

HANDBOUND
AT THE



UNIVERSITY OF
TORONTO PRESS



Digitized by the Internet Archive
in 2010 with funding from
University of Toronto

Med
137
4775
I
NEW YORK MEDICAL JOURNAL

INCORPORATING THE
PHILADELPHIA MEDICAL JOURNAL
AND THE
MEDICAL NEWS

A WEEKLY REVIEW OF MEDICINE

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.
CLAUDE LAMONT WHEELER, A. B., M. D.

ASSISTANT EDITORS

CHARLES F. BOLDUAN, M. D.
CARY EGGLESTON, M. D.
ALBERT ROBIN, M. D.

WILLIAM F. C. STEINBUGLER, M. D.
A. STRICKLER, M. D.
W. H. DONNELLY, M. D.

SPECIAL EDITORS

Genitourinary Surgery,
EDWARD L. KEYES, JR., M. D.
Orthopedic Surgery,
H. AUGUSTUS WILSON, M. D.
General Surgery,
BENJAMIN T. TILTON, M. D.
Neurology and Psychiatry,
SAMUEL D. INGHAM, M. D.
Pediatrics,
GODFREY R. PISEK, M. D.

Dermatology and Syphilology,
JAY F. SCHAMBERG, A. B., M. D.
Ophthalmology,
MATTHIAS LANCKTON FOSTER, M. D.
Otology and Laryngology,
RUFUS B. SCARLETT, M. D.
Pharmacology and Therapeutics,
LOUIS T. DE M. SAJOUS, B. S., M. D.
Pathology and Bacteriology,
GUTHRIE MCCONNELL, M. D.

VOLUME CIII.

JANUARY TO JUNE, 1916, INCLUSIVE.

NEW YORK

A. R. ELLIOTT PUBLISHING CO.

1916

422392
19.4.44

R
11
I65
V103

COPYRIGHT, 1916, BY A. R. ELLIOTT PUBLISHING CO.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 1.

NEW YORK, JANUARY 1, 1916.

WHOLE No. 1935.

Original Communications.

HEADACHE IN ITS RELATION TO NASAL DISEASE.*

BY WOLFF FREUDENTHAL, M. D.,
New York.

To be consulted by a patient complaining of the one symptom of headache, and to have to determine at once the cause, etc., may be a matter of a few minutes, or it may be a task too big for one man to accomplish. It is my privilege to discuss here the question of headache in its relation to affections of the nose and throat. Here again we encounter many difficulties, as pathological conditions in the nose are so very frequent, and as the grossest lesions may exist without a sign of headache.

Hack, of Freiburg, was the pioneer in this work, and the writer recollects vividly how during his student years hosts of patients journeyed from all parts of the world to Freiburg, in order to obtain relief from headaches and, by the way, from asthma as well. Many left that beautiful city perfectly cured; others, on the contrary, had gone there in vain. However, this subject was soon taken up by all laryngologists, I venture to say, and nowadays it is one which confronts us repeatedly every day. In the daily routine of our rhinological work we encounter a certain number of patients who are permanently relieved of headaches.

Permit me, for the sake of simplicity, to classify headaches into: 1. Such as are due entirely to nasal or nasopharyngeal disease; 2, those produced by several factors, one of which is situated in the nose or throat.

If we find the cause of these troubles, the therapy is given at the same time. As a general rule it may be said that when headache is present on awakening, this speaks in favor of its nasal origin. When it occurs later in the day after using the eyes a great deal, it is attributable very probably to some ocular affection. Another rule is this: If cocaineization of the nose diminishes the headache, its nasal origin is the more likely, and this is also the case if it increases when certain diseased areas are touched with the probe. But these tests are not always positive evidence.

If we now ask what affections will produce headache, the answer is that almost every pathological condition in the nose is apt to be a cause; for example, a deviation of the septum, polypi, hypertrophic conditions, in short, any condition which produces

close contact of two mucous surfaces and at the same time pressure upon the sensitive terminal filaments of the fifth nerve, especially its ophthalmic and superior maxillary divisions. As a result there is a partial or complete constriction of one or both nares. If these etiological factors are removed, the headache disappears in the majority of cases. The pain is located often at the bridge of the nose, or near and around the eyes. This is especially so in hypertrophy of the middle turbinate. We have to be careful not to remove such a structure, when it will do no good. On the other hand, examination of the nose should *never*—I say this very emphatically—be neglected in *intractable headache in any form*. If then, for example, the middle turbinate is found to be diseased, it ought to be treated according to well established principles. Headaches in these cases are unquestionably due to pressure of one or both turbinated bodies upon the septum nasi, and this pressure is usually the result of a congestion primarily. It is, says Alexander Francis, through this agency that stomacic and liver troubles may make themselves felt in the head. In fact, in the writer's experience, the majority of such patients had been treated for biliousness, dyspepsia, and all sorts of things, long before they finally consulted a rhinologist. Many a so called bilious headache can be cured by removing intranasal pressure. To illustrate this, let me cite some instances:

CASE I. Mrs. N. S., aged thirty-five years, had almost constant and intense pain over both eyes; suffered from such attacks every few months, preceded by a cold in the head. Was treated by an ophthalmologist, who never examined her nose, and by a score of other colleagues. Examination showed the left middle turbinate to be very large and in contact with the septum. Cocaine contracted the tissues to such a degree that different caustics were applied, an absolute cure resulting within three weeks. (C. M. Robertson has reported a similar case.)

CASE II. Mr. K. S., a strong man aged forty years, had suffered from terrific headaches for more than nine years, had been treated for gout and stomach disease, and felt hopeless of obtaining relief. His pain was referred so distinctly to the supraorbital and frontal regions that it seemed incomprehensible why his nose had not been examined. I found the left middle turbinate very much hypertrophied, but it did not show a myxomatous condition, as in the previous case, and nothing was left but to remove it *in toto*. This was done in one sitting, and the patient absolutely freed of his trouble. Similar cases have been reported by Wyatt Wingrave, and a few others.

CASE III. Mrs. J. M., aged thirty-five years, pale and weak looking; had been suffering for the last three years from dreadful headaches. She had consulted quite a number of our prominent colleagues, had been treated by gynecologists, stomach specialists, internists, etc., until finally some one referred her to me. She generally awakened with a dull pain in the occiput. Then the pain spread forward, terminating over the right eye. In all these years, in spite

*Read, by invitation, before the Yorkville Medical Society, November 15, 1915.

of these distinct symptoms, no one advised the patient to consult either an oculist or, what proved more correct, a rhinologist. On examination a red, large, swollen hypertrophy of the right middle turbinate body was found, and the intranasal pressure was relieved by the removal of the turbinate. Following this, all the symptoms disappeared.

Beside the intranasal pressure just mentioned, these hypertrophies are the cause of other disturbances within the sinuses, especially in instances where the anterior tip of the middle turbinate is large enough to obstruct the orifice of the antrum. Under these circumstances the cavity is shut off from the nasal chambers, and its natural ventilation ceases. Consequently the air within will be rarefied, giving rise to a retention of gases, swelling of the mucosa, serous discharge which afterward may become purulent, etc.

Permit me to mention here that therapeutically the application of a stream of dry hot air under pressure, as recommended by Vansant, has been employed by the writer with a good immediate result. The effect is to open up the outlets, allowing retained gases and fluids to escape, and to restore the equilibrium of the atmospheric pressure. (Robertson.)

This brings us to another group of headaches, viz., those due to purulent affections of the accessory sinuses. In this category we find represented all classes of focal and general headaches. The most violent and constant pains in the head result from empyema, their intensity varying according to the severity of the local disorder.

As to the situation of the pain in disease of the various sinuses, it must be said that no definite localization is possible excepting perhaps in acute frontal sinusitis. In acute cases headache is always more pronounced. The pain from antrum disease is often experienced in the cheek, and is of dull or lancinating character, radiating to the forehead and frequently to the ear. In ethmoid and frontal sinus affections there is a constant or intermittent ache referred to the ocular or frontal regions. But the seat of the pain in antral as well as frontal sinus disease may be in the infraorbital nerve, the supraorbital nerves, or the supraorbital nerve. On the other hand, pain in the occipital region is not uncommon. The reason why in antrum affections the pain is often in the frontal region, is that the two ostia are so close together in the infundibulum that pain as well as disease extends quickly from one to the other. To make a diagnosis as to which one of the sinuses is affected from the site of the pain would be a mistake, as it is by no means a sure sign.

Patients with chronic affections of the sinuses may never complain of headache, in spite of advanced changes in the mucous membrane. In other cases headache is the predominant symptom. When present, it is generally severe in the morning and improves as the day goes on, i. e., the more pus the patient is able to get rid of, the easier he will feel. Or immediate relief may be obtained when his sinuses are washed out by the physician. It has been my experience time and again, for example, that the distinct pain at the inner angle of the eye disappears immediately.

The trouble in all these chronic suppurations of the accessory sinuses, is that the neurologists to whom these patients are referred do not always

consult a laryngologist in *obstinate cases*. Often the fine spun diagnosis of cerebral affection is made, but of course without benefit to the patient.

Let me give but two examples out of a rather wide experience in this class of cases:

CASE IV. Mr. —, a business man aged about forty years, had "acted queerly" for some time. He had such intense headache that he was forced to give up business, and was finally sent to a sanitarium out of town. Not having improved there, his wife (whom I had known for many years) asked my advice. She thought that her husband was getting insane. As she had laid so much stress on the headache, I told her that though it might seem absolutely ridiculous to examine the nose of a person who was becoming or probably already was insane, it might be worth while. The nose was examined by a local colleague and masses of nasal polypi were found, together with an empyema of one of the sinuses. He was operated upon, and has been in perfect health for the last six years.

CASE V. Another case, previously reported by me, is that of Mr. X., who went to Europe in search of a cure for his headache. On the way out he often felt like jumping overboard, as he thought he could not stand his suffering. This patient, after consulting several more neurologists abroad, was referred by his sister (!!) (who had noticed a "nasal catarrh") to a rhinologist, and by him was referred to me. I found a chronic empyema of the frontal sinus, and was able to convince his attending New York neurologist of the presence of pus in that cavity only by inviting him to the operation. The patient lost his headache after free drainage had been established, but there was always some discharge from the nose.

The hardest cases to diagnosticate are uncomplicated empyemas of the sphenoidal sinus. While the acute cases offer no special trouble in this respect, I have had several cases of long duration in which the diagnosis was extremely difficult. They were published some years ago.

The region most active in the causation of headache is not the nose, but the nasopharynx. The commonest of all affections which I believe every practitioner encounters, is nasopharyngeal or post-nasal catarrh. By treating this condition by very simple means, I believe every physician could relieve fifty per cent. of all sufferers of headache.

Parentetically it should be mentioned that in cases of nocturnal headache we should always think of lues.

So far I have spoken of pain in the head which was evidently the result of intranasal disease, and which disappeared on its removal. These are plain and uncomplicated cases. There are, however, many other cases which are not so simple. A patient may have an empyema or an hypertrophied turbinate body, and besides he may have heart disease, nephritis, arteriosclerosis, constipation, etc. For that reason we should never neglect examination of other regions, for headache in these cases will not always disappear after operation, and the patient may have reason to feel dissatisfied. Therefore the regulation of diet, manner of living, etc., ought to be tried first before resorting to an operation, which in some instances may thus be avoided. In the class of cases mentioned above, in all of which there were strict indications for immediate operative intervention, this was not feasible.

There is no doubt that sometimes the patient does not derive relief from an intranasal operation, and his headache is as bad as ever. It may be difficult to decide whether in a given case an operation ought to be performed at once, or postponed, as for example, in the following:

CASE VI. Mrs. L. R., aged fifty-one years, complained of headache as the chief trouble of her life. Having tried all kinds of treatment without avail, she was finally forced to look upon her pain as inevitable. She consulted me on account of epistaxis (climacteric!). I found the left side of the nose greatly blocked by an exostosis far back on the septum. But she was suffering greatly at the same time from rheumatism and constipation. I had her treated for the latter complaints for about a month without the slightest improvement. Then the spur was removed under some difficulties (quite some hemorrhage, etc.), and the result was excellent. That was done about three years ago, and although she had headaches occasionally, they occurred not oftener than about every two months, and were easily borne.

In this instance I surely thought I was right in postponing an operation, but it did not help us, and we had to resort to it anyway. In other cases just the opposite is true.

CASE VII. Miss L. N., aged thirty-five years, had another typical case. She had suffered from a bandlike pain around the head for several years. It came on suddenly and lasted for several days. She was extremely neurotic, and on being questioned informed me that her nose became clogged before an attack occurred. I examined her many times without being able to detect anything abnormal in her nose or throat (there are such people!). Finally she came one day during an attack, and both nares were found to be blocked by acute swellings of the inferior turbinate bodies. Cocaine, and afterward the galvanocautery, restored normal conditions.

I have seen similar conditions in young men and women, and have come to the opinion that the underlying causative factor is not always neurasthenia, but often sexual excitement or abuse of the special nasal hyperesthesia to which they are prone, and which in its turn induces a rapid swelling of the turbinates.

Many interesting cases along these lines could be cited, but I must close with the words of Dr. A. Church, of Chicago: "There is no problem that requires more thorough and searching investigation than the origin of headaches, and there is no condition so unimportant that it can be overlooked in any case of headache."

1003 MADISON AVENUE.

STUDY OF DRUG ACTION.

(Third Paper*)

BY THOMAS J. MAYS, M. D.,
Philadelphia.

THE MECHANISM OF STIMULATION.

Stimulation has already been defined as a process which makes for health, and an effort will now be made to describe its intimate mechanism. In doing this, it is essential to recognize that the ultimate aim and province of all drug action is confined to aiding and fortifying the normal molecular activity of the bodily tissues, and that any attempt which assumes to go beyond that point is destined to meet with disappointment.

Health, like a spinning top, is a moving, variable, and fluctuating entity, which maintains its equilibrium under many conflicting forces, and the status of which is never actually the same at any two successive periods of its activity; while, on the other hand, disease may be compared to that period in the career of the moving top when unfriendly

forces have stepped in and threatened its equilibrium—with more or less serious consequences. Disease, unless absolute, is therefore a relative term, existing along side of, or commingling with health, and without any sharp or well defined line of demarcation between the two states, but shading off, the one into the other. That which was health yesterday may be disease today, and the reverse may be true tomorrow. They spread through contagion, and the size of each one's territory is limited by the degree of normal resistance which is present in the part affected or in the body as a whole. If the latter is weak or depressed, disease extends its area, and if it is strong and vigorous, health enlarges its territory and crowds out disease.

Now, if, as stated above, the final object of drug treatment consists in aiding and supporting normal molecular activity of the body, and, if stimulation is a measure which enhances this process, it is worth while to get as clear an idea as possible of the mechanism of stimulation. There are two modes of stimulating, or of invigorating the molecular activity of the body. The first is that of chemical stimulation, which consists of a conversion of the force energy of the body which is derived from the combustion of food substances like hydrocarbons, carbohydrates, etc., and of applying it directly to the bodily organ as working force—a process analogous to that of the steam engine which transforms the heat force of the fuel into mechanical energy. This process may, therefore, be called the physiological or chemical mode of stimulation, not only because it moves in harmony with the bodily forces, but because it distinguishes it from the other method of indirect or mechanical stimulation, which produces its effects by moving in antagonism to the bodily forces, as will be briefly outlined in the following paragraph.

When two forces of equal strength meet one another from opposite directions, rest is produced, but, if a stronger force attacks a weaker, the latter will move in a direction parallel to that of the former and to a point at which a temporary mutual balance occurs, but by a series of such impacts the weaker will be forced to seek a new equilibrium in which it will remain after the attacking force ceases to act. This phenomenon is witnessed when a persistent strong wind blows over a field of tall grain. At first a strong to and fro wavelike motion is generated, which sooner or later gives way to a leaning of the grain in one direction which may be more or less permanent. On the other hand, a moderate wind coming from an opposite direction may counteract the effects of the first gale, and restore the leaning grain to its original position.

If for the tall moving grain we substitute the molecular movements of the body textures, and for the persistent gale of wind some adverse disease breeding force which tends to destroy the normal equilibrium of the body; and, further, for the fortuitous wind coming from an opposite direction the therapeutic influence of a well selected drug, do we not have a material illustration of the effect of mechanical stimulation, of how a remedial force overcomes the deleterious effect of another force? That this is not a strained comparison is confirmed by the experimental evidence obtained from the be-

*See this JOURNAL for August 14 and 21, 1913.

havior of the frog's heart referred to in the second paper of this series, which demonstrates that the detrimental effects of one drug may be immediately antagonized and overcome by applying the appropriate dose of another.

A principle of therapeutic action like that just outlined is not restricted in its operations to small local areas, but is of far reaching applicability, as may be illustrated by the behavior of strychnine, the influence of which is not confined merely to the motor nerve tracts which it specially selects, but affects every organ which its radiating fibres supply.

In small doses this agent acts as a stimulant, and in large doses as a convulsant or paralyzant, and figuratively it may in this respect be likened to the sides of a pyramid, the ascending line of which represents its stimulant or tonic action, while the opposite or descending line exhibits its convulsant or paralyzing action.

Now, as has already been said, health is not a constant but a moving line, which, while ebbing low, has less resistance to disease than while it is at its best, and when strychnine elevates the tone of the depreciated nervous system, it gradually forces the line of health upward in the direction of disease, and crowds out the latter until the apex of the pyramid is reached. This constitutes the danger point in its action, which must never be crossed, although it should be hugged as closely as is consistent with safety. This line varies in different persons, and is liable to shift its position in the same person. The dose which may be liable to call it forth at one time, may later, if the drug is given continually, be largely increased. Some patients, however, do not appear to be able to take as large doses after convalescence has fairly set in, as they had taken before. A certain degree of immunity seems to be established in these cases.

From these observations it is obvious then that the mechanism of stimulation is a twofold process, of wide practical applicability, and called into play, not only by chemical and mechanical stimulants operating from the interior of the body, but also by those that work from the outside, like the environmental forces of heat, light, sound, electricity, mental influence, etc., all of which conspire to maintain the integrity and well being of the human organism.

COUNTERIRRITATION.

Counterirritation is a method of applying a number of medicinal agents, such as mustard, cantharides, croton oil, tartarized antimony, etc., to the surface of the body, and thereby causing engorgement, vesiculation, and pustulation of the skin; by thus bringing about a great deal of surface irritation, counterirritants are believed in some way to beneficially influence disease of the internal organs of the body. That they produce such relief, a long array of well founded clinical experiences attest, but they are far from demonstrating that the irritation which is caused on the outside of the body is transmitted as such to the disease within the body.

The doctrine has been advanced that the alleviation afforded by these agents is accounted for on the score of the amount of blood which is drawn

to the surface from the engorged or inflamed organ over which they are applied. That such a contention is scarcely tenable, is obvious from the fact that the quantity of blood which is thus abstracted would have to be drawn from the whole bulk of the body blood, and for this reason would be too diminutive an amount to influence the diseased part.

In place of acting as direct irritants, it is more than likely that these agents bring about their remedial results by generating a violent state of irritation on the surface of the body, the disturbance of which radiates inwardly from the centre, and naturally weakens as it spreads, finally shading off into stimulating impactions at its periphery. The latter invigorate and enhance the normal resistance of the textures which surround the diseased area below, bring the latter to a normal level, and move the line of health into the province of disease.

Counterirritation varies in degree and form. Mustard and other rubefacients cause a transient hyperemia and congestion; cantharides produces such a rapid engorgement of the skin and subcutaneous tissue that the serum of the blood is forced through the capillary walls under the epidermis and appears in the form of blebs or blisters; while croton oil and tartarized antimony, although slower in action, produce intense irritation, which manifests itself finally as a papular or pustular eruption.

From the character of their action it is evident that therapeutically counterirritants are not to be applied indiscriminately in all pathological conditions in which they are indicated, but that a proper selection must be made. Thus, as a general rule, it may be laid down that mustard and other rubefacients in general are indicated in superficial and transitory affections, like neuralgia, myalgia, etc.; and cantharides, or other blistering agents, on account of their rapid penetrating power, are more applicable in the treatment of morbid affections of the serous and fibrous textures like acute pleurisy, rheumatism of the joints, etc., which, in virtue of lessened vascularity and greater homogeneity, require stronger and more active stimulating impactions than is the case with diseases which invade organs of greater vascularity and impressibility, such as the lungs, etc. On the other hand, pustulants are most useful in the treatment of chronic inflammatory diseases, like those of the pulmonary organs, the joints, the intestinal tract, etc.

MENTAL THERAPEUTICS IN PULMONARY CONSUMPTION.

Any one who makes a serious and impartial study of the treatment of pulmonary consumption, must be impressed with the fact that the death rate of this disease has not been reduced during the last ten or fifteen years.

In casting about for explanations of this unfortunate state of things, it will not do to deceive ourselves into the belief that this default is only temporary, and that it will be remedied after the present preventive system becomes more fully organized. This would be well worth waiting for, if it were ever possible to materialize, but it requires no very extended practical information to recognize that the great majority of those affected with

this disease are absolutely and hopelessly beyond the reach of treatment as it is at present currently applied; and why? Because eight out of every ten of such cases are the outcome of poverty and all that goes with it, and its amelioration is not so much a question of ministering to the physical wants of these patients as it is of relieving the mental and social distress incidental to a perverted economic condition, and in such a manner that they will be fitted to avoid or combat a return of these conditions during their future career.

Nothing that is said here is to be construed as even an attempt to discourage the valuable services rendered by remedies which are now and will be employed in the treatment of this disease; but a plea is made for a sufficient widening of our therapeutic horizon to realize that, in addition to his body infirmities, the consumptive is suffering from the stress and strain of mental oppression—reaction from which is as essential to his recovery as that of his corporeal ailments, and that any treatment or system of treatment that does not lay strenuous emphasis on this consideration is unconditionally wanting in the first principles of adaptability, and must fail on account of its inherent inertia.

That a close affiliation exists between diseases of the nervous system and pulmonary consumption is shown by the fact that the latter disease is four or five times more prevalent among the insane, the idiotic, the epileptic, the neurasthenic, etc., than it is among the nonneurotic population; that poisonous agents like alcohol, mercury, lead, etc., which destroy the integrity of the nervous system, are extremely likely to cause this disease; that, while both insanity and consumption were comparatively unknown among the negroes of the south during slavery, since emancipation both diseases preponderate to such a degree that they threaten to decimate the race—the latter disease, as a rule, developing after the former.

Moreover, a number of clinical writers on consumption have observed a well marked tendency to disturbance of the nervous system previous to and during an attack of this disease. Smith (*Consumption*, p. 44) states that out of a thousand patients of this kind under his observation, seventy-one per cent. exhibited an excitable, impressible, and nervous temperament, while they were yet in good health. Weil discovered that in fifty-one cases of consumption, about forty per cent. were affected with hyperesthesia of the muscles of the trunk, arms, hip joint, and neck, in most instances confined to the side of the body on which the diseased lung was situated. The tendon reflexes were not materially altered, the pharyngeal reflexes were absent in nine cases, and neuralgia and sciatica were present in a goodly number. Mircoli observed that disturbances of the nervous system may constitute the earliest sign of this disease, among which is increased sensitiveness on the affected side. Gasperini and Goldmann also established a connection between a local hypersensibility of the skin, muscles, bones, and joints, and the site of the pulmonary lesion. Koths, in describing the effects of fright during the bombardment of Strassburg in 1870, says that diseases of the lungs were markedly

aggravated, and that hemoptysis often occurred for the first time in those affected with pulmonary diseases.

As to the symptomatic pathology of the consumptive's mental condition, Doctor Smith (*op. cit.* p. 45) says:

The spirits are greatly elated under pleasing circumstances, so that the vivacity is beyond that of health, while at other times there is sudden and unaccountable depression, rapidly alternating with the former and becoming more marked by contrast. . . . The same is true of the general nervous organization so far as it relates to its increased excitability, for it is unusually sensitive to all impressions, whether pleasing or painful. The influence of sudden impressions, whether of mental emotions or of physical occurrences, is increased; so that shock, whether of the mental or general nervous organism, is more easily induced. Fear more certainly paralyzes, pleasure exhilarates, pain exhausts, and cold revulses, than under ordinary conditions.

This graphic picture of the consumptive's mental pathology, as viewed by one who fully comprehends this disease from its material side, and who judges it from the totality of its symptoms, brings into prominence the extreme sensitiveness of the consumptive's organization, and very lucidly illustrates the truth that impressions, which under ordinary conditions would be mere trifling incidents, arouse and provoke a deep and far reaching agitation in the consumptive's nervous make-up. This being true of both hurtful and healthful influences, the practical therapeutic lesson to be drawn from the picture is to avoid the former, and to take advantage of the latter.

The baneful influences that assail the consumptive do not usually come in the shape of great and appalling misfortune, but rather as small harassing and annoying troubles of everyday life, such as financial adversity, grief, disappointment, and other "slings and arrows of outrageous fortune." Poverty is severity itself, but is fearfully handicapped when intensified by a serious and long drawn out sickness.

Another grave complication in the life of a consumptive is home sickness; a disease which appears in the form of great mental depression, coupled with an intense desire to return home. It is especially disastrous among sufferers of this disease who are sent away long distances, unaccompanied by friends or relatives. It also prevails among hospital and sanatorium patients, when the institutions of which they are inmates are built in places not readily accessible to their friends and acquaintances.

Now, in casting about for agencies which have the power of correcting and of deflecting these abnormal mental manifestations, it is useless to expect much help from ordinary drug medication. Indeed, this is a problem that leads us into the realm of economic and mental therapeutics. The primary effort in this plan of relief is to ease up the financial and domestic strain that envelops the very existence of many of these sufferers. They must be properly housed and fed, which means the outlay of large sums of money; but more than this is essential to realize all the possibilities which this system of treatment affords. The great issue is the mental and physical reinvigoration of the powers that lie dormant in these invalids. Every source of irritation or of depression, every disheartening look

or speech should be distanced as far as possible. The practice of informing the sick of their real condition, in the hope of making a deeper impression and causing them to exercise greater care in carrying out instructions in regard to treatment, is as senseless as it is ill advised. No matter how insistent these sufferers may be to have their whole case laid bare, the truth is that such information almost invariably produces a mental shock from which they never fully recover. It is hardly natural for even the most stolid optimist to stand up calmly and relish that which he knows will sentence him to a life of misery and ostracism, and which, in place of being an asset to his means of resisting the disease, is really a serious drawback. If the condition must be reported, it is most advisable to spare the patient and inform the family or some intimate friend.

The emotional factor plays such an important part in the ups and downs of the consumptive's life, that those who have charge of his care and management should never lose sight of it. A fracture, or even a deep muscular wound, will, on account of the greater or lesser obtuseness of the tissue implicated, follow a process of repair, whether the victim is happy or morose, cheerful or depressed; but in disease of organs like the lungs, which are in close nervous touch with the higher nerve centres, the case is quite different, and the mental influence becomes a potent element in deciding the outcome of the malady. For this reason, if for no other, the gospel of cheerfulness and of sunshine should radiate from every attendant, and every effort and measure that contributes to the normal elevation of the consumptive's feelings should be resorted to.

At first sight, an appeal to immaterial mind force for the relief of disease may be regarded as a subject not properly relevant to the domain of drug action. This objection disappears, however, when we reflect that the material element in a drug is only the representative of a certain degree of energy which it manifests in accordance with the laws of all other forces. That mental forces, so far as we know, are amenable to the same laws; that they are just as active, and capable of displaying power for good or evil as the more strictly physical forces, is too evident to require discussion.

The force which is generated in a single mechanism like the steam engine—itsself the product of mental force—almost staggers computation; but what of the power of the force in an idea, like that of intellectual and civil liberty, which sways the world and has already crushed the shackles of untold millions? In view of this, it can hardly be advanced that the human mind, which is almost capable of performing miracles, is impotent to coordinate and adapt means that will finally circumvent and blot out this pernicious miasma.

To the serene mind, the Home Hospital for Puerperalosis, on East Seventy-eighth Street, New York, meets the ideals and requirements for the relief of this disease better than any other. Physical suffering and treating the patient and his whole family, the fact that the latter being also impaired, its condition, its home, and its economic elements of treatment and care for the present as well as for the immediate future. It provides the family and the community with a home, and other

family worries. It educates the mothers in everything that pertains to housekeeping. It nearly doubled the earnings of the restored discharged families. In the first two years one died; about eighty per cent. recovered, and not a new case developed. It lifts these people out of poverty and mental dejection into health and earning capacity, and enables them to live on a higher plane than they occupied before they entered. It is an institution which should be copied by every city in this country.

1829 SPRUCE STREET.

SALVARSAN IN PRIMARY SYPHILIS.

Five Years' Experience with 606.

BY ALEXANDER A. UHLE, M. D.,
Philadelphia,

AND WILLIAM H. MACKINNEY, M. D.,
Philadelphia.

It is now five years since salvarsan was introduced into the list of therapeutic means used in the treatment of syphilis and therefore sufficient time has elapsed, in our estimation, to enable certain deductions to be made concerning its value. All observers agree in regarding salvarsan as the most efficacious drug we possess to remove the symptoms and clinical manifestations of syphilis. The quickness of its action depends upon the duration, type, and character of the lesion. Observation over a long period of time and repeated Wassermann tests performed by competent serologists must be the only factors in determining the ultimate efficacy of the treatment.

Since 1910 the writers have observed fifty-seven patients with genital or extragenital chancres, who have received salvarsan or neosalvarsan treatment. Included in this report are cases seen in private practice, for dispensary and hospital patients are of little value from the standpoint of the investigator, as such patients usually disappear from observation within a short time after a symptomatic cure has been effected. It has been our experience that, in spite of a large increase of syphilitic cases in private practice, there has been a gradual decrease in the number of chancres observed. Thus, in 1911, there were twenty-two cases, in 1912, eighteen cases, in 1913, eight cases, in 1914, six cases, and in the first nine months of 1915, two cases. This we can attribute only to the extensive use of salvarsan or neosalvarsan in the treatment of syphilis, and the rapid and efficient action of these drugs in removing the early and very contagious manifestations of the disease.

In the following table may be seen the same diminution in the number of patients admitted to the men's venereal service of the Philadelphia General Hospital for primary and secondary syphilis during the past four years, compared with a gradual increase observed in the four years prior to 1912.

Year.	Primary syphilis.	Secondary syphilis.	Tertiary syphilis.
1911	22	18	12
1912	18	18	12
1913	8	18	12
1914	6	18	12
1915	2	18	12

During 1911, salvarsan was extensively employed in all the large hospitals and dispensaries and the results are seen in the progressive diminution in primary and secondary syphilis observed in this public institution.

Of our series of fifty-seven chancres fifty-two were genital and five were extragenital; of the latter, three occurred on the lip, one on the tonsil, and one on the tongue. The duration of the lesions varied from two to forty days. Duration is a very important factor in the chancre salvarsan treatment, as we shall subsequently endeavor to prove. The Wassermann reaction was never found positive in any chancre of less than seven days' duration, and was positive in every case examined after the fourteenth day. The diagnosis of chancre in these cases was made chiefly upon the microscopical demonstration of *Treponema pallidum* in the serum obtained from the lesion, upon the clinical characteristics of the ulcer, and in a few cases, upon the results of the Wassermann test. Of fifty-seven cases, fifty-two were examined for *Treponema pallidum* by the dark field illumination method. The microorganisms were found to be present in forty-eight cases, and absent in four cases in which their demonstration had been rendered impossible by previous local application of some form of mercury, chiefly calomel in powder or wash. The local application of mercury presents a greater obstacle in making an examination for *Treponema pallidum* than the internal administration of mercury, it being possible to demonstrate the microorganisms after a few weeks of internal mercurial treatment. In chancre the only clinical characteristic of diagnostic value is induration, which is frequently absent from the early sore, and even when present cannot be absolutely depended upon for a positive diagnosis. Multiplicity of lesions offers but little diagnostic evidence against syphilis. While it is true that chancres are as a rule single, they are frequently multiple, and any number of sores may be observed. Among our fifty-seven cases, forty-seven were single and ten multiple, the greatest number of lesions coexisting being nine.

In a suspected initial lesion where for some reason or other the diagnosis cannot be made by microscopic examination, the Wassermann test must be relied upon to confirm clinical judgment. Before any decisive step is taken toward the establishment of a diagnosis of syphilis from the standpoint of the Wassermann test, at least two positive reactions by different serologists should be obtained. The time at which the Wassermann becomes positive in primary syphilis varies considerably in the hands of different serologists, depending upon their technic and antigen. We have recently called attention to the wide discrepancies in Wassermann tests made by different serologists upon the blood of syphilitics in all stages of the disease. In primary syphilis the reaction is found positive by some observers as early as the fifth day, while others do not report a uniformly positive reaction until the thirtieth or thirty-fifth day, or even later. As said before, in our series of cases a positive Wassermann was never obtained before the seventh day and always after the fourteenth day. It is in this stage of the disease that the Wassermann reaction has a most valuable prognostic significance, for as we shall show later, cases

observed by us with a negative Wassermann and treated energetically with salvarsan or neosalvarsan did not show subsequent clinical or serological manifestations of syphilis. While this observation is not new, it confirms that of others, that in this stage syphilis is radically curable.

In thirty-three cases Wassermann tests were made prior to salvarsan or neosalvarsan treatment. Of these thirty-three reactions, eleven were negative and twenty-one positive.

The eleven patients with negative reactions received salvarsan or neosalvarsan, in consequence of which ten never became positive. The serological observations covered a period of from two to thirty-six months; six of the above mentioned ten persons were observed for longer periods than one year, the time elapsed since the last examination varying from three months to four years and two months. Only three took mercury in addition to salvarsan or neosalvarsan in periods of three weeks to six months. One patient who had a negative reaction prior to treatment, had a serological relapse seven months after treatment.

Of the twenty-two patients from whom a positive Wassermann was obtained prior to active treatment, the reaction became negative in nine cases from two weeks to two months after treatment; it remained positive in three, and in ten no subsequent observations were made, the patients failing to report as directed. Of the nine patients whose reaction became negative, four were observed for periods of over two years, the longest time being four years and three months. Mercury was administered in every one of these cases, but in none for a longer period than one year.

Of the twenty-four cases in which no Wassermann was made before treatment, there were twelve whose Wassermann was negative one month to thirty-six months after treatment (seven of these covered periods of over one year), eleven cases never returned, and one case which gave a negative reaction five months after treatment presented a serological and clinical relapse two months later.

Of the ten cases of chancre whose Wassermann was negative before and after treatment, five received only one dose of salvarsan intravenously, while the other five received two to three doses of neosalvarsan at weekly intervals. Neosalvarsan was introduced about two years after salvarsan, and this accounts for the administration of several doses, it having already been recognized that early intensive treatment was the key note of success in the treatment of syphilis. We now make it a practice to repeat the injections of salvarsan or neosalvarsan at intervals of about a week for three injections.

Of twenty-two cases with a positive reaction prior to treatment, nine received one dose of salvarsan, and one, two doses. Six received one dose of neosalvarsan, two, two doses, two, three doses, and two received one dose of salvarsan and two doses of neosalvarsan. As to the relative value of salvarsan and neosalvarsan no conclusions can be drawn from this group of patients; the good results, however, following one dose of salvarsan and the period of time over which these patients have been observed, speak very favorably for this drug. The patients receive

ing neosalvarsan had usually more than one dose and naturally they have not been observed as long as the patients receiving the older drug. With two exceptions, all patients received a full dose by intravenous injection; in only one case a full dose was given intramuscularly, and in the other 0.2 gram of the drug was injected intravenously and 0.2 gram intramuscularly. This patient was observed at intervals for three years with constant negative reactions, and has not been seen for twenty-three months. The patient who received the full dose intramuscularly gave a positive reaction eighteen months after the injection, but presented no clinical lesions of syphilis.

In only one case a severe local reaction was observed. The patient had a chancre of the tongue. Within a few hours after the intravenous injection of salvarsan, the tongue was so swollen that it filled the mouth, swallowing was impossible, and breathing considerably interfered with.

How long a Wassermann reaction must remain negative in the absence of treatment before a patient may safely be pronounced cured, cannot as yet be decided, but that one year is not sufficient is proved by two of our patients who were treated in the early secondary stage of syphilis, and presented clinical and serological relapses fourteen months after treatment had been stopped.

In one patient with a chancre on the prepuce a circumcision was performed twenty-four hours after an intravenous injection of neosalvarsan. The chancre was removed with the foreskin and an examination of the serum expressed from the ulcer revealed *Treponema pallidum* in abundance. Animal inoculations of the macerated chancre were made by injecting it into the testicle of a rabbit, and positive results were obtained. This interesting observation prompted us to remove another chancre forty-eight hours after intravenous neosalvarsan showed it to have precisely the same results, microscopically and by animal inoculation. The marked round cell infiltration which takes place in a chancre results in an occlusion of the blood and lymph vessels and so offers a barrier to the penetration of the drug into the focus of infection, the same condition holding good in the later tertiary manifestations of the disease. For this reason we advise the removal of a chancre when this can be carried out without unwarranted mutilation of the part; if this is impossible, thorough cauterization should take its place when feasible. It would be interesting to determine how long after a dose of salvarsan or neosalvarsan *Treponema pallidum* may be demonstrated microscopically or by inoculation. There is every reason to believe that in the early stage of chancre treponemata which gain access to the general circulation have not had time to penetrate connective tissue to the extent that they become inaccessible to the spirillocidal action of these drugs, but the experiments above detailed prove that the round cell infiltration of the chancre in certain cases may be sufficient to prevent the prompt destructive action of the drug upon the initial focus of infection, and these undestroyed organisms may be responsible for the so called chancre redux which might be mistaken for a reinfection with syphilis.

CONCLUSIONS.

1. The earliest positive diagnosis of syphilis depends upon the demonstration of *Treponema pallidum* in the expressed serum of a suspected sore.
2. This examination is best made with the dark field illumination microscope.
3. The Wassermann reaction is of value in the diagnosis, as a positive reaction means the onset of systemic syphilis, while a negative reaction for practical purposes means a local infection only.
4. Experience teaches us that, when energetic salvarsan or neosalvarsan treatment is introduced before the advent of a positive Wassermann reaction, a radical cure is the rule.
5. After the Wassermann reaction is once positive, such uniformly good results cannot be expected.
6. When possible, excision of the chancre is a valuable addition to treatment.

1701 CHESTNUT STREET.

AN OLD CASE OF CHRONIC INSOMNIA.

By WILLIAM RENWICK RIDDELL, LL. D., F. R. H. S.,
Toronto.

An extraordinary character in the early history of Upper Canada was Robert (Fleming) Gourlay. Born in Scotland of a moderately wealthy family, he was educated in St. Andrews and Edinburgh Universities. He fell out with the Earl of Kellie at home and went to England, where he made a careful report for the Government on the condition of certain agricultural classes. He then became a farmer in Wiltshire, but fell out with his landlord, the Duke of Somerset, and came out to Canada in 1817. He soon fell out with the authorities in Upper Canada, and in 1819 he was banished from that Province. Then he went to England and bombarded the King, his Ministers, and the Parliament with petitions concerning his wrongs. Not receiving sufficient attention from Henry (afterward Lord) Brougham, he horsewhipped him in the lobby of the House of Commons, for which he was sent to prison until he should give security to keep the peace; this he refused to do for over three years. Getting tired of jail, he got out and shortly thereafter came to New York and later to Canada. He pestered the Parliament of Canada about his treatment and was granted a pardon and an annuity of two hundred dollars for life. He refused both and went again to Scotland, where he died at the age of eighty-five years.

His case presents more than one curious aspect medically, but I propose to speak at length only of one. Passing over the facts that he was almost insane when in jail at Niagara before his banishment, and that he, fearing for his reason on his return to England, threw himself on the parish and broke stones for a living for months, I shall speak only of his alleged insomnia.

The story I take wholly from his own writing. He tells us that this did not trouble him till 1833. When after horsewhipping Brougham he was imprisoned in the House of Correction at Cold Bath Fields, he had had very little need of sleep, and the greater part of the time spent in bed, never more

than six hours, was given to reveries. He thinks that the habit of doing without sleep began to form at that time; after he left the prison and from March, 1828, till November, 1833, he was tortured with unsettled business affairs but was generally in perfect health. He could walk without fatigue from morning to night and four or five hours' sleep was quite enough for rest and enjoyment.

November 5, 1833, he left Edinburgh at 6 p. m. in a canal boat for Glasgow; the boat was an iron one, and jarring every little while against some other boat, bridge, or lock, kept him in unspeakable discomfort, and sleep was out of the question. The ship from Greenock to Liverpool ran into a hurricane and was at sea till the second day: these two nights were sleepless like the preceding one. Before going on board his ship for New York, he told the captain his condition, and was advised to take a warm bath before going to bed at Liverpool. He did so, and got some sleep; but all the way over, from November 9th to December 22nd he had not a wink of sleep. Laudanum, opium, getting tipsy, all were in vain; the "grog" indeed made him sick for the first time at sea, but he got no sleep. This spell of sleeplessness, it will be seen, was of more than six weeks duration.

The next attack came on at Willoughby, Ohio, in the beginning of January, 1837, when he was seized with erysipelas in the leg. Thereafter he was five months without sleep, then sleep returned gradually; for many weeks he dozed at times and had strange dreams.

About January, 1839, the insomnia again set in, induced by ill health and family affliction. After enduring it for seven months he consulted Doctor Widmer, of Toronto, "reputed the most experienced Physician in Upper Canada," and certainly well deserving his fame. He advised to dine early and go to bed fasting. This to the last, afforded the most comfort. He also prescribed acetate of morphine, which had not the slightest effect. The doctor supposed that the trouble proceeded from excitement, reading and writing in politics, but Gourlay thought this a mistake, his view being that it arose from unsettled private affairs.

After three years of this sleeplessness Gourlay consulted Doctor Robinson, of Montreal, who had a patient, Mr. Jamieson, who had not slept for five months; Doctor Robinson could do nothing.

In September, 1840, arriving in New York from St. Catharines after a long and wearisome voyage, he lay down on a luxurious bed, closed round with mosquito curtains, and he will not swear that he slept none. So, too, in June, 1841, seated in the door of his log house in Dereham Township in Upper Canada during the stillness of a summer evening, he verily believes he would have slept had not a neighbor disturbed him. Five months afterward, in Kingston, Upper Canada (November, 1841), he had a delightful night; he told his landlady he had *nearly* been asleep; and at Quebec a week afterward he "dozed and dreamt which is certainly an approach to sleep"; while about a year afterward, after being "entertained for a whole day in the most delightful manner" he flung himself into bed and "if Morpheus did not obtain dominion over" him, he "had at least perfect repose." Several times per-

sons came into his room and reported that they had found him asleep, but this he denies; he "knew the train of" his "thoughts perfectly." He had "tried many remedies, a hop pillow, hop tea, etc., and laudanum, fifty drops, seventy drops, ninety drops, and upward of a hundred, yet still . . . no sleep." He had not as yet tried mesmerism. A month or so afterward (June 16th), he obtained two hours' sleep, but no more for a month or more when we have the last account of the trouble.

At no subsequent date does Gourlay recur to this affliction. It is therefore to be presumed that he was quite cured of it.

This extraordinary story there can be no doubt Gourlay implicitly believed. He was, it is certain, incapable of mistating a fact, however wrong his inferences might be; but it is equally certain that he was in error. It is by no means an uncommon circumstance that one believes he has not slept a wink all night, when those occupying the same room, or perhaps the same bed with him, have been kept awake for an hour or more by his snoring. Every one must have had experiences of whole nights passed, as he thinks, in sleeplessness, when it has been made quite certain that he did in fact sleep. No medical man could be found who believed that Gourlay could pass years without sleep, even if he did nothing but rest; not to mention the fact of his being mentally and physically active during practically the whole period.

No doubt he was a light sleeper and did not require many hours of sleep. This seems a part of his general ill health. When he says that his "constitution, naturally strong and vigorous, was till forty years of age sustained by healthy exercise as a farmer, riding and walking much," this must be taken *cum grano salis*. In 1809, he was advised to move to England on account of his health "rendering a change of climate necessary." In the summer of 1815 he had to go to Cheltenham to take the waters there on account of ill health. On coming to Upper Canada, he was confined to the house for two months by sickness. All this was before the confinement in Niagara jail. Thereafter, his frequent attacks of erysipelas indicate an undermined constitution; but the most noticeable illness is of a "nervous" character. The rheumatism may perhaps be fairly accounted for by a wetting he got near Staines. Using his own words, he "suffered for years from a nervous disease." He "guarded against the usual consequences by means not one in a thousand would have resolution for." He "by no means acknowledged insanity," but it was necessary in order "to save his reason" (he was "on the verge of madness") that he should break stones on the road, a pauper where he had been a farmer, thereby curing himself of the nervous disease which "for three years tore him to pieces"; he determined at one time, when suffering from this "nervous" disease, to commit suicide at the Lands End. After returning to Canada, we find him stricken again and again. On returning to Scotland he feared he never would see Canada again by reason of his state of health.

Yet he did marvels in the way of walking, till forty years of age. Walks of thirty or forty miles a day never distressed him. On his return to the

old land, in 1819, we find him at once making walking tours in Scotland, later in England. On release from Cold Bath Fields he walked in Scotland from morning till night without fatigue, and when again in Canada we find him walking on every opportunity. No doubt this exercise, coupled with a constitution physically sound and a temperament from infancy sanguine and enthusiastic, enabled him to live to the great age he attained, notwithstanding the rude buffetings of the world, bitter disappointments, and grievous sorrow.

SOME PUZZLING FEATURES OF EMPYEMA.*

By JOHN H. PRYOR, M. D.,
Buffalo.

My object is to present briefly some more or less puzzling problems associated with empyema, with a few suggestions relative to their possible solution. As a rule the disease is not difficult to recognize, and its clinical history may show little variation, unless the duration of illness and the influence of age are considered. There is a marked difference in the behavior of empyema when it occurs in the child and in the adult.

The symptomatology in the child may prove quite misleading at times, and too frequently the condition is overlooked and a diagnosis long delayed. Recently attention has been directed by many writers to the abdominal symptoms which divert observation from the chest. Some of the most serious septic and hopeless cases are attributed to this error. My experience supports these statements to a certain extent, and most of the cases have been falsely diagnosed as tuberculous peritonitis.

It is rather dangerous to say that any mistake is inexcusable, but the confession is forced that such blunders must be exceedingly rare, if carelessness is eliminated. If all the symptoms and signs were grouped and studied, and time taken to look at the child and examine it, this mistake should not occur, because the picture is distinctly not one of abdominal disease alone. It is the play of a reflex unless a subphrenic abscess exists or accompanies an empyema. Mention is made of this complication as a puzzling feature which may be met.

Five cases of empyema and subdiaphragmatic abscess have thus far come under observation. The empyema was detected in all of them, but in each instance the child continued very ill and did not show the expected improvement after evacuation of the pus from the chest. Two of the patients recovered after drainage of the abscess. One died because operative interference came too late, and was not radical enough. Two died because of timidity. Operation was postponed or refused because the diagnosis was not accepted and interference deemed unjustifiable. In all, the abdominal symptoms were present and continued largely to one side. The diaphragm on one side was apparently immobile. There was tenderness over the upper half of the abdomen with muscular rigidity and resistance to pressure. Pain could be caused by pushing up

against the diaphragm. Cough caused a catching of the breath and some spasm of the diaphragm. In one, hiccough with pain was suspicious. The lower ribs did not move freely. On two other occasions the chest was explored without finding pus, and yet a conviction remained that empyema was present. The signs and symptoms seemed to exclude an empyema and pointed directly to subphrenic abscess. Both children died. In one case aspiration revealed pus, but operation was postponed. In the other case nothing was done. The introduction of a needle after death, proved the presence of pus where it was suspected.

There is room for the inference that the diaphragm may be forced up and produce confusing signs over the lower region of the chest, but the perplexity could have been eliminated by noting the change in the percussion sound during deep inspiration, altering the position of the child and observing the absence of Grocco's sign modified by position. Any comprehensive article devoted to empyema should lay strong stress upon the marked differences and exceptions which characterize the disease in the child. We must bear in mind the sudden onset, and the appearance of symptoms similar to those manifested in pneumonia, which are responsible for most of the mistakes. Again, the physical signs, usually so reliable in the adult, are frequently remarkably modified in the child.

The breath sounds and the conduction of the voice through a large accumulation of fluid, may be most deceptive when considered alone. The percussion note may be misleading in reference to the amount of fluid, and the heart may not be displaced in proportion to the amount of pressure. Most of our knowledge of the acoustics of the chest is largely theoretical, and there are factors in the thorax of the child which we do not fully understand and often forget. Yet in the vast majority of cases doubt can be removed by a few procedures.

1. Exclude other conditions, particularly pneumonia.
2. Remember the possibility of associated pneumonia.
3. Obey the cardinal rule of physical diagnosis; compare, always compare. The sounds on the affected side are practically always different in quality and degree to a trained ear. There is almost always a perceptible difference if the child's voice sounds can be elicited by palpation.
4. Employ the role of gravity by change of position, and mark the altered levels of the fluid. It takes longer for thick pus to gravitate to a new area than thin serum.

There are times when empyema in the child is masked, and the signs are modified by the presence of an extensive pneumonia, but often the suspected pneumonia does not exist. The needle may be employed to remove doubt and supply positive evidence. Unfortunately this procedure is not always successful on the result final. One or more punctures may be made in vain if the proper site is not selected, a favorable change in position secured, the method faulty in various ways, or an interlobar abscess or accumulation is present. The amount of pain caused by exploration can be decidedly diminished by finding a space between the ribs if possible.

*Read before the Buffalo Association of Physicians, November, 1900.

where there is room for the needle, and by widening the space and preventing squeezing, by bending and twisting the body away from the operator, and bringing the hand well up over the head to pull away intervening musculature. There is something wrong when much strength is used. Whether a needle is really sharp or its point and edge dulled, may explain the difference between a nervous, frightened, howling child, and a quick merciful introduction, instead of pushing and jamming an entrance. No needle should be used repeatedly without sharpening. Slight contact with a rib easily dulls or bends the point. The needles occasionally furnished at hospitals are an abomination. We should have a number of various sizes, properly sharpened, and the one selected should be long enough to pass through a thickened pleura.

This reference to exploratory puncture may seem trifling, trite, and unnecessary. I have seen much clumsy bungling and needless infliction of pain from this procedure. The spray of ethyl chloride and the application of iodine in thick layers adds toughness to the skin. They can be quickly wiped off with alcohol or sterile water, the skin pulled up to tighten it, and then the quick, direct thrust made through the skin, always prepared to stop and change the course if a rib is touched.

Frequently the child, and sometimes the adult will be as much perturbed by the insertion of the hypodermic needle to induce local anesthesia, as by the passage of a larger one which will permit aspiration.

Now one or two more trite, cursory references, without apology: We really make more progress feeling the way between ribs, than endeavoring to puncture the rib itself. The needle employed is often too small and will not allow thick pus to pass, and failure leads to a false conclusion or the necessity of another trial. The child dreads a second attempt to a pathetic degree. If the space between the ribs is very narrow, and a large calibre needle must be used, an anesthetic should be given, because some force and time may be necessary to push the ribs apart and avoid injury. If pus is found, there is a chance to make an opening immediately and without pain. There may be no pus visible in the barrel of the syringe, but a slight amount, a shred or drop in the needle. When no fluid appears in the barrel, do not let the piston slip back before withdrawal, and thus expel material in the needle. The needle should be emptied carefully for evidence about as valuable as the appearance of a larger amount. Some of my readers are silently remonstrating that everybody does these things, and the answer is that they don't.

If the site of the puncture is high, the character of the exudate may be misjudged. Thin pus, or seropurulent fluid, may be found in the upper layer, and a thick flocculent or cheesy pus present in the lower stratum. This point should be remembered also in selecting a spot too high for opening and drainage, as the evacuation may be incomplete and absorption is compelled to care for a remainder that might have been removed. This condition sometimes accounts for a delayed recovery and the formation of a pocket to encapsulate a deposit.

Symptoms indicative of profound toxemia, as rapid breathing, high fever, and rapid, disturbed heart's action, are often due to the association of a pericarditis, frequently undiscovered. In the child as well as the adult, death in a large percentage of cases is caused by septic endocarditis, alone or combined with pericarditis. Its appearance should be watched for, as the prognosis becomes much more grave. We learn to fear the meaning of a cardiac murmur when developing suddenly in this condition, especially if the patient is septic and free drainage has been delayed.

Experience seems to prove that evacuation by incision is usually sufficient in the child, and more radical measures, while sometimes necessary, may be needlessly employed. Why the quick emptying of a large cavity containing pus is less dangerous than rapid removal of serum, I have never seen explained. We occasionally experience much difficulty in pushing a tube between the ribs of a child. This can be obviated by a simple device. Quickly introduce the little finger into the pleural cavity and make a round hole to form a canal for the drainage tube.

During childhood the tube is often left in place too long and drainage encouraged indefinitely. There can be no fixed rule for guidance, but early removal can be risked much more than in the adult. When the drainage is slight and the amount little increased by cough, a gauze drain may be tried and withdrawn in a few days. The wise surgeon begins deep breathing exercises early, and does not always dismiss the patient as fully recovered when the opening has closed. In exceptional cases, unless patient, persistent effort aimed at repair is made, a crippled lung and diaphragm may last for years or life. The heart may be permanently displaced. I have seen a number of cases in which the heart remained far from its normal position indefinitely. One child, under observation for the last two years, has a history of an attack of pneumonia and pleurisy with effusion two and a half years ago. The heart is entirely to the right of the sternum, and transposition of viscera has been excluded by physical signs and the electrocardiograph.

Recurrent empyema and undetected pockets of pus occur during childhood, as well as in adult life. I have met with three marked instances. A second opening became necessary three weeks, five weeks, and three months after the primary operation. There may be considerable difficulty in locating a site for the second exploration, because the thick adhesions obscure to a large extent the physical signs. The introduction of the perfected screen and the improved x ray tube, permitting longer observation, is of enormous assistance.

Finally, if one is not an expert in physical diagnosis, it should be remembered that there is a type of breathing almost characteristic, and its occurrence should arouse strong suspicion of fluid in the chest. One shoulder is lifted and there is partial immobility of the affected side in the region of the abdomen near the diaphragm. This is accompanied by an increased distance between the spine and scapula, if the fluid exists in considerable amount.

EMPYEMA IN THE ADULT.

Now a few words concerning the unusual problems encountered in adults. The diagnosis should be easy, particularly if the needle is used when there is doubt. But altogether too often, when the operation is successful, much sepsis has developed, great displacement and damage has occurred, and an important function has been crippled.

The diagnosis of empyema must be early and relief prompt, if a comparatively good result is expected. A deformed chest, a twisted spine, a displaced heart, a totally or partially useless lung, and a diaphragm with greatly diminished function, is certainly not a desirable or laudable result. When pronounced a recovery it becomes a grim travesty upon the word. The fact should be strongly emphasized that the ultimate result depends upon the conduct of the physician and very rarely upon the surgeon. The surgeon cannot repair, try as he will, the effects of a late diagnosis and a tardy summons. There exists a surprising tendency to assume that extensive consolidation of the lung or a large amount of fluid has formed in the chest, because respiration is rapid and difficult. Such an inference or conclusion may be true or false. The amount of fluid may be small with rapid breathing, and one may see repeatedly an effusion of one or more quarts with the breathing normal or slightly accelerated and slight elevation of temperature.

The rapidity of the breathing seems to depend very largely upon the effects of toxemia and involvement of the pericardium or diaphragm. We can form an estimate of the amount of fluid, by the extent of displacement of the heart, the movement of the diaphragm, the area of flatness along the spine, the obliteration of resonant regions, and the movement of the fluid by change of position.

When the pus is sacculated or pocketed, then difficulties arise. The clinical history may prove obscure and confusing, and the temperature range and the blood examination particularly, may furnish little aid. Careful and often repeated physical examination is required to determine the spot for exploration and avoid many punctures of no avail except to deceive.

These cases call for skill, experience, and the employment of some tricks in the art. The efficiency of the screen cannot be tested at times, because the patient cannot be moved to the office of the radiologist. Under the circumstances we must depend often upon fine changes in sounds and pitch of tones. Cough must be employed to bring out adventitious sounds and the effect of gravity studied as far as possible. Success depends largely upon the extent and thickness of pleural adhesions, the size of a pocket, and their number and distribution. So many pockets may exist that evacuation of all is not accomplished, or may be impossible. The injection of bismuth solution followed by screening has proved an aid. The difficulties which may be encountered receive scarcely any attention in the textbooks, and therefore a brief description of a few typical cases will be presented as an illustration.

There are few if any conditions found in the chest more puzzling than recurrent empyema. The books, so far as I have searched, do not mention this

as an occurrence or possibility. I have seen four cases in eight years, and the second attack on the same side occurred from three months to three years after the previous primary attack.

The recurrence three years after recovery in a young man, came under observation in 1907. He had had an attack of lobar pneumonia in 1904, followed by an empyema. A portion of one rib was resected and a large quantity of pus evacuated. In the course of two months the opening closed, and he apparently made a complete recovery. Three years later, malaise and loss of flesh were noted with evening rise of temperature. But the chief symptom was an annoying cough. He gradually became worse and left college to return to his home in this city. The temperature rose each evening to 102° F. with great regularity. The leucocyte count, made several times, was between 7,200 and 7,500.

The cough became so harassing that anodynes were necessary. The breath sounds over the previously affected lung were suppressed or very indistinct. He expectedorated almost exactly one and one half ounce of pus a day. The only sign which afforded any indication for localization was over a small region posteriorly where rales were elicited by cough. At different times ten punctures were made over this region without obtaining fluid. Finally it was decided to remove a portion of several ribs, if necessary, and explore the chest. While the patient was under the anesthetic, five more punctures were made over the region previously explored, and the fifth puncture revealed pus. The pleura was greatly thickened and displaced, and revealed a perfect picture of a honeycomb. Many of the interstices were filled with pus.

About two ounces of pus escaped from a half filled cavity deeply buried in firm adhesions. The opening communicating with the lung was plainly visible, and the pleura at that site bled so profusely that stitching was attempted to check it. The material tore through the spongy tissue and the chest was quickly packed. The patient became unconscious, blue—almost pulseless, and the respirations dropped to eight a minute.

A few hours later he appeared to be dying from hemorrhage. A rubber bandage was tightly wound around the chest, and the breathing became extremely difficult. Then oxygen was given constantly. He made a good recovery.

There were other interesting features in this case, replete with new experience, but space will not allow a recital in detail. The object now is to deduce these facts:

1. Empyema may recur after years, and the presence of vastly thickened adhesions and the consequent obscuration or absence of physical signs, makes the diagnosis a hard task.

2. The screen as employed today, might have been of assistance or not, on account of the massive pleura and the honeycombed tissue change. Possibly the movements of the fluid during shaking would have shown.

3. The danger of pleural hemorrhage and its avoidance if possible.

4. The use in extremity of an untried procedure, viz., tight bandaging with rubber to control move-

ment of the thorax and lung, and the combined use of oxygen. Since the observation of this case, I have nearly lost by hemorrhage two patients, from exploration of the pleura by the finger or probe. In spite of the fact that this has been strongly recommended to discover sacculated areas, pleural adhesions should be torn apart with the greatest care. The pleura may be explored in most instances, without this risk.

In a recent case pneumonia was followed by an abscess of the lung, draining into a bronchial tube. It was located by examining when full in the evening, and partially emptied after cough with expectoration in the morning. Later on empyema developed. A rib was resected and the pus evacuated. The surgeon was warned to explore, but not to tear. The next morning he reported that he was called in my absence and that the patient nearly died from shock. I found that he was pale, with a weak pulse. The percussion note was flat where it should have been resonant from the presence of air in the pleura. A soft rubber catheter was introduced to that region, and in the course of a day one and a half pint of blood was discharged.

The resection of a part of one or more ribs is not only justifiable to promote and maintain free drainage, but it should afford an opportunity for thorough exploration. It is one of the chief advantages to be derived from the operation. The finger can sweep over an area where pockets may be detected. They are usually to be found in the lower half of the thorax.

The interlobar regions should be examined particularly for fluctuation, and the diaphragm explored for unsuspected accumulations. A second and third operation for exploratory purposes has been made many times, because adhesions form new pockets. But they are occasionally present when the original opening is made and they are unobserved.

A few notes relative to these conditions are presented. An empyema was diagnosed after long detention of a large quantity of pus. After six months, the drainage continued in considerable amount. There was a daily rise of temperature, loss of flesh and strength, tenderness, and distention over the upper quadrant of the abdomen. A sacculated empyema involving the diaphragm was suspected. The woman was brought to Buffalo for observation. A probe was introduced and the patient screened. It was found that the probe was free in a very large cavity with no appearance of fluid. The diaphragm was immovable, and its upper border could not be seen. In the region of the diaphragm a cavity about two thirds filled could be perceived and the fluid wave was made wonderfully clear by shaking the patient. The fluid did not move with full inspiration or expiration. A possibility that the fluid was below the diaphragm was removed by placing a metal button at the location of the diaphragmatic attachment and noting that it was four inches above it. Operation and exploration revealed dense old adhesions attached to the diaphragm, enveloping about six ounces of pus. A distinct tumor in the right upper region of the abdomen disappeared after drainage.

The diaphragm was greatly thickened and roughened. Large drainage tubes were introduced. Later

there was much complaint of pain and discomfort upon breathing. This was referred to the abdomen. Advice was given that the tubes be pulled out and shortened so that they should not rest upon or touch the diaphragm, and the pain disappeared. The observations on this case are as follows:

1. A second operation should have been made earlier.

2. The symptoms pointed plainly to another accumulation of pus involving the diaphragm.

3. The pain from the tube irritating the diaphragm has occurred repeatedly in my experience, and can be avoided by a shorter tube and in some cases by not making an opening too low.

The chest may be invaded when entirely unnecessary, or result in failure because the wrong spot is selected from imperfect or incomplete preliminary examination. A girl with most obscure symptoms and confusing signs was seen twice in consultation. She had persistent fever, some cough, and pain in her chest. A diagnosis was finally ventured of sarcoma of the lung accompanied by fever. Others disagreed, and she was sent away as having a case of tuberculosis. At a health resort the assumption that empyema was present became so insistent, that a rib was resected and no fluid obtained. A piece of the pleura was snipped and examined microscopically, and the diagnosis of sarcoma established. She returned with sarcoma and empyema.

A man had pneumonia, and apparently recovered, but fever and cough persisted after he resumed work. The signs and symptoms pointed to empyema. Whether pus was discovered by the introduction of a needle I have never been able to learn. A low opening with a resection of one rib, was made, but no pus appeared. The operator just missed the diaphragm by a fraction of an inch.

Twelve days later, pus began to flow in small amount through the opening. It soon was almost closed, but a few drops of pus would exude. Then an abscess developed in the axillary region, broke, and considerable pus was discharged. This was soon followed by another.

When the third abscess was ripe, he came to me to learn why they continued in such rapid succession. The temperature, blood count, and physical signs were plainly indicative of a localized empyema or an abscess of the lung. Just before the apparently superficial abscess broke, which accident occurred on a train, he began to expectorate pus. A probe was inserted into the opening of the abscess and took an upward and inward course for about four inches. Another probe introduced into the old sinus at the seat of the resection, took a course upward and inward for about six inches. The patient was then screened and a large abscess was perceptible about half filled with pus, and the wave was obtained. At the time of operation a needle was introduced at a point determined under the screen, and the needle and probe clicked.

After resection it became necessary to work carefully and slowly through at least two inches of thickened pleura, and a large abscess was evacuated. The old fistulous track was scraped and packed. He made a remarkably quick recovery.

The hints in this case are so plain that reference is made only to the immense value of screening,

which will be considered more fully at a future time. The electric light was an aid in this case, but was of greater assistance in another with additional interesting features. All the evidence seemed conclusive that a sacculated empyema or abscess of the lung was present. The question was, Where is the pus? Repeated punctures failed to find it. At last the physical signs could be interpreted and the site determined. It was found to be an interlobar abscess, and the use of an electric light of endoscopic type was of great assistance.

The symptoms did not subside as expected, and the probability of another focus had been explained. A few days later, the symptoms became pronounced and another exploration was made. After careful search the light revealed the oozing of pus from a small opening leading to the lung, and another abscess was discovered involving the pleura and lung.

There is still another way in which an empyema may behave. A college girl acquired an empyema, and the diagnosis was not made until she had become profoundly septic and very dangerously ill. She was removed to a neighboring city and a rib resection made. Two quarts of yellow, stinking pus were removed. The temperature dropped and she was better for five days, when suddenly the temperature rose to 105° F., the pulse became very rapid and feeble, and the outlook was extremely bad. It was agreed that exploration must be made the next morning after screening. During the night the dressings were soaked with green pus and a large amount was evacuated. The symptoms subsided and she made a tedious recovery. The yellow pus was sterile. No growth could be obtained on different culture media. The green pus contained bacteria, but I never learned their names. The surgeon believes that there were two distinct and dissimilar infections, and there is good ground for the deduction. Whether the other focus could have been found by the finger or a large sound which was employed, I do not know, but luck was mighty kind.

Infarcts of the lung following surgical operations, especially those of the upper right quadrant in the vicinity of the gallbladder, occur much more frequently than they are detected. They sometimes account for an obscure rise of temperature after operation, and it may continue for an indefinite time. When septic, a slowly developing empyema may result while the cause of the disturbing symptoms is suspected elsewhere.

A recital of the suggestive features which appeared in an unusual case is included, to illustrate another perplexing problem. A man of middle age gave a history of having suffered from dysentery contracted in a tropical region. There was a slight diurnal rise of temperature, gradual loss of weight, and an obstinate cough with persistent expectoration. An abscess, or sacculated empyema, partially draining into a bronchus, was suspected. The signs pointed to involvement of the lower thoracic region posteriorly on the right side, but the pleura did not contain fluid. There was immobility of the diaphragm on that side. The sputum contained a pure culture of colon bacilli, and a decision was reached to open and explore with the needle through the diaphragm. Pus was found and evacuated. I did not see the operation or the method pursued. The

man recovered and all symptoms disappeared with recovery.

I was asked to see a man because he was suffering from great dyspnea. It was explained that there was fluid in the chest in apparently small amount, but not enough to account for the breath hunger. The attack had come on suddenly and the symptoms indicated asthma. He was fairly gasping for breath and cyanosed.

The effort was typical of pneumothorax. There was a small amount of effusion, but great distention from escaped air. A large quantity of foul air was removed by aspiration, and the dyspnea almost immediately disappeared. No effort was made to remove the fluid. Later it became necessary to tap. The fluid was cloudy and contained a large number of leucocytes. The sputum did not contain tubercle bacilli, and there was no history of tuberculosis, but after the removal of the air from the pleura, a large tuberculous implantation was found in the upper lobe of the affected side. The chest was aspirated once more to relieve air pressure, and twice to lessen the amount of seropurulent fluid. Since that time, the usual course of an active, progressive tuberculosis has ensued. The true condition could have been determined by several methods, and especially by the coin test which was exceptionally pronounced.

TUBERCULOUS EMPYEMA.

When an empyema is believed to be tuberculous by all attainable evidence, it calls for most conservative management, notably in advanced victims of tuberculosis. An opening into the chest should be avoided if possible, and aspiration resorted to by preference. The danger of sepsis is not great in the vast majority of cases, for a considerable period. The complication is more benign and the course characterized by mild manifestations. Contrary to erroneous belief, a tuberculous empyema often subsides without free drainage by incision.

There have been altogether too many pitiable sufferers from resected ribs, where the affliction of an opening which never heals and drainage that never ceases until death, have been added to the ravages of tuberculosis. It is sometimes easier to make an opening than to close it. A valued acquaintance, who was lately released from prolonged misery, was slowly dying from pulmonary tuberculosis. He was an improper subject, from any standpoint, for an artificial pneumothorax or any other hazardous, meddlesome interference. However, an artificial pneumothorax was produced, and was followed by an empyema, an aspiration, a tube, dressings several times a day, and a harrowing cough, with a hissing, spluttering hole in the side. The ghastly picture of pathetic woe and heroic resignation, will long abide in memory. In other cases recently observed, openings in the chest had been made long before and patience and surmise were exhausted because the flow was so reminiscent of Tennyson's brook. These were patients suffering from a focus of tuberculosis in a part of the spinal column, and cold abscesses had drained into the pleural cavity.

Dr. A. H. Garvin, of Ray Brook, has described to me a very interesting form of treatment which he has employed in tuberculous empyema. It seems rational and meritorious, particularly when tubercle bacilli can be found in the exudate. Thus far no

proper opportunity has been offered to try it. Doctor Garvin has employed the treatment in four cases successfully, and by careful selection has had no untoward results. I include his brief report kindly sent to me:

Patient, physician; advanced tuberculosis. Year previously, had suffered from spontaneous right pneumothorax, which slowly healed and disappeared after about six months. Patient continued for the next six months in very satisfactory general condition, although not able to do much. No rise in temperature, no cough, or expectoration. Lesion quiescent, although dyspnea marked.

In the winter, patient slipped and fell on the sidewalk, bruising his right side. There promptly developed, in the course of two weeks, a complete chest fluid. Aspiration of this showed it turbid, whitish in color, consisting of cell detritus and innumerable tubercle bacilli. No secondary organism discovered.

Through two needles, one for aspiration and one for the inflow of normal saline, seventeen quarts of fluid were introduced and withdrawn, keeping the patient in perfect balance during the entire procedure. A stoppered washed bottle was used on the introduction of the fluid, and a similar bottle at the exit of the fluid, so the quantity relations were always the same.

As a result, there was obtained about 1,000 c. c. of wet sediment, consisting entirely of cell detritus and innumerable tubercle bacilli. Three weeks later, the procedure was repeated, using a lesser quantity, about 800 c. c. The sediment in this instance was slight and the fluid slowly absorbed, and the patient returned to his previous state, with the disappearance of the tuberculous empyema after about sixteen weeks.

The needle tracks, following the removal, developed slight necrosis at the skin punctures (probably tuberculous skin inflammations), which healed quite promptly.

The recommendations for the treatment, were its efficiency and extreme simplicity. The striking thing was the extremely large number of tubercle bacilli in the pus on ordinary smear. Most of these were probably dead, as the needle track would otherwise have reacted a little more severely to the local infection in withdrawing the needle. The organisms were not tested out in laboratory animals.

In subsequent cases five c. c. of tincture of iodine were added to two quarts of the fluid, and this was introduced and washed out in the course of the usual washing. (I believe, however, the mere mechanical removal of the vast amount of tuberculous pus, together with the large amount of bacillary residue, gives the patient normally the opportunity to handle the residue satisfactorily, if his powers of resistance are able to accomplish this.)

Rib resection was considered out of the question, and the termination of the case was so satisfactory after simple lavage, that it recommended itself in sterile (not complicated with secondary organisms) tuberculous empyema. The inflow and outflow were kept within 100 c. c. of the perfect balance, and the process prolonged until the escaping fluid became clear.

IMPORTANCE OF EARLY DIAGNOSIS.

The vital importance of prompt diagnosis and early operation in nontuberculous empyema becomes more and more apparent as we learn more of the irreparable effects of a large collection of fluid, especially when long continued. It involves more than a factor of pressure. The more we review the theories advanced, in the hope of finding an explanation, and the discussion concerning questions of physics, the more important become certain clinical facts.

The delayed evacuation of pus in the chest, particularly in the adult, produces a loss of function almost never fully restored, even when a thorough attempt is made. Carnification and atelectasis may be avoided to a large extent by early interference, but once established are seldom overcome to any great extent. The tonus and elasticity of the lung are lost in great or moderate degree, and the methods employed for reexpansion of the damaged lung

often fail, because they are tried too late, for an interval too short, or the efforts are not thorough, systematic, or properly supervised. If more patients were carefully examined after operation, and the assistance of the screen sought as it should be, the absurdity of the belief that the crippled lung was pushing out the tube and filling in a vast cavity would be only too obvious. I have tried many methods to promote expansion of an atelectatic lung, and none yield the results obtained by the use of the pneumatic cabinet. This instrument has unfortunately almost passed into disuse.

THE FLUORESCENT SCREEN.

Finally, attention is called to the use of the fluoroscopic screen in determining the extent of the injury and impairment of function following a so called recovery from empyema.

Considerable experience is required to interpret the view, and avoid false conclusions. One deception will often be exposed. The false assumption that the lower lobe is in respiratory action because a murmur has been heard over that region, will be dispelled, and the conduction of sound from a distance will be better appreciated. The dense, thick adhesions may hide all beyond from vision, but the index is to be searched for by observing properly the play of the diaphragm. A striking flatness and restricted excursion are perceptible in the vast proportion of cases. This is true even when the symptoms and signs lead to the impression that little harm has been done.

Many times one half of the diaphragm is absolutely immobile, while the other half may move over a wide radius. I recently watched the diaphragm on the unaffected side rise beyond the third rib during natural respiratory effort, while the other half remained immobile during strenuous forced respiration. Occasionally the diaphragm assumes a V shape with the apex reversed. In these cases both sides may be immobile.

The cardiophrenic angle is apt to be obliterated on the affected side, and there is an appearance as if the adhesions fixed the pericardium and the diaphragm at that point.

The diaphragm has no portion of lung in its vicinity to compress, and for some physical reasons not fully elucidated, it does not rise in the vacuum.

There seems to exist an opportunity for investigation along new lines. What happens to the affected side of the diaphragm to destroy its mobility? Is the disabled function due to a disturbance or annulment of the equilibrium of physical laws, or are pathological tissue changes and innervation responsible for the loss of power and activity?

The possibility of a fault in the diaphragm instead of in the altered associated mechanical conditions is rendered conjectural because the image on the screen may display an apparently permeable air filled lung which lags, while the diaphragm refuses to perform its share of work.

There are other factors which might be adduced to strengthen the suspicion entertained, but the purpose at this time is confined to a gleaming of hints which may be helpful, from a cursory review of an experience somewhat unusual.

SUGARS AND STARCHES IN INFANT FEEDING.*

Present Opinion as to Their Uses and Action,

BY THOMAS S. SOUTHWORTH, M. D.,
New York.

The part played by the carbohydrates in the economy of the infant, as in that of the adult, is primarily that of furnishing fuel (carbon) for heat and energy. It is possible, however, for these to be stored in the body, not only temporarily as glycogen, but as fat, which serves both as a fuel reserve and as a protection against the radiation of heat. Sugar enters largely into the composition of breast milk, indicating that carbohydrates in some form are an essential part of the food of infants as indeed of all young mammals. Carbohydrates have been shown to be necessary to the nutritive functions, for when they are lacking metabolism exhibits pathological manifestations (Mendel). The sugar splitting ferments as well as the diastatic ferments which act on starch are present, even at birth, and the latter, especially, increase in efficiency during infancy.

In the routine artificial feeding of the normal healthy infant there really seems little to choose between the employment of lactose (milk sugar), saccharose (cane sugar), and maltose dextrin (malt sugar), each of which has stood the test of extended and enthusiastic use. This statement, however, calls for certain qualifying comments. Lactose, which is present in all mammalian milk, seems to have nature's endorsement, while its slower absorption and favoring influence upon the normal flora of the intestines present certain advantages, although these may cease upon the occurrence of intestinal disturbance.

More attention and investigation should be given to Coit's warning, that lactose from unreliable sources may be capable of causing otherwise inexplicable disturbances of digestion. In view of the possible manufacture of lactose from the bacteria and toxin laden by products of creameries, care should be exercised in the selection of a reliable product. Certainly the sources from which cane sugar and maltose dextrin are derived are cleaner from the standpoint of the production of toxins. The relative cost, also, of these three forms of sugar as marketed may be a determining factor among the poor and in some charitable activities.

There remains to be mentioned the fact that the limit of toleration for maltose dextrin is about double that of the other forms of sugar, and that it can be given in larger amounts, if desirable, while it is also less liable to cause disturbance when reasonable amounts are unwittingly exceeded. This latter error is not so frequent with the measurable dry forms of maltose dextrin as with the semifluid malt soup types.

But it is in the disturbed conditions of the gastrointestinal tract, with or without evidences of malnutrition, such as occur unfortunately in a considerable proportion of artificially fed babies, that the greatest interest has centred about the triad of

sugars. Finkelstein, whose pronouncement that sugar, especially lactose, under given conditions produced fever with almost mathematical certainty, has gradually receded from his position, which threatened to divide pediatricists into two militant camps, and in this country at least the role of bacteria in causing a superimposed fermentation of the carbohydrates has again recovered a dominant position.

Probably Finkelstein's most valuable contributions to infant dietetics have been the emphasis which he placed upon the irritative and laxative effects of the sugars, especially lactose, when not well borne, and the measures he suggested for combating these, even if we do not accept his views *in toto*. The findings of Talbot and Hill that with the giving of increasing amounts of lactose the acidity of the stools may, upon the appearance of diarrhea, jump 500 per cent., would appear not only to indicate abnormal splitting of the sugars by bacteria, but also to demonstrate conclusively the effect of such irritant acids in increasing peristalsis.

The injurious effects of carbohydrate intolerance and fermentation are manifold; for while in the normal intestine the carbohydrates have a negligible influence upon the absorption of fat, when they become irritative in the course of abnormal fermentation, increased peristalsis occurs with disorganization of the orderly processes of absorption in the bowel, and nutritive materials, whether derived from fat, protein, or carbohydrates, are swept out with resulting undernutrition. The desideratum, therefore, is to eliminate or decrease the fermentation in order to restore absorption. The importance of this loss of nutritive material from increased peristalsis will, if I may venture to prophesy, play a large part in the future management of malnutrition cases. Furthermore, in fat intolerance accompanied by excess of unneutralized fatty acids, or the increased formation by the body of ammonia to meet this unusual demand for alkalies, an abnormal fermentation of the sugar may intensify the picture. Thus acidosis may be caused, not only by the abstraction of alkali, but through failure of the normal absorption of nutritive materials. Here not only a reduction of the fat in the food and the administration of some form of alkali are indicated, but the substitution of a combination of maltose dextrin and starch often changes the flora of the intestinal tract and favors much needed absorption.

The addition of cereal diluents to feeding mixtures has long been based on clinical custom with little knowledge of the percentages employed. To White, Chapin, and Ladd belongs the credit of proposing that these percentages of cereal be as carefully determined as those of fat, protein, or sugar. It appears that 0.75 per cent. of starchy cereal is usually within safe limits for infants, and sufficient for its protective colloidal effect upon casein coagulation. This proposal, however, has not received the general adoption which its importance deserves, save among the patrons of milk laboratories, where such percentages are readily calculated and dispensed. This apathy has probably been due to the impression created until recently, that the value of such starchy decoctions was a purely mechanical one based upon the coagulable casein, and negligible from nutritive

*Read before the Pediatric Section of the New York Academy of Medicine in the Symposium on Modern Infant Feeding, November 1914.

and other standpoints. Dextrin, so closely related to starch and a constant component of malt sugar preparations, has been similarly regarded.

The writer of this paper called attention, some time ago, to the increasing empirical use of cereal decoctions in feeding mixtures, or of wheat starch in special mixtures, for infants suffering from disturbances of the digestive tract, and drew the natural deduction that boiled starch had protective, curative, or remedial properties under such conditions. To this view no opposition has appeared.

Boiled starch has mechanical, nutritive, and protective or remedial properties. The mechanical value is widely recognized and may be dismissed. That cereal grains contain vegetable proteins, which are utilized, will also probably be conceded. Dextrin and starch may be discussed together as having a close relationship and similar properties.

We are aware that in the last half of the first year starchy food is split and utilized for growth; in fact, at this period the giving of starchy food to breast fed infants, or to those previously fed on cows' milk alone, often shows brilliant results in gains of weight. Difference of opinion is chiefly confined to the question at what age such utilization becomes sufficient to be taken into account. Undoubtedly this varies somewhat with the individual, but as long as the presence of amylolytic ferments and their steady increase in production is admitted, there is no questioning their acting upon cooked starch when this is introduced with the food. Such feeding should be kept within safe limits, for it is accepted that overfeeding with starch may cause disturbances of digestion; although it seems probable that if the digestive chemistry of the other food ingredients proceeds normally and the ration the infant receives is well balanced, there is considerable elasticity in the tolerance of starches.

There remains to be discussed the curative or protective action of starch, which appears to be especially useful where there is intestinal irritation or disturbance due to faulty digestion of other food elements, or to abnormal fermentation or putrefaction of bacterial origin. Aside from the value of the carbohydrates in putrefactive conditions, owing to their favoring influence upon the growth of the lactic types of bacilli, which repress the putrefactive types, the efficiency of starch and its offspring, dextrin and maltose, depends not only upon their effect upon the flora of the intestine, but upon the greater complexity of the starch and dextrin molecules, whose slower conversion, and consequently delayed absorption, occupy more time and take place while the chyme is passing through a greater length of the intestinal lumen. Previously overtaxed and irritated areas are thus given a better opportunity for recuperation. Starch is also recognized as having a tendency to delay peristalsis. There is consequently a definite advantage when the intestinal disturbance has arisen from the use of the single disaccharides, lactose or saccharose, in substituting for them mixed carbohydrates—dextrin and maltose, or starch, dextrin, and maltose.

HEADACHE.*

BY FRITZ NEUMANN, M. D.,
New York.

Headache is not a morbid entity, it is essentially a symptom. However it is often of such importance and prominence, that it overshadows all other symptoms and creates the impression of an entity. It may then be the most characteristic or even the only obvious picture.

Headache is in all probability caused mostly by the meninges, and of them especially by the dura; the nerves, which supply the dura are anterior to the fossa, the trigeminus, in the fossa fibres from the vagus. The coverings of the skull are supplied up to the vertex by the trigeminus, the occiput itself by the upper four cervical nerves. As it is not within the scope of a paper for general practitioners, I deem it advisable, not to try to explain headache from the standpoint of the pathologist, but simply to discuss the different forms of headache, the localizations and causes, from the clinical standpoint of the general practitioner, leaving the other forms, which will lead to a discussion by the different special branches of medicine as ophthalmology, otology, rhinology, and neurology, aside. And this brings me to the different kinds of headache.

A headache may be *throbbing* in character and is then usually the consequence of circulatory disturbances, generally active hyperemia of the brain or the meninges, due to prolonged or excessive mental effort or to excessive use of alcohol, or to an overdose of vasodilating drugs, such as nitroglycerin or amyl nitrite, the latter two causing particularly, headache in the upright position. It is also found in the beginning of meningitis, and after violent coughing. The same kind of headache is produced by passive hyperemia of the brain, through congestion of blood in the brain or the meninges, as by mechanical interference with the return of venous blood from the head, caused by improper clothing, such as tight collars, or by tumors pressing against the veins of the neck or face.

Another form of headache is the dull, heavy pain, mostly due to toxemia, which means due to the presence of soluble toxic substances or toxins in the blood, mostly elaborated by pathogenic microorganisms in their growth and multiplication, and by the morbid processes which those poisons produce, or due to the presence of toxic substances produced by chemical changes in the blood, which again, in turn, may be due to insufficient or improper nutrition, faulty elimination, or accumulation.

There is the headache in diabetes, due to acid intoxication as a result of an increased destruction of proteins; or in gout, due to increased formation of uric acid or decreased elimination, perhaps to accumulation of it in the blood, or to improper elimination as consequence of an impairment of the function of the kidneys; headache in chronic pulmonary tuberculosis, not as an essential feature, but, if present, due to toxins in the blood or overloading of the

blood with carbon dioxide as a consequence of the diminished breathing area and concomitant dyspnea; headache in chronic nephritis due to decreased elimination through the diseased kidneys, to uremia or cardiac dyspnea as a circulatory disturbance; or headache in constipation, acute indigestion, gastrointestinal catarrh, ptomaine poisoning, hepatic disturbances, cirrhosis of the liver, carcinoma of the liver, due to poisonous products in the blood, toxins, the exact natures of which are unknown. We have the headache of lead poisoning, due to functional disturbances and direct lead encephalopathy, and associated often with convulsions, delirium, and coma, contracted kidneys, hypertrophied heart, and arteriosclerosis, also diminished excretion of urea and uric acid; headache in chronic poisoning with drugs such as opium and chloral hydrate, due to cerebral anemia, but often due to some of the reasons which brought about the habit of the drug taking such as prolonged worry and anxiety or insomnia, etc.; headache in poisoning with alcohol, due to chronic congestion of the liver and the kidneys, sclerosis of the brain or chronic pachymeningitis; headache from the excessive use of tobacco, due to the absorption of toxic substances as, for instance, pyridine and nicotine; headache after overdoses or even full doses of chinin or salicylates; headache from helminthiasis, due to the absorption of the toxic products of the worms, especially in ascariasis, or due to anemia in ankylotomiasis, or due to acute gastrointestinal infection in trichinosis—all the foregoing are examples of headache due to toxemia.

All forms of acute infections such as typhoid fever, malaria, erysipelas, influenza, relapsing fever, smallpox, syphilis, hay fever are also examples of toxemia and give headaches, sometimes very typical, as in typhoid fever, steady, increasing, with rising temperature, or in malaria in paroxysmal attacks, or in influenza in the region of the frontal sinus and behind the eyeballs, or in relapsing fever from the onset until the crisis, when it stops entirely, or in smallpox with excruciating pains in the back and joints at the time of the invasion, or in syphilis, exacerbating at night, or in hay fever, very intense and often the chief symptom.

Another form is the sharp boring headache, as if a nail were being driven into the head. This headache is found in a variety of diseases and may be associated with all kind of conditions, as in syphilis with pains in the bones, in tabes with gastric crises, in uremia with convulsions and maniacal symptoms, in sunstroke with high fever and meningeal symptoms as sequels. It is also associated with acute, chronic, epidemic, tuberculous, or septic meningitis. In leptomenigitis the headache is sometimes absent, but if it develops it is usually severe, of a dull and heavy character. A dull and heavy headache is also associated with tumors or abscess of the brain, more severe in affections of the cerebellum than of the cerebrum, more severe with rapidly growing tumors, except with glioma, very often recurring periodically, and more intense at night.

Entirely different is the constrictive headache, which causes a sensation as if a band had been tied tightly around the head. This is often found with

anemia, leucemia, Addison's disease, and neurasthenia.

Another form is the general headache of a sore character, affecting either the whole cranium or one half of it or even only certain parts, such as frontal, temporal, or occipital headache. It may be continuous or paroxysmal and the latter is a very conspicuous symptom of aneurysms of the basal arteries of the brain. This kind of headache is also present in tuberculous meningitis and in neuralgia, in many neuropathic conditions such as neurasthenia, hysteria, and epilepsy; further after injuries to the head with an additional localized pain on the injured spot, and again with concussion of the brain.

After having enumerated all the different forms and causes of headache which are of interest to the general practitioner, we have to admit that there is no limited classification of headache, as one form may be associated with different causes and one and the same cause may give different aches.

There remains then only a general differentiation of headache, and that is by way of origin. This means, the headache is either organic or functional; organic, if due to a lesion on or in the head, or lesions of the skull and its coverings or its contents; functional, if due to conditions arising from other parts of the head, face, or of the body. The differential diagnosis between these two is of the utmost importance, and the characteristics of the organic headache with its steadiness, varying only in intensity, its increase by mental or physical efforts or excitement, its peculiarity of not yielding so easily to symptomatic treatment as a functional headache, makes it a matter of lesser difficulty. Having been asked to prepare a short paper on headache, I have tried to make this paper as compendious as possible.

PHYSIOLOGICAL VERSUS SYMPTOMATIC THERAPY.

By ALBERT C. GEYSER, M. D.,
New York,

Professor of Physical Therapeutics, Fordham University; Late Clinical Instructor, Radcliffe and Radiotherapy, Cornell University, Etc.

At the risk of being judged too didactic I shall attempt to draw a line of demarcation between physiological and symptomatic therapy. As the latter is that branch of therapeutic medicine which has been handed down to us from our predecessors, it will at once be admitted that while it may be correct, it cannot be accepted as scientific. Again, absolute scientific therapy seems as far in the future as ever; but a therapeutic deduction which has for its purpose the restoration of the physiological conditions involved, is at least rational and may even be scientific.

Here we encounter the first parting of the ways. The usual modern therapeutic procedures seem to attempt to treat symptoms rather than to take into consideration the involved perverted physiology which causes the manifestations of the symptoms.

After all what is disease, pain, discomfort, changes in contour or composition of the organs or

their contents? It is one of two things; either overactivity or underactivity of some of the physiological functions of the body. This thought is in accordance with most of the usual drug therapy.

We have two classes, two kinds of drugs. We may classify them ingeniously, but the fact remains that they are either stimulants or sedatives. It seems therefore perfectly natural that when an organ or part is overactive, we should administer some sedative; when an organ is sluggish in the performance of its function, the exhibition of a stimulant for that particular process seems to be warranted.

Speedy results delight both patient and doctor. To illustrate, a patient is suffering from pain in the sciatic nerve; the better physician taboos morphine on general principles; instead he injects alcohol in the nerve. Another injects a saline solution into the nerve sheath, while still another injects it around the nerve. There certainly is no physiological consideration involved in such therapeutics. I am not questioning the efficacy of these procedures. In a case of *tic douloureux* a similar procedure is followed. If that fails, nerve section and even the removal of the ganglion is practised. Just why the surgeon stops at the removal of the ganglion I do not know. Why he does not keep right on and remove all the sensory area of the brain controlling that part is not quite clear. Aseptic surgery certainly is safe enough. Again the question occurs, Is such treatment physiological?

That one of these procedures or all of them might be entirely contraindicated, as far as restoring the physiological integrity of the part is concerned, does not seem to enter into the consideration of this surgeon; his immediate object is to relieve the symptoms.

The tendency of the present day practice of medicine follows the same lines as everything else in life; results must be had quickly and above all cheaply. I do not place the blame entirely upon the doctor. The patient expects results cheaply and quickly and if it is not forthcoming from one doctor the patient tries another. In order, therefore, to meet the existing competition, Doctor No. 1 is obliged to show results quickly, for with the patient nothing but visible, immediate results count.

Now to return to our case of sciatica. It is of course immaterial whether the treatment was successful or not; the question here is, Was it physiological? It was not, because we did not establish the fact that the parts involved required alcohol, salt solution, or surgical intervention. Ordinarily, nerve pain, omitting tumors, traumata, or swellings, is the result of toxic material having associated itself with nerve cells. It was for that reason that the older doctors used to say that the best cure for sciatica was six weeks in bed. That was physiological, because rest is the greatest, natural physiological therapeutic measure that we possess. It took the system six weeks to rid itself of the accumulated poison, provided that the entire system was allowed to take part in the cure. When such a patient recovered, he was cured; his treatment did not lay the foundation of a future Bright's disease or rheumatoid condition by allowing the poisons to increase. Some of the older doctors bled such pa-

tients if they were plethoric, thereby removing and diluting the existing poison. That was heroic but physiological treatment. Some doctors starved their sciatic patients for a period of ten to fifteen days. This was an uncomfortable, but a physiological treatment.

All of these three methods, rest, bleeding, and starvation, accomplished the same thing, the removal of the toxic material from the system; again showing that "it is not the agent but the reaction of living cells to an agent that must guide us in the selection of our therapeutic agents."

To say that the injection of alcohol or salt water did not relieve the pain, the symptom of which the patient complained, would be stating an untruth. As has been previously stated, the pain in the nerve is a symptom, a warning that there are in the circulation unsaturated substances which may form combinations with nerve or other susceptible cells. When such a combination exists and alcohol or water is injected in the immediate vicinity, a dilution or even a separation may take place at that particular spot; but, while the nerve cells may manifest such an unphysiological combination by pain, all other tissue cannot call our attention to such a fact. While, therefore, the pain may be mitigated or even abolished, the toxic material is still present and may form combinations with other tissues and organs, so that, while the patient is apparently cured quickly and cheaply of the pain, he is laying the foundation for a future condition much worse and much more difficult to eradicate.

Hardly a day passes without our coming in contact with the results in typical cases of a previous unphysiological treatment. Such patients are usually spoken of as chronic sufferers. They hardly recover from one symptom before another and usually a worse one manifests itself. Following are typical cases of this kind.

CASE 1 (referred by Doctor Bainbridge, July 13, 1915). Miss E. F., aged fifty-one years, nurse, family history negative. Personal history: Never robust, tired easily, for years suffered from various aches and pains diagnosed as neuralgia, always relieved by some drug. Pains would appear in other parts of the body, only to be relieved again. Four and one half years ago, suffered from uterine pains, diagnosed as fibroids, hysterectomy performed. Four months later, right lobe of the thyroid gland became enlarged, thyroidectomy performed; two years ago pain in back and groin, diagnosed as abscess of the kidney; operation denied on account of poor physical condition; pus and blood was discharged with the urine; bladder was washed out daily, recovered(?) Urinalysis showed albumin and casts in the urine. One year ago, enlarged glands of the neck and axilla developed; these were operated on, later more glands appeared, and more operations were performed. Four weeks ago, patient was operated upon for an enlarged mass containing pus, situated at the top of the sternum, median line; wound still open and discharging pus. Present condition, more enlarged cervical glands, general anemia, constipation and copremia, abdominal ptosis, and intestinal stasis.

The physiological treatment in this case, December 1, 1915, consisted of the anabolic process, starvation diet with free evacuations for ten days, followed by a physiological diet according to requirements, rest in the horizontal posture at least sixteen hours out of every twenty-four; diathermia applied to the enlarged glands on alternate days, thirty minutes for each treatment, physical culture exercises, and a tonic morning bath at 80° F.,

colon oil (physiological) as a mechanical lubricator one tablespoonful at night, Bulgarian bacillus culture one dram daily. Miss F. finds herself looking and feeling better than she has for years. The discharging sinus healed promptly, the tuberculous (?) glands have disappeared, she has gained twelve pounds in weight, instead of being anemic has a healthy appearance, and expresses herself as ready to resume her vocation of nursing; another three months of enforced rest and physiological dieting will be required before permission to work is granted.

CASE II (referred by Dr. T. J. Gallon, July 15, 1915). Mr. F., aged fifty-one years, business man, family history negative. Early in life suffered from rheumatism, growing pains (?) and neuralgia in various parts of the body. These pains were usually controlled with various drugs only to manifest themselves elsewhere. From his twelfth year on he suffered from stomach and intestinal troubles, indigestion, and dyspepsia. Twelve years ago, he became very irritable, and especially apprehensive of some impending danger, suffered much from constipation, but the taking of various kinds of pills furnished relief for the time being. Ten years ago his eyesight began to fail; glasses gave only partial relief. A few years later, he noticed a gradual increase in weakness of the lower extremities. Doctor S., neurologist, diagnosed "spinal exhaustion," and advised massage to the affected limbs. Finding no improvement after two years of massage, Mr. F. tried one physician after another until brought to my office with Doctor Gallon supporting him on one side, while an attendant performed a similar duty on the other side. Examination, electrical and physical, brought out the following condition: Lower extremities in a fair state of nutrition, but felt flabby with loss of all muscular power; there was no atrophy and no reaction of degeneration. Electrically the lesion was located in the lumbar region of the cord. Patellar reflexes were increased and a feeling of discomfort in the lumbar region which hardly amounted to actual pain. There was obstinate constipation with considerable bladder irritability, cystitis(?). The tongue was coated and showed hypochlorhydria; loss of appetite as the result of the discomfort produced after eating.

Physiological treatment was begun, a mixed diet with a liberal amount of fat and cream; physical culture exercises for the lower extremities, reeducation treatment in walking by passing stimulating impulses through the collateral fibres of the cord, diathermia thirty minutes every other day to the lumbar region for the purpose of increasing the local heat and circulation to the parts. Dilute hydrochloric acid and pepsin were given with each meal, also colon oil (physiological), a teaspoonful night and morning.

By December 1, 1915, Mr. F. was attending daily to his business as a real estate operator, walked with the assistance of a cane, slept well and felt well, was of cheerful spirits and enjoyed his meals. While complete restoration of physiological function seems doubtful, his condition is better than it has been for the past few years.

CASE III (referred by Doctor Surnamer, of Paterson, N. J., February 9, 1915). Mrs. Z., aged thirty-three years; family history negative. Considered herself well, up to three years ago, then suffered from an attack of malaria. She was treated with the usual antimalarial treatment, quinine and arsenic. Soon after, she noticed a loss of weight, tired easily, appetite became capricious, had intestinal discomfort and constipation. Hypertrophic rhinitis caused deafness. Aural specialists were consulted, operation for turbinates advised, but refused. Various treatments for nose and ear failed to give relief, and the condition seemed to get worse.

Physical examination showed tenderness on palpation over entire liver region, a hypertrophic rhinitis, deafness,

especially on left side, with a relaxed tympanic membrane. Electrical examination showed sympathetic lesion from seventh to tenth dorsal which control liver and gallbladder, with a sympathetic branch from ninth to tenth dorsal to Schneiderian membrane. Diagnosis, faulty physiological action of liver (? hepatitis) with secondary involvement of the mucous membrane of nose, etc.

Physiologically, the liver was stimulated by passing a high tension faradic sinusoidal current from the seventh to the tenth dorsal to the liver region; phenolphthalein, grain one, at night was given with one tablespoonful of colon oil (physiological) each morning. All liver tenderness disappeared, stools became normal, appetite was regular, and a general feeling of well being ensued. The hypertrophic condition of the nose improved without local treatment; the deafness was stationary. The high frequency current was applied in the external auditory canal for the purpose of creating a local inflammatory reaction around the tympanum. As soon as this was accomplished, a drop or two of collodion was applied, which contracted the relaxed tympanum, and when the inflammation disappeared the drum was found normal.

By December 1, 1915, this patient felt well, had gained twenty pounds, had neither digestive disturbance nor constipation, hearing was almost normal, no tinnitus present; in short, this patient was physiologically as well as ever.

CASE IV (referred by Doctor Sherman, September 2, 1915). Mr. C., aged forty-two years, family history negative; well up to five years ago, then began to accumulate weight rapidly, tired easily, edema of lower limbs, sent to Mt. Clemens for three months, improved while there, but on returning fell back into his old condition. Was given infusion of digitalis and various cathartic measures, calomel twenty grains a day until he became salivated. During the last year acquired abdominal ascites for which he was tapped at regular intervals.

Present condition: Weight 204 pounds, blood pressure 210 mm. Hg., pulse 118, respiration 22, appetite good, always very fond of large quantity of salt with his meals. Lower limbs edematous, abdomen contained fluid; was constipated. Electrical examination negative. Diagnosis, general edema due to salt retention.

As to treatment, this patient was ordered to bed on an absolutely salt free, reduction diet, as little fluid taken internally as he could get along with without suffering. Nights and mornings a bath was given at 112° F. until free perspiration ensued, followed by a cold douche, massage, and rest in bed. Four weeks later, physical exercise was gradually added to a sustaining diet, with only a small amount of salt allowed.

By December 1, 1915, his weight was 168 pounds, his blood pressure 150 mm. Hg., pulse 90, respiration 18, the bowels moved twice daily, he felt well, and examination could detect nothing abnormal.

CASE V. Mr. S., aged forty-five years, family history negative; an older brother, however, had a prostatectomy performed three years before, since which time there had been complete incontinence, making of him a confirmed hypochondriac.

Patient admitted a urethritis three years ago, from which he recovered in six weeks. Two years ago noticed difficulty in urination, and was compelled to rise several times during the night; complained of a bearing down pain in the region of bladder and rectum; appetite was fair, bowels regular. Prostate operation advised which was refused owing to the brother's postoperative condition.

Present condition: Patient had lost eighteen pounds in weight during the last six months, was very nervous and apprehensive, had undergone much treatment, including

static wave current to prostate. There was no urethral stricture; the urine was normal but alkaline in reaction; he had a tender moderately enlarged prostate, with two ounces of residual urine. Electric examination showed a reaction at the fourth to fifth vertebra of the lumbar region which controls the bladder wall, neck of bladder, and the prostate gland. Diagnosis, prostatitis with habit retention, reflex nervous manifestations, neurasthenia.

As to treatment, the bladder was distended with a boric acid solution, the faradic current from a Wappler double vibrator high tension coil was passed into the fluid, the other pole resting over the spinal nerve origin. The current was turned on to a point of comfortable tolerance and the sinusoidal apparatus switched in for ten minutes, then connected with the rheotome, fifteen interruptions a minute for another ten minutes. Most of the fluid was then expelled by the patient's effort; the rest was drawn by catheter. Patient drank five to six glasses of distilled water before 4 p. m. each day, and attempted to go without fluid intake after that hour, but made regular efforts to void every two hours until retiring time. The electric treatment was repeated daily for one month, then on alternate days. Psychic therapy was given to overcome the desire to rise at night.

Unless there is a pathological anatomical condition, these patients do not require prostatectomy, neither do they have to become physical wrecks on account of loss of sleep and still less do they need to suffer from retention, for that is frequently the result of habit and the bladder can easily be re-educated in the performance of its physiological function.

By December 1, 1915, this patient had regained his former weight, ate well, and slept all night, attended to his business daily, and considered himself to be symptomatically cured of prostatic enlargement and all that goes with it.

Another case has just come to my notice, which illustrates only too well the results of symptomatic instead of physiological treatment.

CASE VI. Mr. H., aged thirty-five years, family history negative. Up to eight years ago considered himself as well if not better than the average man. While attending Stevens Institute, and working at the blacksmith forge, he became overheated and, being exposed to a cold draught of air aided by cold drinks, suddenly became chilled. The next day he felt pain and stiffness in the neck and shoulders. This was treated with the usual pain relieving remedies; a little later, pains appeared in one, then both knees with some swelling. One knee was operated upon, but nothing was discovered. This was shortly followed by an attack of appendicitis, operated on with recovery. The arthritis became general until all the joints were involved. Salicylates and aspirin were the main remedies. Patient soon became worse. Consultations were held frequently, but nothing of a physiological nature was ever suggested. For the past year he has been confined to his bed. Eight months ago his eyesight began to fail, so that now he was able to make out only the shadow of a person standing between himself and the light. A few months ago, serum therapy was employed, and so far he has received upward of fifty injections without benefit. Today he was practically one bone from the top of his head to the soles of his feet, was nearly blind, could move neither hand nor foot, could not turn over in bed without assistance. He took aspirin, medinal, and morphine to escape even for a few minutes from the tortures of pain. All this was the result of symptomatic treatment.

It seems reasonable that since these and similar cases ended in recovery almost completely after years of discomfort, that they might have not only

terminated favorably at the very beginning of the ailments, but that much suffering and sometimes useless mutilation might have been avoided, had physiological instead of symptomatic therapy been employed.

Physiological therapy may not be as quick, it may not be as simple, it may not be as cheap, but it certainly is more rational and more successful than symptomatic treatment because it restores the parts to their previously normal physiological status.

Surgery with its brilliant results saves life and makes possible a comfortable existence, but seldom does it restore the normal physiological condition of the parts. It should therefore be invoked only when physiological therapy fails.

231 WEST NINETY-SIXTH STREET.

SIMPLE GUIDES FOR THE ARTIFICIAL FEEDING OF INFANTS.*

By M. H. EDELMAN, M. D.,
New York,

Adjunct Pediatricist, Sydenham Hospital; Instructor in Practical Pediatrics, Post-Graduate Hospital; Assistant in Pediatrics, Babies' and Post-Graduate Hospitals.

The subject I take up is of such magnitude, that pages would be required to treat it properly. I have therefore limited myself to a small part, and that is to mention certain simple guides which will tend to simplify the rather complicated subject of artificial feeding of infants.

I will simply pass the subject of breast feeding by stating that usually it can be likened to the Monroe Doctrine; it takes care of itself in the majority of cases. But when we take the subject of artificial feeding of infants, we meet with the difficulty of making a food to fit the infant. Every infant presents a personal equation; we must therefore individualize our infants and not generalize them. It is undoubtedly true that in the present state of our knowledge, it is impossible to lay down exact formulæ which will suffice even for the majority of normal infants. But it is a fundamental knowledge of a few guides I wish to present, which will enable the physician to make a formula for the particular infant at the bedside or in the office with ease and success.

Briefly I wish to state the various methods in use for artificial feeding. The milks in use are of lower animals; cows', goats', and asses' milk are mainly used. The methods in use may be divided into: 1. Empirical; 2, scientific.

1. *Empirical.* Whole milk (raw, boiled, diluted), skimmed milk (raw, boiled, diluted), top cream mixtures, flour and starch mixtures, malt soup, butter-milk feeding, condensed milk, albumen milk, proprietary foods, caloric method, etc.

2. *Scientific.* The percentage method, advanced by the late Doctor Rotch, of Boston, and taken up by Walker Gordon twenty years ago, was an effort to make cow's milk equal in percentages to human milk without any regard to its digestibility. It is this method that is responsible for the idea that proteins are the main source of the gastrointestinal disorders

*Read before the clinical meeting of the Sydenham Hospital Alumni, April, 1915.

of infancy (which has been disproved by Finkelstein and Myer by the introduction of Eiweiss milk, which contains from three to four per cent. of proteins). Another objection to this rather complicated method is the difficulty for the physician to understand it, so that they have been driven to the indiscriminate use of patented infant foods or to copying formulas to fit the age of the infant without ever having seen the infant to be fed. In order to carry out proper infant feeding there are three requirements:

1. We must have clean milk from a tubercle free cow.
2. It must contain proper elements.
3. These elements must be digestible and in proper quantities.

Cow's milk can be made clean and digestible and contains the proper elements. The elements of most importance are proteins, fats, and carbohydrates in the form of sugar. In order to make these elements digestible, various methods have been used.

Proteins. 1. The percentage method has been used, but its objections I have already mentioned above.

2. Lime water and other alkalies have been used to modify the digestibility of proteins, but in the proportions used they were worthless.

3. Gruels with milk have been used, but an infant cannot very well digest gruels properly until about four months old.

4. The split protein theory—whey with cream: Here most of the sugar is soluble in whey; we are therefore giving a food with large quantities of sugar and rich in fat from the cream.

5. The simplest method and in my experience the best for aiding the digestibility of the proteins, is, to *boil the milk for three minutes*. Beside aiding the digestion of the proteins, it also aids the digestibility of the fats and destroys harmful bacteria that the milk may contain. The objections to boiling are the production of scurvy, rickets, anemia, constipation, and poor musculature. In a large series of artificially fed infants at the outpatient department of the Post-Graduate Hospital, together with some private cases, I failed to see the development of any of the above mentioned nutritional disturbances. Where the boiled milk was given for a longer period than six weeks, orange juice was also given to prevent scurvy. As for the constipation, it seems that the addition of sugar overcomes it. The infants brought up on this method never developed rickets. Anemia was overcome by the early administration of vegetable soups and yolk of egg, both rich in iron which is deficient in milk. The infants in the majority of cases resembled breast fed infants.

As to other objections, such as the milk sugar becoming caramelized, the ferment action of the milk being destroyed, and the formation of hydrogen sulphide, these changes do not take place with three minutes' boiling; to produce such changes milk must be boiled from seven to ten minutes.

Fats. The digestibility of fat is also aided by boiling, and besides, cow's milk fat rarely does any harm in the infant. If, however, fat indigestion should occur, as evidenced by soapy stools which are dissolved by ether, we can overcome it by using skimmed milk.

Sugar. This is the most important element; it has been disregarded in this country. It is most difficult to digest and gives the physician and infant the greatest amount of trouble. The sugars in use for infant feeding are milk sugar, cane sugar, and malt sugar in the form of dextrimaltose. As to the digestibility of the sugars, a great amount of work has been done, the most recent by Sherman and Jones, who took thirty infants, and fed them on six per cent. milk sugar in barley water, six per cent. cane sugar in barley water, and six per cent. malt sugar (dextrimaltose). The gastric contents were withdrawn in one hour and the results were found to be as follows: Dextrimaltose is twice as stimulating to the gastric juice as either cane sugar or milk sugar, and cane sugar is slightly more stimulating than milk sugar. The conclusions to be drawn are, that malt sugar in the form of dextrimaltose is the easiest to digest and therefore is best taken care of by the artificially fed infants; cane sugar comes next, and milk sugar last. Cane sugar should be used for healthy babies. *In infants hard to raise, in newborn infants, and when a new formula is being given, or after any nutritional disturbance we use dextrimaltose.* When beginning a new food, we always begin without sugar, and then add it slowly in small amounts, always being guided by the infant's tolerance. Sugar is, as before stated, a laxative.

In taking up the third requirement (sufficient quantity of the proper elements), we are again confronted by a discussion of the various methods which I have briefly dwelt on. The quantities of the various elements to be used are as follows:

Proteins. Allen and Grulee have shown that the amount of protein contained in one ounce of milk is required to each pound of weight of the infant in twenty-four hours to maintain a nitrogen equilibrium (that is, no gain), and in order that the infant may build up sufficient nitrogen in the tissues, the proteins must be one and a half ounce of milk for each pound in twenty-four hours. That is, an infant weighing ten pounds requires ten ounces of milk in twenty-four hours to maintain a nitrogen equilibrium or keep its weight, and fifteen ounces to store up nitrogen or make a gain.

Fat. The same is true of fat; it requires one and a half ounce of milk in twenty-four hours to the pound, that is, the infant, in order to gain, must have the fat contained in one and a half ounce of milk for every pound of its weight in twenty-four hours.

Sugar. An infant weighing below ten pounds requires one ounce of sugar in twenty-four hours. An infant weighing above ten pounds requires one and a half ounce of sugar in twenty-four hours. We never give more than two ounces in twenty-four hours. When giving sugar for the first time, or after any nutritional disturbance, we never give the required amount, but we start with a teaspoonful and increase every day, or every other day, until we reach the required amount; being guided by the infant's tolerance and the stools.

The foregoing guides give to the physician a simple method of using the various individual elements. It should be noted as a caveat—To limit the formula as a whole, I use the caloric method. A calorie is

the amount of heat required to raise the temperature of one kilo ($2\frac{1}{2}$ pounds) of water from zero to 1° C. It is a heat unit and is used as expressing a food value. With it we know exactly how much food to furnish the infant in twenty-four hours, with reference to its requirements and weight. But in order to ascertain the required calories, it is necessary to divide infants into three classes:

- Class 1.—Fat baby over 5 months, or an average baby at any age, requires 40 to 45 calories per lb. in 24 hours.
 Class 2.—Average baby under 4 or 5 months, or a moderately thin baby at any age, requires 50 to 55 calories per lb. in 24 hours.
 Class 3.—An emaciated baby at any age requires 60 to 65 calories per lb. in 24 hours.

Bearing these three classes in mind, it is only necessary, when we see the infant, to place it in one of the classes. This can readily be done by inspection, palpation, and weighing of the infant. It is a very simple method to tell if a baby is normal, thin or emaciated.

It may be asked, Why does an emaciated baby require more calories than a fat baby?

1. An emaciated baby cries and frets more, and uses more calories than a fat baby.

2. The amount of heat produced is in proportion to body surface, that is, the greater the skin surface, the more the heat produced. The skin surface of fat babies is the same as that of the emaciated babies, therefore they produce the same amount of heat. We can readily see that the emaciated baby requires more calories to make up that heat, because its weight is less.

In order to make our formula according to the caloric method, it is necessary to know that one ounce of four per cent. milk equals twenty calories and one ounce of sugar by weight equals 120 calories.

As to the number of feedings in twenty-four hours, either two, three, or four hour intervals are used. I use the three hour interval in all babies who are not premature, and in the latter I use a two hour interval. If the three hour interval is used, we give food at 6 and 9 a. m. and 12 m., and at 3, 6, and 9 p. m., and again at 2 a. m. until six months of age. If the two hour interval is used, we have ten feedings. The four hour interval, I must admit, I have not as yet given a thorough trial, for in dispensary practice it is impossible to have the mothers carry it out.

The quantity to give an infant at each feeding is determined by the following rule: *Give one or two ounces more at each feeding than the number of months in the baby's age*; never less than three ounces, and never more than eight ounces. Experiments have shown that an infant one week old can take three ounces every three hours, with good results, and my experience bears it out. The reason is that the liquid portion of the milk passes into the intestine immediately, and the solid portion of the milk takes from three to three and a half hours to pass through. The liquid portion makes up about three quarters of the milk and the solid portion makes up the other quarter.

The rule for the diluent of the milk. That depends upon the number of feedings and the amount we give at each feeding. Example: Baby three months old; the number of feedings according to the rule would be seven; amount to give at each feed-

ing would be, according to the rule, from four to five ounces. We then multiply seven feedings times five ounces and we get thirty-five ounces of food for twenty-four hours. Therefore that infant requires thirty-five ounces of food in the twenty-four hours. If we now deduct the amount of milk we desire to use, we get the quantity of the diluent to be used. Having learned these guides, we can now proceed to feed our baby.

Example. Baby A., six months old, weighs fifteen pounds, stools normal. This baby belongs to the first class, forty to forty-five calories. This baby, according to the rules, requires six feedings (after five months), no night feeding. The amount at each feeding in this baby would be seven to eight ounces (one to two ounces more than the baby's age).

Protein and fat requirements would be fifteen pounds (the baby's weight) multiplied by one and a half ounce equals twenty-three ounces of milk required. The sugar required is one and a half ounce for the twenty-four hours (baby weighing over ten pounds). Total amount of food for the twenty-four hours would be six feedings, and eight ounces to each feeding; six times eight equals forty-eight ounces of food for the twenty-four hours, including milk and diluent.

The weight of the baby is fifteen pounds. The calories necessary for each pound are forty to forty-five. The child requires fifteen times forty-five calories, equals 675 calories; this child requires food for twenty-four hours amounting to 675 calories. From this amount we must deduct the calories for the sugar to ascertain the amount of milk and diluent required, one and a half ounce of sugar times 120 calories per ounce of sugar equals 180 calories. Subtract 180 from 675 equals 495 calories to be made from the milk. We divide 495 by twenty (because there are twenty calories to each ounce of milk) equals about twenty-four ounces. This entire formula of forty-eight ounces requires twenty-four ounces of milk, and therefore leaves twenty-four ounces for the diluent (in this case boiled water) and one and a half ounce of sugar (here cane sugar because this is a normal baby). Our formula for this baby would consist of twenty-four ounces whole milk, twenty-four ounces of water (boiled for three minutes), and one and a half ounce of cane sugar, to be divided into six bottles of eight ounces each, to be given at 6 and 9 a. m. and 12 m. and 3, 6, and 9 p. m.

This, to my mind, is the simplest and the most successful method of artificial infant feeding we have today. For the method I am indebted to my chief, Dr. R. Dennet.

530 WEST 144TH STREET.

Proposed Care in Canada of Soldiers Suffering from Shock.—Following the example of England, France, and Germany, Italy is making special provision for her soldiers suffering from nervous disorder caused by the shocks of warfare. We in Canada have not yet begun to consider the subject, remarks the *Western Canada Medical Journal* for December, 1915. Our returned soldiers are arriving daily. Can we not meet this need?

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXV.—How do you treat ophthalmia neonatorum? (Closed.)

CLXVI.—How do you treat the constipation of sedentary men? (Answers due not later than January 15th.)

CLXVII.—How do you treat rickets? (Answers due not later than February 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXIV has been awarded to Dr. William Martin, of Atlantic City, N. J., whose article appears below.

PRIZE QUESTION CLXIV.

THE TREATMENT OF INSOMNIA.

By WILLIAM MARTIN, M. D.,
Atlantic City, N. J.

Insomnia must necessarily be treated as a symptom, not as an entity, for it is always the result of some underlying condition. The etiological factor must be sought out and relieved in each individual case before a cure can be expected, as no one can apply successfully any line of treatment empirically.

The usual treatment of insomnia as generally pursued, may be, for the sake of convenience, divided into the following heads: 1. Removal of cause; 2, diet; 3, exercise, active and passive; 4, hygiene and psychic measures; 5, physical, which includes electrical or mechanical vibration, and hydrotherapy; 6, drugs.

Removal of the cause includes treatment of all diseases of which insomnia is a symptom, too vast a subject for a short paper.

Diet must be suited to the patient's needs as regards nutrition and ability to digest, as frequently these patients have weak digestions. In case of intestinal putrefaction with toxemia, the low protein or the protein-free diet must be adhered to, according to the individual requirements. As a rule, the evening meal should be light, the dinner being at midday. This will allow of completed digestion by bed time. If at bed time there is a craving for something to eat, the patient may be allowed a glass of milk or a cup of hot malted milk, with a couple of crackers. Coffee and tea should be avoided at the evening meal. Tobacco may be either stopped or used in moderation, according to individual requirements. Alcohol should be entirely avoided.

Exercise conduces to sleep if taken in moderation just before retiring. A short brisk walk may suit the average case, while massage will be found best in other cases. This latter should be given lightly

at first, and with gradually ascending force, as best judgment will dictate. The massage must be general.

As to hygienic and psychic measures, the room in which the patient sleeps should be a quiet one, well ventilated, easily darkened, and with no bright street lights shining in upon the bed. The patient may be taught some method of autosuggestion, if necessary, such as counting backward, keeping the thoughts upon pleasant things, and above all things, not worrying about not sleeping, giving the assurance that this will come around all right in time. Impress upon the patient's mind that ten hours of rest awake equal six hours of sleep. Many other measures in this line will suggest themselves to the mind of the medical attendant, and serve to direct the thoughts into other channels with good results.

The bed should be a comfortable one with a hair mattress and no feathers. The pillow should be chosen for the comfort of the patient, and the bed clothes sufficiently warm, but not too heavy.

Business men suffering from insomnia should have their hours regulated so that some recreation can be worked in, such as golf or tennis. Vacations, allowing of a change of scene at frequent intervals and of short duration, will often suit better than a long one once a year.

Physical measures are of the greatest avail. Electrical treatment of hypertension by the autocondensation method, is of the greatest benefit in suitable cases, as the high frequency current has a peculiar action toward a cure, particularly in cases caused by toxemia. The static wave current applied to the spine by a long narrow metal plate, with a ten to twelve inch spark gap for twenty minutes, will do much to reduce the spinal irritability and leave a distinct sedative effect.

Mechanical vibration over the interspaces of the second and third, and third and fourth dorsal vertebrae, will add much to the treatment of the hypertension type of cases. This can be done for five minutes, and repeated for another five minutes after an intermission of a few minutes. Abdominal vibration, using the ball vibratode or the head of the vibrator, following the course of the colonic current, will add much to relief of the splanchnic congestions so often present, and will be beneficial also in relieving the usual constipation, by promoting peristalsis. Vibration (in the labile manner) of the neck will help to relieve the full blooded feeling in the head, of which some speak.

In hydrotherapy we have a most excellent adjunct, both in the line of physical and psychical thought. It forcefully directs the patient's thoughts into other channels, and at the same time serves as a curative measure, although it cannot be said to be a panacea. When properly applied, it relaxes the peripheral circulation and has a sedative effect upon the nerves. Its use is not limited to hospitals and sanatoriums as is generally supposed, but in modified ways it can be used in the home with excellent success. The simplest method is that of the foot bath, with or without mustard. If needed, ice cloths or cold cloths can be applied to the head at the same time. Local packs to the legs or to the abdomen, the latter being known as Neptune's girdle, and dripping sheets, all have their good points. The general bath,

started warm and allowing the water gradually to drop in temperature until there is a decided vasodilatation of the skin vessels, followed by a friction rub or light massage, is another excellent way of applying it. Some patients react well to being placed wet between two blankets and being allowed to remain there to sleep. Sitz baths, the water being heated to tolerance, with either an ice cap or cold cloths applied to the head, forehead, and eyes, will prove of value in some cases.

Drugs are of little value in insomnia, except in those who are actually suffering from some serious or incurable disease, when a drug to force sleep will be permissible or absolutely necessary.

Castor oil and other drugs of that type to clear the intestinal canal of toxic poisons will be necessary in many cases, but in the ordinary case of insomnia, drugs are to be mentioned only to be condemned, as they are apt to do more harm than good.

Dr. A. A. Stafford, of San Francisco, writes:

Treat insomnia by attending to the production of Abraham Lincoln's condition of good health, viz., "Keep the head cool, the feet warm, and the bowels regular." When these conditions are present the patient can sleep. 1. Keep "head cool" by giving all the special senses an opportunity to rest, by having the patient in a well ventilated, quiet, and darkened room, in a comfortable bed, with his mind free from care and anxiety, in a condition of mental rest; cerebral circulation should be quieted at night by having the patient moderately exercised and bathed in warm water in the late part of the day, but not immediately before retiring at night. Should painful conditions be present, give the proper therapy.

Be sure the extremities are comfortably warm, but do not burden the patient with an excess of bedding. If necessary, put a hot water bottle at patient's feet and have the bed artificially warmed. Attend carefully to the digestive and alimentary functions. In case of insomnia, it is always wise to cut down the meat part of the diet and avoid all stimulants, sometimes dropping even coffee and tea. But occasionally a small meal before retiring of easily digested food will work charmingly. If there is autotoxemia from constipation, this must be met by proper diet, exercise, and medication. In short, see that all the functions of alimentation, nutrition, exercise, and elimination are so well regulated and balanced as to leave no excess toxins in the circulation to disturb the brain cells.

As to medication, do not use it. The best and proper treatment is the treatment so well done that no soporific or hypnotic is required. But should it be necessary to administer something for its physiological effect, let it not be stronger than a simple bromide mixture or a little *passiflora incarnata*.

Dr. D. E. Warren, of Passaic, N. J., observes:

In the treatment of insomnia, we should resort to physical measures before using drugs, whenever possible. The sleep thus induced is a purely physiological sleep, from which the patient awakens feeling rested and refreshed—so different from that induced by nearly all drugs, which have more or less disagreeable aftereffects.

In cases of insomnia of nervous origin, I recommend a warm tub bath, followed by a glass of warm milk, immediately before retiring. If the patient is sufficiently strong, I advise a walk or other exercise in the open air, sufficient to produce fatigue. If these measures do not suffice, after a few night's trial, I administer small doses of sodium bromide (grains ten to fifteen) or veronal (grains five to ten) in conjunction with the foregoing. In sthenic cases with great excitement, particularly in the acutely insane, and in delirium tremens where there is usually motor as well as mental excitement, the cold pack is of great service. The patient is wrapped in a sheet wrung out of cold water, and then wrapped in blankets. The excitement is reduced and the patient drops off into a natural sleep of several hours' duration, remaining in the pack all the time. Hyoscine hydrobromide in doses of 1/200 to 1/100 grain hypodermically is one of the best drugs to use in this class of cases, as it tends to reduce the motor activity as well as to induce sleep.

In cases of chronic insanity with insomnia, paraldehyde, half to one dram; veronal, grains ten to twenty; trional, grains ten to twenty, are the most useful and are not particularly harmful, although trional, when administered for a prolonged period, produces changes in the blood (hematoporphyria). A mixture of chloral hydrate, grains fifteen; fluidextract of hyoscyamus, minims fifteen; fluidextract of conium, minims fifteen; water to one ounce, is used extensively in some hospitals for the insane. Care must be taken not to administer it in cases with cardiac lesions.

In sleeplessness due to pain, there are no better hypnotics than morphine (grain one eighth to one quarter) and codeine (grain one half to one).

When insomnia is present in the acute infectious diseases, where there is considerable elevation of temperature, the cold pack as described above is very efficient, serving the double purpose of reducing temperature and inducing sleep. If for any reason the pack is inadvisable, veronal and trional, in doses of ten to fifteen grains, are the best hypnotics. In childhood, sodium bromide in suitable doses is the safest and best.

(To be concluded.)

Abstracts and Reviews.

THE METHOD OF GROWTH OF THE LYMPHATIC SYSTEM.*

BY PROFESSOR FLORENCE R. SABIN,
Johns Hopkins University.

For the last three centuries anatomists have disputed over the nature of the endings of the lymph channels and the nature of their formation and growth. Long ago certain tissue spaces were known to exist and the lymph channels were believed to end in these. Others held the view that the lymph channels terminated in blind ends lying between the cells. Even the extent of the lymphatic system has been a matter of much dispute, and it has been a bone of contention as to whether cer-

*Summary of a lecture delivered before the Harvey Society at the New York Academy of Medicine, December 18, 1915.

tain of the larger spaces such as the subarachnoid, pleural, and other serous cavities formed parts of the true lymphatic system. With the gradual accumulation of knowledge it became possible to divide the tissue spaces of the body into three different types. The first of these included the general intercellular spaces which contained a fluid probably identical with blood plasma. Another, less generally distributed set of spaces, was that held to be connected probably with the lymph channels, and to include these channels themselves. Lastly, there were certain systems of special spaces which contained fluids which were neither plasma nor lymph. These specialized spaces included the peritoneal cavity, the pleural sac, the subarachnoid space, the perineural "lymph spaces," spaces in the internal ear and in the eye, and a system of spaces surrounding the Purkinje fibres in the heart muscle.

In the study of the mode of ending of the true lymph spaces and their anatomical origin and relation to the tissues, two methods of procedure were available; one by injection of suitable substances, the other by reconstruction from serial sections of the tissues. The former method has given the best results. It was early discovered that absorption differed, both with regard to different materials and with respect to the site of the injection. Thus it was found that certain true solutions were absorbed from the brain tissues directly into the circulation, while certain suspensions were taken up by the arachnoid villi which projected from the arachnoid membrane. Certain villi in the intestine were also known to be the absorbents of fats, while carbohydrates entered directly into the blood stream. The different classes of spaces, therefore, were obviously possessed of different absorbing functions, and it seemed that they probably did not all belong to a single great system. It became obvious that the primary absorbing system was that of the true tissue spaces connected with the blood capillaries, in which plasma was normally present. Secondary absorbents were also present, and of these the spaces connected with the lymphatic vessels apparently constituted a single great system, which was not the same functionally or anatomically as either the true tissue spaces or the specialized spaces previously mentioned.

For the study of the true lymphatic system, therefore, attention was turned to the lymph channels and their connected spaces. Embryos of the chick, the pig, and of other animals were employed and injections were made at different stages of their development in the hope of discovering their origin and mode of growth. It had been previously shown that the lymphatic channels were true vessels lined with endothelial cells, but whether these channels developed from a fusion and union of blind intercellular spaces, from other vessels, or by the channeling of strands of endothelium, remained to be determined. Work along this problem soon proved that the earliest sign of lymph channels appeared only after the blood vascular system had been well differentiated in the embryo.

In the human embryo, when ten mm. long, or about the sixth week, buds of endothelial cells were found to appear on the wall of the veins. The

first of these developed from the internal jugular vein and grew to form a large sac extending into the posterior triangle of the neck. From this sac lymphatic vessels gradually extended into the subcutaneous tissues of the head and neck and into the arms. From the sac, also, there developed the various chains of lymphatic glands of the neck by differentiation, some arising directly from the sac, others from the secondary vessels. At the seventh week of development, or when the human embryo is about twenty mm. in length, similar buds develop from the abdominal veins to form the abdominal lymphatics. Here, however, we are not yet certain as to the precise veins which give rise to these buds. The origin of the abdominal lymphatics is possibly multiple, that is, from several different veins. There is formed, however, a primary abdominal sac analogous to the cervical sac. Two iliac sacs also develop and give origin to the lymphatics of the lower extremities and the abdominal wall.

By the time that the embryo is five cm. long, the primary system of sacs is well developed and all are connected through the thoracic duct. The development of lymph channels at this stage is complete so far as their extent is concerned, but the vessels contain no valves until a later stage. The origin of the true lymphatics is thus proved to be from endothelial buds which spring from the walls of certain veins, and their growth is centrifugal, the vessels spreading out into the tissues of the several regions by multiplication of their cells. The mode of growth was shown in living specimens, the tail of the tadpole providing an excellent tissue for their observation.

These studies have carried us a step farther, and we are now in a position to state that the lymphatics do not grow primarily from a differentiation of the mesenchyma, as has been believed. Instead, the differentiation of endothelium from mesenchyma is a much earlier process and leads to the formation of the vascular system of the general circulation. It is from the already differentiated endothelium that the lymphatics take their origin. The differentiation for the formation of the lymphatic system is a secondary one from existing endothelial cells.

The three great systems of tissue spaces originally differentiated tentatively on anatomical grounds are thus proved to be different in embryological origin. The spaces including the arachnoid, pleura, etc., are not even lined with true endothelial cells, a fact which accounts in part for their different absorbent capacities. True endothelium is found only as the lining layer of the blood vascular system and forming the walls of the lymphatic channels and spaces. The difference in the absorptive functions of the three systems—tissue spaces, lymphatic system proper, and the specialized spaces—is embryological. The same is true of the difference in the natures of their contained fluids.

Absorption via the lymphatics takes place in part probably by direct passage of true solutions, but especially through the intervention of phagocytes and wandering cells. The former type of absorption, on the other hand, is largely confined to the tissue spaces containing plasma and connected with the blood capillaries.

Issues and Events.

IMPROVING CANCER STATISTICS IN THE UNITED STATES.*

By CURTIS E. LAKEMAN,

New York,

Executive Secretary, American Society for the Control of Cancer.

At the suggestion of a number of the foremost American students of the cancer problem, the United States Bureau of the Census has instituted radical improvements in the collection and publication of the statistics of this disease. A special report on deaths from cancer in the United States during the year 1914 is in preparation and will be issued shortly after the first of the year. Inquiries recently received by the director of the census having indicated that some misapprehension had arisen in regard to the purpose and scope of this study, the American Society for the Control of Cancer has issued a statement explaining the significance and essential features of this project of the Census Bureau, which is thought not only to promise important additions to our knowledge of cancer, but to constitute a noteworthy advance in the registration of American vital statistics.

It should first be made clear that the Census Bureau has not undertaken special research work that will in any way duplicate the studies of existing institutions and laboratories which are investigating the cause of cancer. On the other hand, there should result a marked improvement of our national mortality statistics of this disease in the direction of greater accuracy and more detail. The experience of foreign countries has shown the value of perfecting and carefully analyzing the annual statistics of deaths in order to throw new light upon the cancer problem, which still remains the chief outstanding question in the realm of medical science.

In February, 1914, the American Society for the Control of Cancer suggested to the Federal authorities that the figures of deaths from cancer in the United States Registration Area be published in greater detail, and that instead of being reported under only seven headings, as had been the custom hitherto, they be listed under many more titles according to the part of the body first affected, thus affording opportunity for more exact comparative study. The suggestion received favorable consideration by the Bureau of the Census, and a special report for 1914 was ordered by the former director, Hon. William J. Harris, and is now nearing completion under his successor, Hon. Samuel L. Rogers. This special monograph on cancer will consist of tables showing the deaths from cancer, according to the site of the disease, age, sex, color, nativity, and marital condition, for the registration area, the several registration States, and the usual subdivisions. Figures for white and colored will be shown separately for such counties and towns as have a colored population of 10,000, or at least 10 per cent. of the total. The new plan subdivides the seven titles for cancer in the International List of the Causes of Death into twenty-nine headings re-

ferring to the exact site of the disease. For instance, all deaths from "cancer and other malignant tumors of the buccal cavity" will now be reported under the separate subdivisions for cancer of the lip, tongue, mouth, and jaw, and similarly with the other groups.

Upon the further suggestion of a prominent surgeon the Census Bureau also planned to increase the accuracy of the statistics by tabulating separately the returns in which the diagnosis was reasonably certain and those in which it was uncertain. In arriving at this distinction a report is classed as certain if the diagnosis was confirmed by microscopical examination of tissues, or by surgical operation, or by autopsy. All cases of internal cancer in which the diagnosis was based on clinical observations alone are classified as uncertain regardless of any strength of assertion by the physician that the diagnosis was correct. At the request of the Census Bureau an advisory conference, including representatives of the Harvard Cancer Commission, the George Crocker Special Research Fund of Columbia University, the Barnard Free Skin and Cancer Hospital of St. Louis, the New York State Institute for the Study of Malignant Disease, two large life insurance companies, the American Association for Cancer Research, and the American Society for the Control of Cancer, considered the details of the plan and assisted in the formulation of instructions for editing certificates of deaths from cancer in preparation for the special report. To gather the necessary detailed information the Director of the Census has sent over 35,000 letters of inquiry to physicians who certified deaths from cancer during 1914.

Although a large amount of additional labor has been thrown upon the Division of Vital Statistics of the Census Office by the preparation of this report, it is believed that the trouble and expense will be more than repaid by the result. The improvement of cancer statistics has practical bearings of greater consequence than may at first appear. Indeed, the importance of statistical investigation in arriving at the solution of the cancer problem is likely to be overlooked. Much of the valuable knowledge of the disease which we possess today has resulted from the collection and comparison of statistical data, and this method must be relied upon, side by side with experimental research and clinical observation, to elucidate the baffling problem of the nature and cause of this disease. The publication of this report by the Census Bureau should bring out new and useful information as to the prevalence of the disease in the United States and thereby contribute to the better understanding of its controllable features. Such a study as the Census Bureau is making, if continued, should also throw clearer light on the question of whether or not cancer is really increasing. The foremost authorities have repeatedly urged that this question can be scientifically answered only by studying separately the facts in regard to each of the many forms and sites of malignant disease. The Imperial Cancer Research Fund has cooperated with the registrar general of England and Wales in a thorough analysis of the detailed figures for cancer of the stomach, cancer of the tongue, cancer of the breast, etc., for succes-

*A special report to be made by U. S. Census Bureau, detailed and accurate figures having been gathered.

sive years. By the progressive action of the Director of the Census similar data as to parts of the body affected on which such studies can be made will now become available for the first time in the official statistics of the United States.

The new plan will not only produce data for the year 1914, but every future year a vast amount of information will be recorded and stored away, and can be compiled and published when the demand warrants. Efforts are also being made further to coordinate the work of the State and Federal statistical offices for the better registration of deaths from cancer and other diseases as well. By the operation of this plan and the mutually supplementary efforts of the National and State registration officials, it will be possible permanently to record and study the extensive American data on cancer mortality, with all the detail required by the most exacting statistical methods.

Contemporary Notes.

The Lancet's Tribute to Kenneth W. Millican.

—In its issue for December 11, 1915, the *Lancet* publishes the following obituary of Doctor Millican: "We much regret to announce the death of Mr. Kenneth William Millican, until recently the assistant editor of the *Lancet*, who died on Sunday, November 28th, the day after his sixty-second birthday.

Kenneth Millican was born at Leicester, where his father, William Millican, was an architect of high position, a leading member of the Conservative party, and a colonel in the Volunteers, of which service he had been from the beginning an ardent advocate. He was educated at the Atherstone Grammar School and Emmanuel College, Cambridge, and graduated in honors in the Classical Tripos. He showed his all round capability by proceeding to St. Mary's Hospital as a natural science scholar. In 1879 he took the diploma of M.R.C.S., England and in the following year that of L.R.C.P. Edinburg, and was for a time a surgeon in the service of the Ocean Steamship Company. Later he practised in Kington, Warwickshire, and also as a specialist in throat diseases in Welbeck Street. He was for a time surgeon and laryngologist to the Infirmary for Consumption in Margaret Street and also the West End Hospital for Paralysis, while he displayed his literary capacity by writing two volumes of verses—*Smoke Clouds* (jointly with the late Dr. A. B. Clarke) and *Passion Spray*, both volumes showing considerable command of metre. In 1887, in collaboration with C. H. Stephenson, he produced a domestic drama entitled *Fettered Freedom* at the Vaudeville, and at this time he was well known as an amateur actor. As early as 1883 he wrote a small book entitled, *The Evolution of Morbid Germ*, which displayed remarkable foresight in suggesting what may be called Darwinian doctrines in relation to disease, and quite recently Millican's attitude toward the question of anomalies as affecting the specific germ theory has received indorsement in our columns by modern writers. He inherited his father's belief in the principle of voluntary military service, and as a captain in the Ninth Battalion of

the King's Royal Rifle Corps he became a thorough going soldier in spirit, as well as an authority on military administration.

"He was a man of singularly versatile and varied talent; so versatile, indeed, that it probably operated against his obtaining a great success in any one direction." We are here quoting from a private communication supplied to us by two great friends of our late assistant editor, and they account in this way for Millican's sudden changes of objective in making a career for himself. For in 1892 he took a post as surgeon in the British and Foreign Steam Navigation Company, in the following year he went as medical officer to some mining works in Mexico, and resigned this post three years later for an appointment with the Mountain Copper Mines in California, where he worked until 1897. At this point his literary career as far as medicine is concerned commenced, for he was appointed associate editor of the *NEW YORK MEDICAL JOURNAL*, a post which he held for six years, leaving it to become the editor of the *St. Louis Medical Journal*, which periodical for two years he conducted with success. At the end of that time alterations in the management and style of the paper made him transfer his energies to the *Journal of the American Medical Association*, and for four years he was the literary editor of our distinguished contemporary. At the end of 1911 he joined the editorial staff of the *Lancet*, and for the last four years had worked in that capacity.

Millican's health broke down suddenly in the summer, when a damaged heart began for the first time to show signs of want of compensation. For a time he held his own, but during the last few weeks of his life the end was seen to be inevitable.

He was twice married, and leaves by his first wife a grown-up son and daughter who are settled in the United States, and by his second wife, who survives him, one daughter twelve years of age. To them we offer our sincere sympathy, and speak in so doing for the staff of the *Lancet*, who will always cherish their regard for Kenneth Millican's memory."

Aid for Drug Victims.—Acting under the suggestion of Francis Fisher Kane, United States District Attorney, according to the *Pennsylvania Medical Journal* for December, 1915, a committee has been formed of well known citizens of Philadelphia, headed by Edward W. Bok and C. H. Ludington, to employ and direct a skilled social worker to investigate and aid habitual users of narcotics. More than \$1,000 has already been raised to be used in working out this drug problem. The committee is anxious to obtain at least \$3,000 to defray the expense of the first year's work. The committee will not confine itself to cases referred to it by the Federal courts, but will take up recommendations made by the State courts and the various societies and agencies throughout the city (Philadelphia), in an effort to effect a reform in any case that is deserving. The duty of the agent will be to investigate the facts, and when the case is not hopeless, follow up the individual, obtaining the necessary medical assistance and later, if needed, an opportunity of obtaining employment. These are really details which should have been incorporated into the law and perhaps will be, as amendments, at the next session of Congress.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 1, 1916.

OUR NEW DEPARTMENT.

With this issue, the NEW YORK MEDICAL JOURNAL introduces to its readers its new department of Modern Treatment and Preventive Medicine. We begin modestly with ten columns, but we hope gradually to enlarge the scope of this venture until it includes everything of value in contemporary medical literature in all languages. In addition, we shall present from time to time, original communications expressly written for this department by the most prominent therapeutists in the United States and abroad, first hand material of the finest kind, which it may not be feasible to publish in any other form. As prophylaxis is being recognized as of prime importance in the modern practice of medicine, a due amount of space will be allotted to that important science, but, since the etiology of our commonest diseases, especially those of childhood, is still wrapped in mystery, the pound of cure must continue to receive the greatest attention. Our readers have frequently approved our attitude toward foreign therapeutics, from which we can certainly obtain valuable hints, although European practitioners are not averse to mixtures. Henceforward, in cases where remedies and vehicles are derived from a foreign pharmacopeia, we shall replace them by American equivalents. Of its now famous "tools to work with" the JOURNAL offers this new department as one of the best it has ever devised.

INOCULATION AND THE WIDAL TEST.

The Widal agglutination reaction has come to be regarded generally as the most trustworthy of the laboratory tests for the diagnosis of typhoid fever, excepting only the cultural isolation and identification of *Bacillus typhosus*, from the blood or excreta. Prophylactic inoculation against typhoid has been shown to give rise to circulating specific agglutinins. But, since immunity to typhoid is known to depend upon agencies other than agglutinins, and since these bodies were thought to disappear from the blood of inoculated subjects in a relatively short time, little impairment in the diagnostic value of the Widal test was expected from this measure. This was further minimized as a factor of importance, since inoculation was thought to confer a very effective immunity to typhoid.

Recent observations in Europe under war conditions and here in civil life have shown that a considerable proportion of inoculated persons are subject to typhoid infection when greatly exposed. The disease in such persons usually runs a more or less atypical course and often cannot be diagnosed by purely clinical means. Laboratory methods, therefore, have assumed great importance.

Recent studies in such cases by many competent observers have been practically unanimous in showing the untrustworthiness of the Widal test as commonly performed. These studies have been supported by American workers who obtained agglutination in the usual dilutions with the serums of a majority of normal persons two years after anti-typhoid inoculation. In some persons such agglutination persisted for over four years. As ordinarily conducted, therefore, the Widal test would prove of little diagnostic value in inoculated persons in whom typhoid fever was suspected of having developed.

It was hoped that the value of the test might be restored by using it quantitatively, and several observers sought to determine a dilution at or above which the occurrence of agglutination might be taken as certain evidence of typhoid infection in inoculated subjects. This effort, however, proved futile owing to the enormous quantitative variations shown to occur in both inoculated and uninoculated persons.

In this state of affairs we were faced with the probable loss of what had long been one of our most satisfactory laboratory diagnostic measures. But the human mind was not thus easily to be baffled, and it remained for certain German military physicians to restore the value of the test in inoculated subjects by showing that an infection with typhoid produced a steady rise in the agglu-

tinating power of the serum during the first two weeks or more of the disease. Diagnosis could be positively and easily established, therefore, in "protected" persons by the quantitative measurement of their agglutinations on several successive days. Not only was the diagnostic value of the test thus restored, but evidence is accumulating which suggests its value, when conducted quantitatively, in prognosis.

THE ABDERHALDEN REACTION.

When Abderhalden first promulgated his theory of protective ferments, it was very cordially received, as it seemed to be based on sound principles. Its clinical application was received with delight by many who, with or without laboratory training, began to perform the test. As might have been expected, the results were unsatisfactory. Contradictory reports came in from all sides, some saying that it was a distinctly trustworthy reaction; others that it was of no value, that the serum of men would give a positive reaction in the presence of placental tissue, and so on.

To these latter, Abderhalden's one reply was that they had not followed closely his method or else that their technic was poor and contamination occurred. This quieted criticism for a while, but there were too many skilled technicians performing the reaction for this objection to remain valid. The more investigations that were conducted, the greater became the volume of criticism directed, not only at the technic, but against the entire theory as well.

In regard to the test itself, Bronfenbrenner (*Journal of Laboratory and Clinical Medicine*, November, 1915) reviews it at great length, pointing out not only the difficulties in technic, but also the unavoidable mistakes that the materials used render possible. All precautions in regard to controls have to be taken before making the test and, to make sure of the results, should be repeated afterward, a routine that is practically impossible on account of the time required. In fact, Bronfenbrenner agrees with Ebeler and Lönnberg, who believe that as the technic of the Abderhalden reaction is being improved, it is becoming so complex that its usefulness in the diagnostic laboratory is growing more doubtful.

Further investigations also cast doubt on the existence of specific ferments in the immune serums. One of the important arguments against their specificity is the fact that the presence of ferments has been demonstrated by means of the Abderhalden reaction within a few minutes after the parenteral introduction of the foreign protein into experimental animals, a period too short for the production

of new specific ferments. Bronfenbrenner's experiments also speak against their presence.

In the opinion of many, these protective ferments, although not necessarily identical with antibody or amboceptor, are closely related, but are not specific. Others have found that practically every serum, whether from a pregnant or nonpregnant woman, shows protein digestion when incubated with placental tissue prepared according to Abderhalden. The growing opinion, therefore, is that the results of the Abderhalden reaction are at best of little value, and that the theory of specific defensive ferments is itself open to question.

— —

THE DANGER TO HEALTH FROM STREET DUST.

One of the most flagrant violations of public health precepts is dry sweeping. The feather duster is still used very generally in private homes as well as in public or semipublic institutions, and the broom still raises thick clouds of dust in the streets of our cities. Building operations, the perpetual tearing up of pavements, heavy traffic, and the beating of carpets out of windows, all contribute to surcharge the atmosphere of our cities with dust. Evidently the idea of the harmfulness of dust has not as yet penetrated the callous health conscience of the public, although it has been demonstrated over and over again that dust is a dangerous mechanical irritant, and literature is replete with instances showing how dusty air lowers vitality and predisposes to various morbid conditions.

A year ago, when the Public Health Committee of the New York Academy of Medicine made a report criticizing the prevailing methods of street cleaning and urging the introduction of adequate flushing before sweeping, the representatives of the city pointed out: 1. The sewers would be rapidly clogged if street dirt was washed into them; 2, the consumption of water for flushing purposes would be very large; and, 3, the expenditures involved in frequent sewer cleaning and flushing would be unjustified until sufficient evidence existed to show that street dust is pathogenic, and until the relation of street dust to disease was definitely determined.

A report recently published by the Public Health Committee brings together all the available literature on the subject and expresses the opinion of the committee that the relation of dirt and dust to illness and death "can be roughly estimated to conform to the death rate of certain bronchial and pulmonary diseases, which occur so frequently as the result of dust dissemination."

The report clearly points out that no efforts were made to gauge the relative importance of the patho-

genicity of street dust to other sources of infection, but only to emphasize the danger from that source. Although instances are few where the production of disease can be directly traced to the pathogenic germs suspended in the dust, yet the fact that almost invariably pathogenic organisms can be found in the colonies obtained from street dust is reason enough for subduing it by all means available, without reference to the cost. Public health can be bought, and no sum is too large to pay for the elimination of obstacles which stand in the way of that great social and sanitary goal.

OUR PROFESSION IN WARTIME.

We print in another column a series of resolutions adopted by the Southern Medical Association at the meeting held in Dallas, Texas, last month, which shows that the physicians who constitute that organization realize their special responsibility, and wish to provide in advance, as far as possible, for an adequate supply of trained military surgeons who would be available if mobilization became necessary.

The rapidity with which modern war progresses, and the enormous equipment of machinery, material, and appliances required, have demonstrated that war is not merely a matter of the organization of troops, but means the mobilization of the entire resources of the country. By arousing the whole population in advance to a sense of its obligations, we may hope to make adequate preparations to resist any attempt to subject the United States to foreign domination, but nothing less than such complete mobilization would enable us to make an adequate defense of our extensive unprotected coast line. We have recently published several editorial notes upon the responsibilities of the medical profession in the matter of preparation for war. A leading railroad magnate has directed attention to the need for coordination of the railroads under a general plan which would enable the military authorities to make the best possible use of them in case of mobilization. One of the largest manufacturers has put forth a suggestion that all our wagon factories should be provided with specifications and working plans for the manufacture of escort wagons, so many thousands of which would be needed by the army in case of mobilization; and we observe that the *American Druggist* has urged that a preliminary survey be made of the possibilities of production of medical supplies, so as to facilitate their delivery in case of mobilization.

All these indications point out clearly the awakening of the American people to the responsibility under which all rest in making preparations for the contingency of war. It is to be hoped that other medical societies will follow the example of the Southern Medical Association, and take such steps

as are possible toward bringing about a state of preparedness for war so far as the medical profession is concerned.

BLOOD PRESSURE.

Some day, a thousand or more years from now, physicians, if there are any needed in that happy time, will not be allowed, or will not wish to use new clinical instruments and therapeutic measures before they have been thoroughly tried out and are at least reasonably well understood. The delay will be detrimental to the pocketbook of the maker of instruments and of drugs, but the rest of mankind, including the physician, will be much better off.

The very imposing sphygmomanometer, valuable as it is in expert hands, has, so far, not proved an unmixed blessing, at least to the patient. Probably many people have been rendered unhappy from worrying over the fact that they "have blood pressure" or over their "high blood pressure" even when they have been helped through this instrument; a fact for which the physician is alone to blame. Emotional disturbances influence blood pressure markedly—influence the whole body, for that matter; by stirring up of emotional states by the application of the sphygmomanometer more alarm may be caused than if the blood pressure had not been so exactly taken or had been neglected.

Our laboratory trained doctors forget that they are not dealing with a frog or a cat, but with an always highly impressionable human being. The patient is overimpressed, partly because the physician is also unduly serious over the matter—too much concerned because the mercury goes below or above a certain notch. He might as well be depressed because the pulse falls to sixty or rises to eighty—an exceedingly wide range of cardiac contraction.

Blood pressure is no simple matter, and this is just being learned. The pressure may be very high in persons with normal hearts and normal kidneys, who are on a sensible diet. Moreover, there is a variability and rhythmicality in blood pressure from minute to minute accompanying emotional changes which must be taken into account, for this variability may amount to as much as thirty millimetres (Dearborn).

The latter fact makes one realize that the ideal sphygmomanometer is yet to be invented, for this will give us a continuous reading or record over a considerable period of time. It will be a far more valuable instrument and will prove of especial service as a measure of borderland phenomena between the psychic and physiological.

The sphygmomanometer is valuable, and will be more valuable, for there is much yet to be learned

about its readings. Meanwhile we should be duly impressed with our ignorance, and not allow that ignorance to affect the patient for the worse. A few words tending to reassure the startled patient who has just undergone the impressive ceremony of having his blood pressure taken, will never be amiss.

DOCTOR SAJOUS AND HEMADENOLOGY.

Our readers will learn with pleasure that Dr. Charles E. de M. Sajous has recovered from the operation he underwent some weeks ago and his complete restoration to health is a matter of only a few weeks. He has already recommenced his notes on Hemadenology and our friends will begin to reap the fruits in an early issue. Taking Hemadenology in conjunction with our new department of Modern Treatment, we are offering an unexampld program of therapeutic information such as is obtainable in no other medical journal. Our columns are now unique in the richness of this most valuable material for the practising doctor, and, as time and experience come to our aid, its practical solution of many of the doctor's problems will be more and more evident.

A NEW TECHNIC FOR INTRAVENOUS INJECTIONS.

Dr. J. Alfred Codd communicates to the *British Medical Journal* for December 11, 1915, a note on an improved manner of making intravenous injections. The chief remaining difficulty of this practice, he points out, is that of properly entering and canalizing the vein, especially when the veins are small or deep, as often happens when the superficial veins in front of the elbow form a plexus of small veins instead of the relatively large trunks of the textbooks. The application of a bandage in these cases produces a series of veins scarcely as large as the needle, and canalization is difficult or impracticable. But by using a sphygmomanometer instead of the bandage, and then compressing to just short of blood pressure point, say 120 to 150 mm. Hg., the hitherto small veins will stand out turgidly, and can easily be punctured and canalized, for the vein stands up to the needle, and will not yield before it. Even in the case of the largest veins the manœuvre is more easily accomplished by this method.

After the canalization, in the usual way, the cutting or removal of the bandage often causes movement of the arm and endangers the possibility of second puncture. But with the sphygmomanometer all that is necessary is to release the escape cock without disturbing the compression bag. The latter should in the first place be carried right up into the axilla, and in primary and secondary cases at least should have a sheet of Billroth's cambric interposed between it and the skin to avoid infection.

Obituary.

JOHN O. ROE, M. D.,
of Rochester, N. Y.

Dr. John O. Roe died at his residence, 64 Clinton Avenue, South, Rochester, on December 24th. He was born in 1840 and secured his medical education at the College of Physicians and Surgeons of Columbia University, where he graduated in 1871. He had an international reputation as a surgeon in affections of the eye, ear, nose, and throat, and more recently had been particularly successful in plastic work. Doctor Roe was a warm friend of the late Dr. Frank P. Foster, also of the present senior editor of the *NEW YORK MEDICAL JOURNAL*, to which he was a frequent contributor. His last paper appeared on November 28, 1914, and was a discussion of Phlegmons of the Upper Respiratory Tract.

WILLIAM PHILIP SPRATLING, M. D.,
of Lafayette, Ala.

Doctor Spratling died unexpectedly at Wilska, Florida, on December 22d. He was born in Chambers County, Alabama, in 1863, and was educated at the Alabama State Polytechnic Institute, in a business college, at Vanderbilt University, and at the College of Physicians and Surgeons, of Baltimore, where he graduated in 1886. The following year he entered the Public Health Service, but left it in a year to become assistant physician to the State Hospital for the Insane at Morristown, N. J., where he remained five years. After practising in New York for some three years, he became superintendent of the Craig Colony for Epileptics at Sonoma, N. Y., the first institution of the kind. He was at one time president of the National Association for the Study of Epilepsy. Doctor Spratling was a voluminous writer on epilepsy, some of his most valuable contributions appearing in the *NEW YORK MEDICAL JOURNAL*.

News Items.

Change of Address.—Dr. Binford Throne, to 162 Halsey Street, Brooklyn, N. Y.

Harvey Society Lectures.—The fifth lecture in the course will be given on Saturday evening, January 15th, by Dr. Donald D. Van Slyke, of the Rockefeller Institute for Medical Research, his subject being the Present Significance of the Antinutrients in Physiology and Pathology.

A Free Hospital to Be Established in St. Paul.—The will of Mrs. Martha A. Miller, who died recently in St. Paul, Minn., provides for the establishment of a free hospital in St. Paul, to be called the Charles T. Miller Hospital, Inc. Real estate valued at approximately \$1,000,000 and \$400,000 in cash comprise a trust fund for the erection, equipment, and maintenance of the institution. Dr. John T. Rogers has been appointed one of the trustees.

Dental Surgery for Animals.—A complete dental equipment has been installed at the Angell Memorial Hospital of the Massachusetts Society for the Prevention of Cruelty to Animals, on Longwood Avenue, Boston, in order to relieve animal pets suffering from defective teeth. The apparatus, which includes an electric dental engine, will provide dental treatment for all animal patients at the hospital. When necessary, teeth will be filled, extracted, or cleaned, and the apparatus will also be used for drilling and other forms of bone surgery on small animals.

American Aid for Belgian Physicians.—During the week ending December 25, 1915, the treasurer of the Committee of American Physicians for the Aid of the Belgian Profession received \$25 from the Brooklyn Medical Society. The total receipts amount to \$7,930.86, with a balance on hand of \$620.82.

Providing Work for the Blind.—In a recent number of the bimonthly bulletin issued by the New York State Commission for the Blind, a list is given of blind persons engaged in various trades and other occupations. The list includes basket makers, broom makers, chair caners, dictaphone operators, singers, masseurs, rug makers, piano tuners, printers, etc., and will be supplied to those interested on application to the New York State Commission for the Blind, 105 West Fortieth Street, New York.

Richmond Academy of Medicine.—At the annual meeting of the Academy of Medicine and Surgery of Richmond, Va., held on December 14th, the following officers were elected: Dr. W. L. Peple, president; Dr. St. Julian Oppenheimer, first vice-president; Dr. O. F. Blankingship, second vice-president; Dr. Ramon D. Garcin, third vice-president; Dr. Mark W. Peyser, secretary, reelected; Dr. E. H. Terrell, assistant secretary, reelected; Dr. J. H. Smith, treasurer; Dr. G. P. La Roque, librarian, reelected. The following were elected to the judiciary committee: Dr. C. M. Miller, Dr. Moses D. Hoge, Jr., Dr. H. H. Levy, Dr. A. L. Gray, Dr. McGuire Newton, and Dr. Robert C. Bryan.

Mosquito Work of Health Department Endorsed by Public Health Service.—It was announced recently that the United States Public Health Service would cooperate with the Department of Health of the City of New York and various local organizations in the work of mosquito extermination in New York city and vicinity. Dr. R. H. Von Ezdorf, an expert in mosquito work, was detailed by the service as a member of one of the antimosquito committees recently organized by Commissioner Emerson, and in a report recently submitted to the surgeon general of the United States Public Health Service, Doctor Von Ezdorf highly commends the work of the department in Staten Island.

A Symposium on Syphilis.—A meeting of the Academy of Medicine, to be held on Thursday, January 6th, at 8:30 p. m., will be devoted to a consideration of the importance of syphilis, often unsuspected, in the production of a number of apparently unrelated disorders. Dr. Lewellys F. Barker, professor of clinical medicine, Johns Hopkins University, will read a paper on Syphilis in Internal Medicine. Dr. Edward Martin, John Rhea Barton professor of surgery, University of Pennsylvania, will read a paper on Syphilis in General Surgery, and Syphilis in Neurology is the title of a paper which will be presented by Dr. Joseph Collins, of the Neurological Institute of New York. A general discussion will follow.

Coughing, Sneezing, and Spitting as Disseminators of Disease.—According to newspaper reports, there has been a considerable increase in the prevalence of grippé and grippelike infections in New York during the past week. In the absence of any effective specific for grippé, the department of health calls attention to the great importance of preventive measures, which consist almost wholly in the avoidance of contact with infected persons, especially those who cough and sneeze. A publicity campaign has been started by the department directing attention to coughing, sneezing, and spitting as carriers of infection. A large number of leaflets are being printed and will be widely distributed.

Medical Society of the County of Kings.—At the ninety-fifth annual meeting of this society, held in Brooklyn on Tuesday evening, December 21st, Dr. Ralph H. Pomerooy was elected president, succeeding Dr. Russell S. Fowler. Other officers were elected as follows: Dr. Albert M. Judd, vice-president; secretary, Dr. Charles E. Scofield; associate secretary, Dr. Lewis F. Addoms; treasurer, Dr. Stephen H. Lutz; associate treasurer, Dr. Robert L. Moorhead; director librarian, Dr. Burton Harris; censors, Dr. John E. Jennings, Dr. Frederick C. Holden, Dr. John G. Williams, Dr. Frank H. Knight, and Dr. Nathaniel P. Rathbun. Next spring the society will hold a special meeting to celebrate Dr. Lewis S. Pilcher's fiftieth anniversary of the practice of medicine. A committee has been appointed to make the necessary arrangements, and the various medical organizations of Brooklyn will be asked to take part.

Public Lectures at Harvard Medical School.—Announcement is made of the annual series of public lectures under the auspices of the medical faculty of Harvard University. These lectures are given on Sunday afternoons, at four o'clock, in the medical school, and are free. The first lecture will be given on January 2d, by Dr. R. B. Greenough, his subject being Cancer, and on the following Sunday, Dr. W. H. Potter will speak on military dentistry, relating some of his experiences in a three months' service in the American Ambulance Hospital in Paris.

Georgia Medical Society.—At the annual meeting of the society, held in Savannah on December 14th, Dr. Jabez Jones was elected president and other officers were elected as follows: Dr. A. J. Waring, vice-president; Dr. V. H. Bassett, secretary-treasurer; Dr. J. O. Baker, a member of the board of censors, and Dr. T. J. Charlton, a member of the house committee. In the annual address, Dr. H. H. McGee, the retiring president, reviewed the work of the organization during the past year, and Dr. J. Lawton Hiers delivered an address on progress in medical organization in Georgia.

Southern Surgical and Gynecological Association.—Dr. Thomas S. Cullen, of Baltimore, was elected president of this association, at the annual meeting held in Cincinnati, December 14th, 15th, and 16th, under the presidency of Dr. Bacon Saunders, of Fort Worth, Texas. Other officers were elected as follows: First vice-president, Dr. R. S. Hill, of Montgomery, Ala.; second vice-president, Dr. Willard Bartlett, of St. Louis; secretary, Dr. W. D. Haggard, of Nashville, Tenn. (reelected); treasurer, Dr. Le Grand Guerry, of Columbia, S. C. Next year's meeting will be held at White Sulphur Springs, W. Va.

The Sale of Red Cross Christmas Seals.—Preliminary reports from leading cities to the State Charities Aid Association indicate that the sale of Red Cross Christmas seals in the State, outside of the Greater City of New York, will surpass all previous records by a large margin. Buffalo reports the greatest gross increase, selling 300,000 more seals this year than last. Albany will sell 150,000 more than in 1914. Other places so far reporting large gains are Syracuse, Utica, Schenectady, Cohoes, Little Falls, Watertown, Auburn, Elmira, Kingston, Dunkirk, White Plains, Port Chester, Norwiche, Oneonta, and Penn Yan. Oneida, Herkimer, Ulster, Delaware, Otsego, and Tioga counties report large increases from the rural districts.

Military Preparedness from the Medical Standpoint.—At a meeting of the Medical Society of the County of New York, to be held on Monday evening, January 24th, the question of military preparedness will be considered from the medical standpoint. The subject will be introduced by Major Joseph H. Ford, of the Medical Corps of the United States Army, who was recently an official observer with the Austrian army, and will be discussed as follows: For the civilian, by Dr. Karl Connell, recently in France for Columbia University and observer in Germany and Austria-Hungary; for the army, by Major S. H. Wadhams, Medical Corps, United States Army (by invitation); for the organized militia, by Major William S. Terriberry, chief of the surgical division, N. G. N. Y.; for the regimental sanitary detachment, by Major Edmund P. Fowler, Surgeon to the Seventh Regiment Infantry, N. G. N. Y. There will be an exhibition and demonstration of field equipment and supplies used by the medical department of the army.

Changes in the Medical Staff of Harvard University.—The following appointments have been made on the staff of the medical department of Harvard University: Dr. George Richards Minot, Dr. Harry Linenthal, and Dr. Harold Bowditch, assistants in medicine; Dr. Ernest Gray and Dr. Albert Ehrenfried, assistants in surgery; Dr. Robert Bayley Osgood, instructor in surgery; Dr. Raymond Stanton Titus, alumni assistant in obstetrics; Dr. William Richard Ohler, Austin teaching fellow in bacteriology; Dr. John Kirkland Wright, assistant in military science; Dr. Francis Weld Peabody, consulting physician to the Collis P. Huntington Memorial Hospital; Dr. Robert Battey Greenough, surgeon in charge of the Collis P. Huntington Memorial Hospital; Dr. Edward Hammond Risley, assistant surgeon to the Collis P. Huntington Memorial Hospital; Dr. Henry Lyman, research fellow in chemistry of the cancer commission of Harvard University. The title of Dr. James Patrick O'Hare was changed from Fellow to assistant in medicine.

The Harrison Antinarcotic Law.—Two decisions by United States courts construing Section 8 of the Harrison antinarcotic law have recently appeared. This section makes it unlawful for any person who has not registered and paid the tax under the law to have in his possession or under his control any of the habit forming drugs named in the act, and such possession or control is made presumptive evidence of a violation of the act. The United States District Court for the Western District of Washington took the view that Congress intended to prevent the importation, manufacture, or sale of habit forming drugs except as allowed by the law, and that the law should be so construed as to carry out this intention. The same section was considered by the United States District Court for the State of Montana about the same time. Judge Bourquin decided that Section 8 applied only to persons who were required to register under the law.

Typhus Fever in Mexico.—Although typhus fever has been common in Mexico for a good many years, it has been a long time since the situation was as grave as it is at present. There are over 35,000 cases in Mexico City alone, and according to trustworthy authorities, typhus is fairly general over Mexico and has already spread into Texas.

We should not look for much of an epidemic in the United States. In the first place the south of Texas is not badly congested, and, secondly, the sanitary conditions are good. But we know how deadly the disease is from the history of hundreds of thousands dying in the recent epidemic in Serbia and we cannot start a powerful fight against it too soon. The Rockefeller Foundation and the American Red Cross Society have offered their services to Mexico and it is understood that within a few weeks there will be several units in Mexico City and surrounding territory.

The New York City Health Department Awarded Grand Prize.—The jury of awards has just published its official list of the prizes awarded at the Panama-Pacific Exposition. Among those is a Grand Prize to the department of health for its work in health and sanitation. This adds one more to a long list of honors bestowed on this department, among the others being first prizes at the World's Fair in Chicago, the Louisiana Purchase Exposition in St. Louis, and the International Congress on Hygiene and Demography in Washington. The department of health was the only individual department in New York to receive a Grand Prize, but medals of honor were awarded to the Department of Charities and Correction, the Department of Parks, including recreation centres, school farms, public baths, etc., and to Bellevue and Allied Hospitals, including the social service bureau, Miss Mary E. Wadley, collaborator of the bureau, receiving honorable mention. The total number of awards to the city of New York was thirty-two, three being grand prizes and fifteen medals of honor.

The Death Rate in New York.—The death rate from influenza and pneumonia has risen suddenly. According to figures compiled by the department of health the noteworthy feature of the mortality report for the week ending December 25th, is the abnormally high death rate from influenza and pneumonia. The number of deaths from influenza is five times as many as during the corresponding week of last year, and twice as numerous as the deaths from this cause during the previous week. There were nearly 200 more deaths from pneumonia last week than during the corresponding week of 1914. If we estimate that the mortality of pneumonia is about 20 per 100, there were about 2,000 cases of pneumonia in the city last week. It is apparent that the epidemic of grippé recently reported from Chicago, Milwaukee, Detroit, Philadelphia, and elsewhere has arrived. The department of health, therefore, renews its warning, to keep away from those who are sneezing and coughing, and to keep out of crowds as much as possible.

The mortality of the acute infectious diseases, considered as a group, was lower than during the corresponding week of last year. The total number of deaths reported for the week was 1,724 as compared with 1,363 during the corresponding week of last year, the respective rates being 15.49 and 12.74. The death rate for the fifty-two weeks of the year was 1,355 compared with 1,360 for the corresponding period of last year.

The Second Pan-American Scientific Congress was opened in Washington, D. C., on Monday, December 27th, and will continue throughout next week, closing on Saturday, January 8th. The New Willard Hotel is headquarters for the congress. Six hundred and forty-three delegates from the United States attended the congress, among them being the following physicians: Dr. Ramon Guitars, of New York; Surgeon General William C. Gorgas, United States Army; Dr. Victor G. Heiser, of New York; Dr. Ernest S. Bishop, of New York; Dr. C. C. Bass, of New Orleans; Dr. Guy Hinsdale, of Kennebunkport, Me.; Dr. A. Parker Hitchens, of Glenolden, Pa.; Dr. John N. Hurty, of Indianapolis; Dr. John C. MacEvitt, of Brooklyn; Dr. James F. Mitchell, of Washington, D. C.; Dr. Robert T. Morris, of New York; Dr. James B. Murphy, of the Rockefeller Institute; Dr. Charles W. Richardson, of Washington, D. C.; Dr. J. B. Roberts, of Pittsburgh; Dr. George Tully Vaughan, of Washington, D. C.; Dr. William H. Welch, of the Rockefeller Institute; Dr. Joseph H. White, of the United States Public Health Service; Dr. William A. White, of Washington, D. C. Among the members of the executive committee of the congress are Dr. William H. Welch, of Baltimore, and Surgeon General William C. Gorgas.

The Work of the United States Public Health Service.—According to the annual report of the surgeon general of the United States Public Health Service, the year just passed marked the largest amount of work performed in the history of that organization. Perhaps the most important achievement of the year was the discovery that pellagra is a deprivation disease resulting from a faulty diet containing an excess of carbohydrates. Scientific investigation of malarial infection in various parts of the United States showed that in the latitude of this country, the most important agent in carrying the infection through the winter season is man and not, as was previously supposed, infected hibernating Anopheles mosquitoes. From the standpoint of prevention, this is a discovery of considerable value. A great reduction in the incidence of malaria was obtained in localities where surveys were conducted. Drainage projects, rice culture studies, and the conditions surrounding the impounding of water for power purposes, were investigated in order to eradicate malaria, as far as possible, in these areas. The report describes the occurrence of plague at New Orleans, the first outbreak on the gulf seaboard. At the request of the State and local health authorities, the Public Health Service took charge of the situation and by means of extensive rat proofing and other antiplague methods, succeeded in eradicating the disease from among human beings and in practically exterminating the rodent infection.

Gifts and Bequests to Hospitals.—Recent bequests to Philadelphia hospitals are the following: Germantown Hospital, \$5,000 by the late Jane H. Harmer; Jewish Hospital, \$300 by the late Ellis Silberman; Episcopal Hospital, \$18,934.90 for a contagious disease ward, by the late James F. Hope.

The Woman's Medical College, Philadelphia, recently received \$10,000 from the estate of the late Elizabeth Shippen and will receive \$5,000 under the will of the late Anna Yarnall.

The Bankers and Brokers' Auxiliary of the Hospital Saturday and Sunday Association announce contributions to hospitals amounting to \$19,195.

The University of California has received \$100,000 from an anonymous donor to endow the Dr. C. W. and Mrs. Sarah E. Fox Memorial Beds in the University of California Hospital, a part of the equipment of the University of California Medical School. These beds are to be maintained in the new University Hospital, now being erected in San Francisco through the gift of \$615,000 by various friends of the university.

The will of the late Julia C. Greenwood, of Brookline, Mass., contains a bequest of \$3,000 to the Vincent Memorial Hospital.

The Presbyterian Hospital, Philadelphia, received a bequest of \$5,000 under the will of the late Phoebe A. Brown.

Gifts and Bequests to Charities.—The New York Association for Improving the Condition of the Poor will receive \$250,000, under the terms of the will of the late Amos F. Eno, who died recently in New York.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

Cicatrizization and Granulation.—P. G. Unna, in *Berliner klinische Wochenschrift*, for July 12, 1915, directs attention to the fact that the prompt and proper healing of wounds rests on two fundamentally different occurrences—granulation and connective tissue formation on the one hand, and epithelialization and cornification on the other. Reducing substances, irrespective of their nature or origin, hinder the former and accelerate the latter, while the reverse is true of oxidizing agents. Treatment should take these two facts into consideration, especially their time relations. Silver is among the best known of the oxidizing agents used in wounds and has often been employed with benefit when combined with a reducing agent such as Peruvian balsam. The properties of oxidation and reduction are better combined, however, in the combination of silver with ichthylsulphonic acid which is known as ichthargan. Both of these properties—oxidizing and reducing—come into play in the use of the preparation, since the tissues attract that one which is of most benefit to them in their growth. The drug has proved an almost ideal remedy in the treatment of all sorts of wounds; even leprous, tuberculous, and syphilitic lesions heal most promptly and kindly under its influence. It is not necessary to use the drug undiluted, but excellent results can be obtained by using it as a dusting power in the following mixture:

R Ichthargan,	1;
Magnesi carbonatis,	20.
M. ft. pulv.	

This greatly reduces the cost of using the powder as a dressing. In addition to its general utility in wounds, ichthargan acts specifically to destroy the organisms producing impetigo and eczema, for which purpose it may be used either in the form of a medicated rubber plaster, or in the powder just mentioned. The powder should be dusted on the cleaned area and then covered with Hebra's paste or some other suitable ointment. A very efficient ointment for eczema can be made as follows:

I.	
R Pulveris ichthargan (5%),	5-10;
Aque destillatæ,	45-40;
Unguenti zinci oxidî,	50.

II.	
R Ichthargan,	0.25;
Magnesi carbonatis,	5.00;
Aque destillatæ,	45.00;
Unguenti zinci oxidî,	50.00.

Nonspecific Treatment of Tetanus.—Several measures, aside from attempts at specific therapy, are of much importance in the treatment of this disease. These are discussed by Josef Pringsheim (*Medizinische Klinik*, October 31, 1915) in a review of the literature of the subject. It is absolutely necessary to supply an abundance of water and of food, and these ends can be accomplished best in severe cases through subcutaneous or intravenous

injection of normal salt solution, intravenous injection of a ten per cent. solution of glucose, or by enemas of seven and a half per cent. solutions of glucose. The use of alcoholic beverages is also of help, as a food supply, and because alcohol has some direct therapeutic value in tetanus. Morphine, morphine and scopolamine, hydrated chloral, and some of the newer hypnotics, such as medinal or luminal, are of great value in diminishing the severity of the spasms, relieving the suffering, and in aiding the administration of food and drink. Some temporary symptomatic relief can often be secured by the withdrawal of spinal fluid from time to time. In certain cases with persistent spasm of the diaphragm which resisted all therapeutic measures, recovery has followed bilateral division of the phrenic nerves. Recently a preparation of curare known as curaril has been introduced, which is said to be uniform in activity. This has been administered in increasing hourly doses until its action appeared, the initial dose having been 0.2 c. c. Baccelli's phenol injections have given very excellent results in the hands of some, while others have seen no benefit. The use of magnesium sulphate is still in the experimental stage as far as therapy is concerned and is fraught with considerable danger. Opinions differ as to its value.

Treatment of Anal Ulcerations.—A. Mathieu, in *Bulletins et mémoires de la Société médicale des hôpitaux de Paris* for June 3, 1915, refers to the difficulty of securing permanent results in the treatment of anal ulcerations—especially if varicose dilatation of the veins coexists—owing to the irritation to which the passage of feces subjects the parts. Topical remedies are hard to keep in place or are but slightly effective. Recently the author has resorted with success to the use of a small cylinder consisting of a narrow, round stick of wood around which a band of gauze is wound, the whole being about five cm. long and the gauze projecting beyond the wood by three or four mm. The gauze is tied on at one extremity with strong thread and then covered with a thick layer of medicated ointment. The device is inserted into the anal canal with the patient in the knee chest posture. The stick of wood is then withdrawn, leaving the gauze suppository, with the ointment in place. The following ointment has the proper consistence:

R Bismuthi subgallatis,	5i (4 grams);
Zinci oxidî,	5iiss (0 grams);
Adipis lane hydrosi,	5iiss (10 grams);
Petrolati albi,	5vi (25 grams).
M. et fac unguentum.	

A gauze suppository should be inserted at first daily, then every two or three days. Excellent results were obtained in erosive inflammation of the anal canal accompanying hemorrhoids or following attacks of dysenteriform colitis, as well as in cases of uncomplicated hemorrhoids.

Heterovaccine Therapy in Typhoid Fever.—In a communication before the Society for Internal Medicine and Pediatrics in Vienna, Von Decastello (*Berliner klinische Wochenschrift*, for July 12, 1915) reported considerable success in the treatment of typhoid fever with heterologous vaccines. Ten patients were given coli vaccine, of whom four responded by a critical fall of fever following a single injection given at the end of the first or during the second week. One case responded by lysis during the second week and two other cases responded similarly after three injections. Two were not influenced at all. One patient's fever fell by lysis on the eleventh day of his illness after an injection of dysentery vaccine (Flexner strain). The results obtained did not include any effect on the intestinal lesions, which required the same care and time for healing as in patients not treated with the vaccines. The dangers of intestinal hemorrhage and perforation were not removed. The doses of vaccine contained from thirty to fifty million organisms and were without ill effect. Vaccines made from other organisms yielded similar results and even simple injections of albumose reduced the fever in the same way as the vaccines.

Intubation in Wounds of Large Arteries.—Tuffier, in *Bulletin de l'Académie de médecine* for October 19, 1915, calls attention to the fact that in ligation of large arterial trunks such as the femoral, subclavian, axillary, and carotid arteries, it is the suddenness of the circulatory interruption which sometimes causes trouble due to ischemia, necessitating amputation or inducing permanent functional disability of organs supplied by the obliterated vessel. Slow or progressive suspension of the blood current in the same vessels would not be followed by these consequences. Means to secure this result were employed by Tuffier, with partial success, in the case of an engineer who had had his arm caught in machinery above the elbow. The brachial artery had been exposed and severed by the injury. Its upper stump could be seen beating in the wound. No radial or ulnar pulsation could be detected, and the forearm was cold. Instead of amputating, Tuffier, seven and a half hours after the accident, secured the lower, buried stump of the vessel, cut off its closed extremity, opened up its lumen with a lubricated probe, washed it with Ringer's solution, and joined it with the proximal stump by means of a thin walled, silver plated, and paraffin coated tube, over which the vessel walls were slipped and sutured. The clamp on the proximal part of the artery being removed, pulsations reappeared in the radial. The wound was closed with drainage and the arm put up slightly flexed in a plaster splint. The hand became warm and red, but sensation did not return, and whitish spots appeared on the dorsum. On the fourth day the cannula was taken out and the brachial ligated above and below. The forearm thereafter did well, but the hand underwent dry gangrene, necessitating a metacarpocarpal amputation. The partial failure in this case is attributed to imperfect mechanical conditions. In later cases it is advised that, after the cannula has been in place two days, pressure be made above it to help collateral circulation.

Treatment of Phthiriasis.—Sergeant and Foley, in the *American Journal of Tropical Diseases and Preventive Medicine*, August, 1915, are credited with the statement that, since the agent transmitting both typhus fever and relapsing fever has been proved to be the body louse, a campaign against this type of vermin is the basis of prophylaxis against these diseases. A satisfactory procedure is to change and disinfect the clothing and have the patient bathe. Where this is not feasible, the authors have found that an equally good result may be obtained by using oil of eucalyptus to destroy the vermin *in loco*, on the clothing itself, and while the body is still clothed. The louse inhabits the underclothing, except in the periods when it is sucking blood, a process lasting but about twenty-five minutes and not repeated every day. Pieces of cloth moistened with oil of eucalyptus and then dried in the open air were found to kill lice, when these were placed in contact with it, in a few seconds. The odor of the oil was also found to kill lice through thick cloth. The clothing of eight men infested with lice was lightly sprinkled with the oil. In twenty-four hours all the lice had in each instance disappeared.

Pituitary Extract as a Coagulant in Surgery of the Nose and Throat.—Harry Kahn and L. E. Gordon, in the *Annals of Otolaryngology, and Laryngology*, for June, 1915, find that the coagulation time of the blood is materially reduced, usually to from one third to one half, after the hypodermic administration of pituitary extract. The injection of twelve minims to children and fifteen minims to adults is made not less than fifteen minutes before the intended anesthetic is administered. The hemorrhage following operations on the nose and throat is greatly reduced, especially those on the turbinate bodies. The effect on the blood pressure of children is variable.

Deep Röntgen Therapy in the Postoperative Treatment of Carcinoma of the Breast.—George E. Pfahler, at the recent annual meeting of the American Electrotherapeutic Association (*Lancet-Clinic*, November 6, 1915) pointed out that, since three fourths of breast cancer patients apply for operation only after the disease has extended from the original focus and involved neighboring lymph glands, most of them cannot expect to recover through surgical treatment alone. Cancer tissue having repeatedly been shown to disappear under x ray treatment, it can all the more surely be caused to disappear if subjected to the rays immediately after operation. The rays can not only be of service in preventing extension of the disease, but are capable also of doing much to obviate recurrence. Pfahler's view is that at least twenty-five per cent. more patients could be made to recover from breast cancer if every patient received suitable x ray treatment after operation.

The Cure of Amebic Dysentery.—A. J. Chalmers and R. G. Archibald, in the *Journal of Tropical Medicine and Hygiene* for August 16, 1915, limit the application of the term "cure" to cases in which the causal amebas have ceased to live in the patient's body. They have found that definite evidence of this complete disappearance of the or-

ganisms can be attained only by repeated careful differential leucocyte counts in the blood. The amebas may gradually disappear from the stools under treatment, only to reappear after a variable interval if medication is stopped too soon. If differential counts are made, however, at the start of the illness and again after the amebas have disappeared from the feces, the actual state of the infection in the system can be traced. Usually after a course of emetine treatment causing disappearance of amebas from the stools the mononuclear leucocyte count remains high, or may increase. Chalmers and Archibald then discontinue the treatment for a couple of weeks and, if the patient's health continues to improve, count the mononuclears again—generally still finding them high. If, however, the patient instead becomes languid, especially if there is discomfort over the cecum and ascending colon, they at once resume the emetine. In any case after a fortnight emetine is given for a few days. The treatment is then continued, the intervals of nontreatment being lengthened and those of treatment shortened, until the mononuclear count returns to normal or nearly normal in uncomplicated cases, or is reduced in cases complicated with malaria. The eosinophiles also show an increase during emetine treatment, followed by a return to normal when the condition is cured. Chief stress is, however, laid on the mononuclear count as an aid in the diagnosis of the cure of amebic infection.

The Stroganoff Treatment of Eclampsia.—N. P. Costa, in *Semana Medica* for September 2, 1915, explains that this treatment consists in acting directly on the sensory centres by morphine and on the convulsive centres with chloral. Morphine 0.015 gram is given at once and a similar dose one hour later. Two hours later two grams of chloral are given, either by mouth or by rectum, repeated in four hours, and again in six hours. The patient is kept in darkness and silence, and if any examination or even catheterization is necessary, it is done under chloroform. Labor is hastened, but not forced, while careful watch is kept on heart and respiration. Costa reports forty cases of eclampsia in which this method was used, either alone or combined with venesection. The maternal mortality was twenty-five per cent., while the fetal loss was forty per cent. He concludes that this method exercises a real controlling action on the convulsions which are the cause of death and allows of the employment of slow methods of delivery and avoidance of traumatism of the maternal tissues. Its efficacy and simplicity make it the method of choice.

Treatment of Parotid Tumors by Radium.—Reporting the apparent cure of a long standing malignant neoplasm of the parotid, Richard Weil (*Journal A. M. A.*, December 18, 1915) directs attention to the fact that it is probable that only certain histological types of parotid tumors respond to radium, others remaining resistant. In his case the tumor was of the peculiar kind known as cylindroma, which probably arises directly from the salivary gland tissue itself and constitutes a special form of adenocarcinoma. It would make for a better understanding and more rational conception of

the therapeutic uses of radium if the cases in which it was used were always described with respect to their precise histological structure and cell origin.

Chemotherapeutic Studies—American Arsenobenzol.—Jay F. Schamberg, John A. Kolmer, and George W. Raiziss (*Journal A. M. A.*, December 18, 1915) found experimentally that the only drugs which were capable of destroying *Trypanosoma equiperdum*, and trypanosomes in general in the circulation of infected animals were salvarsan and neosalvarsan. Preparations of mercury, of copper and the arsenicals, enesol and sodium cacodylate, had no noticeable effect on the blood trypanosomes when given to animals in the maximum nonlethal doses, nor did they prolong the lives of the animals. It was also found that the toxicity of the effective dose of salvarsan was decidedly less than that of mercury, owing to the relatively slight organotropism of the former. It was shown that weekly injections of insoluble mercurial salts into the muscles led to cumulation with frequent severe renal damage. The safest mode of administering mercury seems to be by inunction. Comparative animal tests were made with the German arsenobenzol and arsenobenzol made by the authors, and the domestic product did not differ from the imported one either in toxicity or trypanocidal powers. It was further shown on animals that neosalvarsan was less effective than salvarsan, a fact which agrees with the best clinical experience. The domestic arsenobenzol was given over 175 times to syphilitic patients without accident and the results obtained were indistinguishable from those obtained with the German product.

Ziehl's Fuchsin in Impetigo.—C. Ferreira reports in *Semana Medica* for September 2, 1915, twelve cases of the rapid curative action of fuchsin in skin conditions in infants. It was used in seemingly intractable cases of skin infection, including, beside impetigo, gluteal erythema and intertrigo. It was of great service in cases where there was an underlying state of malnutrition in artificially fed infants.

Tuberculin as an Aid in Surgical Tuberculosis.—Charles B. Burke, in the *Medical Record* for December 18, 1915, states that tuberculin acts especially well in tuberculosis of the bones, glands, and skin. It is well to examine the patient for other foci before using tuberculin in surgical cases so as to avoid lighting up a new focus. It is a most valuable remedy in the treatment of surgical tuberculosis where the lesion is limited and where the disease is pursuing a slow course without pronounced fever or general disturbance. It is strictly contraindicated in advanced pulmonary tuberculosis, with laryngeal, renal, or intestinal complications and high fever.

Bacterin Treatment of Certain Chronic Pyogenic Dermatoses.—Charles C. Dennie and John H. Bufford had cases of acute, furunculac, deep indurated, and comedo types, furunculosis, and sycosis vulgaris, according to their communication to the *Boston Medical and Surgical Journal* for December 16, 1915. Sixty-four per cent. of all cases treated by bacterins were apparently cured, twenty per cent. were benefited, and sixteen per cent.

received no benefit. Autogenous bacterins were superior to stock, except in furunculosis, in which no difference could be seen. A permanent cure resulted in most cases. In acne, the best results were obtained in the indurated type. The comedo type responded less favorably, and the furuncular type least favorably. The action of bacterins was erratic in the treatment of syphilis, and best in that of furunculosis. The average number of doses in successful cases was eight in acne, four in furunculosis, and four in syphilis. The usual initial dose was two hundred million, and the final, one to two billion killed organisms. The most favorable interval between doses was found to be five days in acne, four in furunculosis, and seven in syphilis. The writers consider that the bacterins are in all probability responsible for the cure in furunculosis and in syphilis, but not in acne, as this treatment cannot correct the faults which underlie the formation of these lesions, so local cleansing and attention to the diet must co-operate with the bacterins in the treatment.

Carbohydrate Therapy in Intestinal Disorders.—Distaso and Schiller, at a meeting of the Société de biologie, Paris (*Presse médicale*, August 5, 1915), recommend a resort to the bactericidal action of carbohydrates in the treatment of certain infectious intestinal disorders, such as cholera and bacillary dysentery. Experimental investigations in white rats had led them to try the administration of raw starch in five cases of obstinate diarrhea. Arrest of both pain and diarrhea was noted as soon as the treatment was begun.

Chlorine Water as a Dressing.—In a memorandum to the *British Medical Journal* (December 4, 1915) J. J. Harper Nelson briefly records his favorable experiences with chlorine water as a wash and dressing in a variety of septic and infected wounds. The chlorine water was prepared by the action of concentrated hydrochloric acid on potassium chlorate, the gas being dissolved as it bubbled through the water. By this means a solution of chlorine in water in the proportion of one in 500 was obtained. This was used undiluted as a wash, diluted three times with water for dressings to prevent irritation, and diluted five times for a throat gargle. Under this dressing a large number of flesh wounds healed by first intention. As a mouth wash in pyorrhea alveolaris the diluted solution has proved efficacious.

Diphtheria Antitoxin in Erysipelas.—H. Koller, in *Office international d'hygiène publique* for October, 1915, is credited with having observed good results in a severe case of erysipelas upon administration of diphtheria antitoxin. Two injections were made, the first of 3,000 units and the second of 1,500, followed by an injection of colloidal silver, at a time when the patient's condition seemed desperate. Improvement set in promptly after the first injection, and after the second the symptoms of the erysipelas proper could be considered definitely conquered. In view of the favorable results already obtained by Pollak in a considerable number of cases, Koller deems the antitoxin treatment worthy of serious attention in this disease. He recommends that, where colloid silver is used, it be given

after the first and before the second injection of antitoxin.

Urea as a Bactericide in Wounds.—W. St. C. Symmers and T. S. Kirk (*Lancet*, December 4, 1915) advocate the use of this substance as an antiseptic dressing for various types of wounds. The former author discovered that urea has strong bactericidal properties against a wide variety of pathogenic organisms, which are exerted in marked degree even in the presence of blood and similar albuminous fluids. Spore bearing organisms are only slightly affected by this agent. These observations were turned to practical application by Kirk, who used the dry substance as a dressing for military wounds in a large series of cases with excellent results. The use of this agent in sloughing infected wounds once in twenty-four hours, gave better results than were obtained from any other form of dressing. Its application was not followed by the usual venous congestion seen after ordinary wet dressings or continuous irrigations, but the circulation seemed to be normal and the repair of tissues to be much more rapid than usual. The drug produced no cutaneous irritation, although its initial application was usually painful. For the best results it should be applied in dry substance and the wound should be protected from the air to prevent the caking of the powder through drying after its abstraction of moisture from the tissues. It has the great advantages of being nontoxic in effective amounts and of not in any way damaging the tissues. It has proved effective in preventing suppuration in wounds occurring in persons already suffering from chronic blood infection, and it forms an almost ideal first aid dressing.

Treatment of Poisoning by Chlorine Gas.—In the course of a study of this form of poisoning, Leonard Hill (*British Medical Journal*, December 4, 1915) gives the following views with regard to its treatment. One of the most essential requisites, particularly in the severer cases, is the expulsion of the fluid from the air passages. This can be aided by posture, either the head being allowed to hang over the edge of the bed, or the patient being placed in the prone position. Artificial respiration should be resorted to whenever the dyspnea becomes excessive, and by it the fluid is expelled and aeration is improved. The administration of emetics, such as salt and water or copper sulphate solution, is useful in the less severe cases. Cyanosis can be reduced and the general condition of the patient improved by the frequent administration of oxygen or, if possible, by placing the patient in a compressed air cabinet under two atmospheres of pressure. Contrary to the prevailing opinions atropine has not given promising results in severe cases. Every attention should be given to the prevention of pneumonia, but in severe cases its prevention has not been possible.

Treatment of Paresis by Injections of Neosalsvars into the Lateral Ventricle.—Graeme M. Hammond and Norman Sharpe (*Journal I. M. A.*, December 18, 1915) discuss the theoretical advantages of intraventricular injections in the treatment of general paresis, of which the most important is

the fact that by this method the entire brain is well bathed in the drug, which cannot be accomplished by any other means of administration. Animal experiments, using dyes, proved the extensive distribution obtainable by intraventricular injection, the dye having not only extended over the entire brain, but also having fairly rapidly passed down the cord even into the cauda equina. Using neosalvarsan dissolved in serum according to the method of Marinesco doses of as high as 0.6 mgm. were given intraventricularly to three paretic patients. The injection was made with a trocar and cannula directly into the lateral ventricle after from ten to twenty c. c. of fluid had been allowed to escape from the ventricle. The injections were made slowly, gravity alone being the injecting force. No severe reactions were seen and the therapeutic effects have so far been favorable. The injection was simple, a small trephine opening being made near the bregma, and the cannula was passed into the ventricle through the silent area of the brain. Subsequent injections were made without anesthetic, except local skin infiltration. Compared with the dangers of the disease, the method of treatment was of little hazard.

Continuous Intestinal Antisepsis in the Treatment of Simple Goitre.—F. Messerli, in *Revue médicale de la Suisse romande* for March, 1915, reports good results in eleven cases of colloid or parenchymatous goitre from the daily administration, for a period of a few weeks, of drugs such as benzonaphthol, thymol, phenyl salicylate, etc. The first named remedy was given in two cases in the dose of seven and one half grains (0.5 gram) three times a day, put up in cachets. Thymol was given in two cases in the dose of one and one half grain (0.1 gram) twice daily, mixed with milk sugar in cachets. Phenyl salicylate was given in three cases in the dose of fifteen grains (1 gram) twice a day, in tablet form. Creosote was given in two cases in the dose of three quarter grain (0.05 gram) three times a day in pills. In the remaining two cases laxative tablets, each containing three quarter grain (0.05 gram) of aloes, one and one half grain (0.1 gram) of resin of jalap, and seven and one half grains (0.5 gram) of rhubarb, were given every evening. The results were similar, whatever drug was used, and consisted in the diminution of the neck circumference of from 2.5 to 5.5 cm. in a period of from twenty-one to thirty-eight days, with the exception of one case where the laxative combination was used, in which a diminution of but 1.5 cm. was noted. Marked improvement in the appearance of the neck or complete subsidence of the thyroid from view, was always obtained, except in the single case just referred to.

These results are taken to confirm those reported from India by MacCarrison, who, after inducing goitres by ingestion of polluted water, caused them to disappear by administering intestinal antiseptics, such as thymol, or anticolon bacillus and antistaphylococcus vaccines; likewise the observations of Gaylord and Plehn, who brought about slow regression of goitres in fishes by adding minute amounts of mercury bichloride and potassium iodide to the water of the ponds in which they were kept. The laxative tablets were, of course, not expected to

exert an antiseptic influence, but were intended to act mechanically, diminishing the number of bacteria in the bowel. From the results obtained it would appear that slight, continuous purgation has a useful therapeutic effect in soft goitre. Whether the antiseptic drugs act directly on the specific goitre producing agency in the bowel, as MacCarrison holds, or act merely by lessening the number of the common microorganisms of the intestine, the toxic products of which might induce further enlargement of an already disordered thyroid, cannot as yet be definitely stated.

Pollen Therapy in Hay Fever.—J. L. Goodale, in the *Annals of Otology, Rhinology and Laryngology* for June, 1915, remarks that since individuals differ widely in their degrees of sensitization to a certain pollen extract, each case must be examined by different dilutions to determine the correct strength which it is safe to use. A series of superficial scratches is made on the skin of the arm, and a drop of the pollen extract to be tested is gently rubbed into a scratch. After five to fifteen minutes, the positive reactions are indicated by varying degrees of local disturbance. The intensity of the skin reaction does not always seem to be proportionate to the clinical symptoms of hay fever. In children, skin disturbances are relatively less pronounced than in adults.

After the exciting pollen has been ascertained by the skin test, a second series of scratches is made at a distance from the first, and different dilutions of the pollen extract in question are applied in order to determine the dose. The dilutions may be most conveniently made by adding a certain amount of the stock solution to alcohol of the same strength, and a twenty-five per cent., ten per cent., one per cent., or even weaker dilution of the original extract is applied to the series of scratches. The initial dose is determined by the dilution which fails to excite a definite skin reaction and for the sake of causing as little smarting from the alcohol as possible, the quantity of material injected should not exceed five or ten drops. It is advisable to postpone the injection of even a small amount until after the reaction from the first skin tests has subsided, since considerable absorption from these probably takes place, and the introduction of an additional amount may cause systemic disturbance. The injections may be made at intervals of two days to a week, increasing by a few drops at first, and later by the absorption of stronger percentages of the stock solution. After five or more injections have been given, the strength may be increased with greater rapidity. To guard against anaphylactic shock, it is a wise precaution to make the initial dose approximately one tenth of that which the patient can theoretically receive with safety. The results accomplished are determined by the behavior of the skin reactions and the patient's observations regarding his condition, the former being the more trustworthy. The time required for the diminution of the skin reactions varies within wide limits, depending both upon the plant tested and the patient himself. Coincident with the diminution in the skin reactions, there seems to occur an increased tolerance of the exposed mucous membrane to the pollen of the plant employed.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT

July 12, 1915.

Clinical and Pathological Studies of the Bile (concluded), by Emil Medak and Bruno Oskar Pribram.—By the duodenal tube for the removal of samples of bile, valuable clinical and pathological information may be obtained. The bile pigment was found to be more or less markedly increased above the normal in all conditions in which there was an increased destruction of the erythrocytes, such as hematogenous jaundice, the anemias of hemolytic origin including pernicious anemia, Banti's disease, etc. A marked increase in the bile pigment under such conditions was found to be a certain indication for splenectomy, since that operation prevented further hemolysis of the red cells. Following splenectomy the bile pigment fell to normal and the red cells increased in number. During menstruation there was found to be a physiological destruction of red cells with increase in the bile pigment. The cholesterolin content of the bile was found to be raised in diabetes, catarrhal jaundice, and hypertrophic cirrhosis of the liver. Since hypercholesterinemia was almost always associated with a diminished excretion of cholesterolin in the bile, the former condition was believed to be due usually to retention. During pregnancy the cholesterolin of the bile fell from month to month until near term there was only a trace present.

MEDIZINISCHE KLINIK.

October 31, 1915.

Experimental Investigations of Weil's Disease, by Ulenhuth and Fromme.—It was found possible to infect guineapigs with blood obtained during the early stages of Weil's disease, and the animals showed symptoms analogous to those seen in man as well as a typical postmortem picture. The urine of patients also proved infectious to these animals. The virus could also be demonstrated in the blood, urine, bile, and organs of severely infected guineapigs. Guineapigs could also be infected through the scarified skin or the normal conjunctiva. Defibrinated guineapig blood retained its infectiousness as long as three days. The virus could not be demonstrated in cultures, however made, and was believed to fall into the class of the filterable viruses on that account. The possibility of infecting guineapigs with the blood of patients provides for the certain diagnosis of doubtful cases of infectious jaundice as well as opening up possibilities of studying the peculiarities of the causative agent and methods of treating the disease in man.

BULLETIN DE L'ACADÉMIE DE MEDECINE

October 31, 1915.

Diagnostic Value of the Tendon Reflexes Tested during Chloroform Anesthesia, by J. Babinski and A. Frémont. The stage of exaggeration of the tendon reflexes appears to be very inconstant and slightly marked in chloroform anesthesia. All action of the will being in abeyance in the anesthetized subjects, the authors conceived the idea of inducing anesthesia to ascertain, in doubtful cases

of nervous disease, the precise state of the tendon reflexes, unmodified by voluntary contractions of the muscles, which may easily increase the amplitude of the reflex movements or even cause an epileptoid spasm, thus misleading the observer. Special attention was paid to cases of nervous disorder arising through spinal irritation due to an osseous, articular, or periarticular lesion. Though typically manifested in exaggerated tendon reflexes, amyotrophic changes without reaction of degeneration, and pain, some of these cases are with difficulty distinguished from purely psychic, hysterical, or simulated disturbances. This was the case in a number of soldiers referred to the authors for study, the extent of the functional impairment being out of all proportion to the objective signs. These patients for the most part experienced marked difficulty in walking, with rigidity and external rotation of the limb on the affected side, yet sometimes with only a slight exaggeration of the tendon reflexes. Under chloroform anesthesia, exaggeration of the tendon reflexes exclusively on the affected side was noticed. In some cases, even in the stage of muscular relaxation, after disappearance of all the other tendon and skin reflexes, an intense and prolonged patellar clonus could be elicited on the affected side. Differentiation of a true, organic disease from the manifestations of nervousness, suggestibility, or purposive exaggeration was thus in many instances rendered possible.

PRESSE MÉDICALE.

October 14, 1915.

Toxic Effects of Intestinal Parasites, by D. E. Paulian.—Alcoholic extracts and macerations of various intestinal parasites—*Tænia cucumerina*, *ascaris*, *oxyuris*, and *trichocephalus*—were prepared and injected into guineapigs. Fever, loss of weight, an eosinophilia up to forty-four per cent., and a mononuclear leucocytosis up to seventy per cent., with corresponding diminution in the polymorphonuclears, were observed. A single injection of a maceration of parasites was found sufficient at times to kill the animal. Post mortem, the spleen was found enlarged and congested, and the kidneys were hyperemic, with swollen epithelium in the convoluted tubules. The lungs showed interstitial pneumonia, the brain hyperemia and slight edema, the liver similar changes, and the adrenals, congestion with intertrabecular hemorrhages. In all microscopic sections the signs of inflammation, with a striking eosinophilia, were seen. Paulian considers both the nervous disturbances and the eosinophilia of parasitic intoxication to be the result of anaphylactic processes.

Abortive Tetanus with Prolonged Incubation Period and Course, by Henri Claude and J. Lhermitte.—Cases of tetanus with an incubation period exceeding a month in duration are exceptional. The authors, however, have recently met with six cases in which the period exceeded two months and which presented such symptomatic peculiarities as might readily mislead the observer. The symptoms began with slight stiffness in the wounded extremity or the masseters, which was not sufficient to interfere with the patient's occupation. Stiffness of the neck and sometimes of the trunk next appeared, but the

patient could still readily walk and remained in excellent health. The patients were referred, not for tetanus, but for neuropathic contractures. The facies showed a peculiar sharpness, with pinched mouth and prominent sternomastoid and platysma muscles, especially upon opening the mouth. Abnormal tonicities in the lower extremities was sometimes found, but the upper escaped unless the original injury had been sustained there. Excessive excitability of the muscles and nerves to the faradic and galvanic currents was a marked feature, the supinator longus contracting with a 0.2 milliampere current, whereas 1.5 milliampere is required under normal conditions. Exaggeration of the tendon reflexes was also observed, sometimes even ankle clonus and a jerk of the sternomastoid or cervical trapezius muscles when percussed. These conditions persisted for several weeks after recovery and proved to be important diagnostic features in the distinction between tetanus and hysterical contractures. In five cases a mild wound had preceded the tetanus, but in one the condition followed merely a typical attack of facial paralysis, after which was noted a hypertonicity of the muscles of mastication, then of the neck muscles, and finally exaggerated reflexes in the lower extremities and ankle clonus. Recovery took place in all the cases without any treatment except the administration of sedative drugs, but was very slow, and interrupted by more or less severe relapses. In five instances a preventive injection of antitetanus serum had been given soon after the reception of the original wound.

A New Diagnostic Sign in Paralysis of the Ulnar Nerve, by J. Froment.—Stress is laid on deficiency in the prehensile function of the thumb and first finger as an indication and gauge of ulnar paralysis, including its influence in causing disability in the occupational sense. In the detection of a weak prehensile function signifying paresis or paralysis of the ulnar nerve, Froment has the patient grasp some thin object, such as a folded newspaper, first between the thumb and forefinger of the normal hand, then between the thumb and forefinger of the affected hand, while Froment himself exerts strong traction on the other end of the thin object. Where the ulnar nerve and the prehensile muscles it supplies are normal, the object will be strongly grasped with the thumb lying flat against it, opposite the likewise extended forefinger. On the paralyzed side, on the other hand, the thumb will be found flexed, and, no matter how much force the patient intends to apply, will be in contact with the object only at its extremity, i. e., with its pulp, and there will be a tendency for the object to slip from his grasp if some degree of force is applied. The reason for this lies in that forcible prehension is accomplished with the adductor of the thumb and the internal portion of the short flexor, which are supplied (except sometimes the deep head of the flexor) by the ulnar nerve. In feeble, delicately adjusted prehension, on the other hand, the adductor muscle is not used, but almost exclusively the flexors of the thumb and index finger, supplied instead by the me-

dian nerve. Thus, when the ulnar is paretic or paralyzed, only the feeble, delicate type of prehension is possible.

RIFORMA MEDICA.

November 21, 1910.

Particular Form of Pulsus alternans from the Use of Atropine and Amyl Nitrite, by A. Fulchiero.—The most plausible hypothesis of this condition is that the acceleration of rhythm produces fatigue of the myocardium in hearts already predisposed. This fatigue diminishes the normal contractile capacity so that two normal systoles are followed by the skipping of one, during which time the heart muscle regains its strength. It is impossible completely to exclude a concomitant direct action of atropine on the heart fibre. Amyl nitrite, when inhaled, produces such a rapid and intense dilatation of the bloodvessels with lowering of blood pressure, as to disturb both the rhythm and the force of cardiac contractions.

November 27, 1910.

Diseases of the Blood and Products of Intestinal Putrefaction, by A. Cantelli.—After prolonged research, Cantelli concludes that products of intestinal putrefaction, especially indol, may produce grave blood alterations, such as diminution of red cells, of hemoglobin, and of leucocytes with changes therein. These products may also bring about an anemia of the pernicious type or again a chloranemia, but never a true chlorosis.

Primary Intestinal Tuberculosis, by M. Pen-netta.—This case, in a man of twenty-one years, showed gastric atony, colicky diarrhea, meteorism, and enterorrhagia. The cutaneous tuberculin reaction was atypical, while tubercle bacilli could not be found in the stools. Post mortem, tuberculous ulcers were found in the lower part of the ileum and in the cecum; the mesenteric glands were enlarged, and there were adhesions between the visceral and parietal peritoneum. No tuberculous lesions were found in other organs.

SEMANA MEDICA

September 2, 1910.

The Mendez Biological Theory of Immunity, by P. Ivanishevich.—Mendez gives the name, animalization, to the process of breaking up by the leucocytes of extraneous material introduced into the organism. He calls lysins the products of digestion of toxins, which lysins act by affinity on the body cells, resulting either in death or recovery, in the latter case by production of antitoxins. His theory supposes that the introduction of antigens into the organism gives rise to the formation of secondary antibodies or lysins and tertiary antibodies or haptins. Haptins are not pathogenic, while lysins are decidedly so, and if a vaccine is properly prepared there should be no lysins produced and hence no negative phase after injection.

BRITISH MEDICAL JOURNAL.

December 4, 1910.

A Supposed Soluble Toxin from Artificial Culture of the Bacillus of Malignant Edema, by G. Barger and H. H. Dale.—It has been stated that a soluble toxin could be isolated from the muscles of

infected guineapigs and from artificial cultures of the organism on meat media, and use has been made of this supposed fact in the attempted production of an immunizing serum. Painstaking studies made with a fresh culture of this organism did yield toxic substances, but chemical investigations of the toxic fluid showed the poisonous substances to be volatile nitrogenous bases. These substances were not specific bacterial toxins but were produced from the meat protein through the marked proteoclastic and "desaminating" action of the organism. The substances producing the toxic actions were ammonium salts of fatty acids produced by splitting off of the amino groups from aminoacids liberated by destruction of the protein. These facts prove the futility of attempting to obtain an antitoxin to the products of the growth of the organism of malignant edema.

BOSTON MEDICAL AND SURGICAL JOURNAL.

December 9, 1915.

Examination and Prophylaxis for Syphilitic Patients and Their Families, by Helen M. Wright.—The methods of investigation used consisted of a free clinic, where a physical examination and blood tests were given; a routine follow up system for all syphilitic patients, including examination and prophylaxis for the members of their families; a uniform method of recording families of syphilitic patients by card catalogue; a special history blank for the families of syphilistics whereby uniform data can be collected; a social worker who investigated cases and arranged for payment for salvarsan treatment when necessary; instructions to patients with active syphilis how to safeguard their families; instructions in preventive and therapeutic measures, and an effort to show the importance of keeping children of syphilitic parents under medical observation. These methods seem not to have been broad enough, so the following recommendations are made: 1. A system by which every syphilitic patient at the Psychopathic Hospital shall have a social history obtained from outside sources. 2. The use of the Wassermann test in suitable cases and a standardized method of recording physical stigmata for all children in the public schools. 3. A public (board of health) registration of all persons having a history of syphilis, either by name or by number. 4. A State appropriation, whereby salvarsan treatment may be used for therapeutic and research purposes. 5. Methods of providing public presentations of scientific data in a form which the lay public can interpret for itself. 6. A health centre, including evening clinics, men's and women's clubs, conferences, and exhibits where information under medical supervision may be given regarding syphilis and allied diseases, as well as other mental and social hygiene problems.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Trichinosis with Larvæ in the Spinal Fluid, by Leon Bloch.—The patient, a middle-aged man, came under observation after having had pains in his arms and legs for four weeks. He appeared prostrated and suffered much pain on moving. The neck was markedly rigid, the intercostal muscles

and abdomen were tender, and Kernig's sign was present without change in the knee jerks and without a Babinski phenomenon. Spinal puncture yielded a fluid, which was clear and under high pressure. Both the Nonne and Noguchi tests were positive with this fluid, and in it were found about a dozen actively motile trichina larvæ. Under vigorous catharsis to remove the parasites from the intestinal tract the patient made a good recovery.

Relation of Heat to Summer Diarrhea of Infants, by Adrien Bleyer.—A careful and extensive study of the relation between the incidence of infantile summer diarrhea and the temperature showed that there was a direct relation. More than half of the affected babies were attacked when the temperature was 90° F., although during the two summers through which the studies were conducted had only thirty-one per cent. of days with such high temperatures. That the high temperature was largely responsible was further shown by the fact that a considerable proportion of the affected infants were exclusively breast fed, while others received only certified milk.

MEDICAL RECORD.

December 18, 1915.

Blood Pressure, with Special Reference to the Diastolic, by Lewis F. Mackenzie.—Mackenzie considers that the diastolic is the fundamental pressure on which to base interpretation of blood pressure readings. One reason is that systolic pressure is the expression of intraventricular pressure and subject to wide variations; further, being intermittent, it is less liable to produce pathological changes in the heart and arteries than the constantly high diastolic pressure. The diastolic pressure or peripheral resistance is much less influenced by emotion, it is constant, it is the pressure which the heart has first of all to overcome, and the one which causes constant strain on the aorta and aortic valves.

Stigmata of Tuberculosis, by Charles J. Holeman.—After a careful investigation of many series of statistics with special reference to alcoholism, Holeman concludes that stigmata of degeneration are also those of susceptibility to tuberculosis. When these stigmata are extreme in tuberculosis they indicate a less favorable prognosis. Stigmata of degeneration and defects of the central nervous system and pulmonary apparatus have a common predisposing origin, alcohol ranking high.

Metastatic Carcinoma of the Brain with Unusual Ocular Symptoms, by S. H. Brown.—In this case the outstanding condition was an intractable corneal ulcer, which later proved to be due to a carcinomatous metastasis in the brain secondary to malignant disease in the sigmoid colon.

PEDIATRICS.

Streptococcic Sore Throat, by Gaylord C. Hall.—A cat acquired sore throat and other symptoms which necessitated its destruction. Ten days later, the man of the family in which the animal had been a pet also acquired sore throat, which disappeared in a few days under simple treatment. Two weeks later, his wife became similarly affected, and one

week after the onset, she suffered from great dyspnea, with paralysis of the soft palate and marked edema of the glottis. The entire laryngeal region was so swollen as to leave but a chink for respiration. Multiple puncture and diaphoresis, aided by the bronchoscopy posture, sufficed to avoid tracheotomy. Ten thousands units of diphtheria antitoxin were given with great improvement; a second dose of the same size was also given and recovery followed. Cultures from the throat showed streptococci only. Later, the only child in the family had an acute cervical adenitis, which was relieved promptly by the administration of antistreptococcic serum.

SOUTHERN MEDICAL JOURNAL.

December, 1915.

Abscess of the Liver, by John B. Elliott, Jr.—Elliott believes that *Amoeba histolytica* is the primary cause of abscess of the liver in the great majority of cases, at least in the south. The most constant symptoms are pain in the region of the liver, loss of weight, and increased leucocyte count. The aspirating needle used for exploration should be at least five inches in length. Exploratory laparotomy is justifiable in doubtful cases. Emetine should be used in all cases as a regular postoperative measure.

Importance of the Fauical Tonsil as a Portal of Entry in Tuberculous Cervical Adenitis, by Byrd Charles Willis.—Tonsils that appear normal may have microscopic tubercles. They, as well as adenoids, should be suspected to be the atria in all cases of tuberculous cervical adenitis, except when there are other demonstrable lesions about the head and neck. Early tonsillectomy frequently induces absorption of the glandular involvement and prevents or reduces the frequency of further systemic infection.

Proceedings of Societies.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-first Annual Meeting, Held at Lexington, Kentucky, October 19, 20, and 21, 1915.

The President, Dr. HUGH CABOT, of Boston, in the Chair.

The Principles of Cleft Palate Surgery.—Dr. JOSEPH RILUS EASTMAN, of Indianapolis, said that failure in palate operations could often be traced to indifference or uncertainty on the part of the operator as to how provisions could be made for arterial communications into the flaps. Naturally in deciding a case of whether lateral incisions were necessary, the principle that there must be no tension upon sutures could not be slighted. No sutured cleft palate would heal if the coaptation sutures were under tension. However, lateral incisions were not often useful in the matter of preventing tension. If the flaps were freely and completely elevated from the hard palate, the soft palate split along the edge of the cleft, and the tensor palati aponeurosis divided, there was usually no trouble in bringing the lateral halves of the palate together without tension, and when they were thus drawn

together they were red and vascular and in the most favorable condition for union.

In turnover flap operations, they severed practically all of the arteries which entered the flap, except the very small branches which entered along the margin of the cleft where the flap was turned over. Such poorly nourished flaps did not always die nor did they always live. Certainly their viability varied with their blood supply, other things being equal. A surgeon was unfair to his patient and himself if he failed to minimize hemorrhage in every possible way during cleft palate operations. Avoidance of injury to the palatal vessels and the consequent hemostasis were of obvious value in keeping the field clear for accurate work. This was not a slight advantage. Often in a small mouth and irritable pharynx the presence of blood sufficed to make a "dismal swamp" operation of what otherwise would be a comparatively simple affair. But as essential as the blood-free field was to precise work, there was a much more important aspect of the hemorrhage question. The hemorrhage not rarely led to a fatal result, perhaps through shock, perhaps through swallowing of blood with its fever inducing constituents, perhaps through the general effect of lowered vitality. For many reasons that operation was best which could be performed with the least injury to bloodvessels.

In wide palatal clefts the prospect of success without lateral incisions might not seem good. They might readily receive the impression that there was little or no palatal tissue to be freed and elevated by scissors-spreading dissection beginning at the edge of the cleft, the temptation to make lateral incisions in such a case being great. However, it might be said that soft palatal tissue was more abundant on the sides, even though widely separated by the cleft, than would be imagined by those who did not make it a practice to relax, unfold, and develop the lateral halves of the cleft palate by blunt dissection, beginning at the cleft margins. The palatal tissue was there. It was their duty to free it, smooth it, and thus broaden it. It certainly was not in the line of their duty to ruin its viability by severing its vessels in making lateral incisions.

Dr. TRUMAN W. BROPHY, of Chicago, said the subject of cleft palate and harelip had been less considered than any other in the domain of surgery by general surgeons. There was no deformity to which the human family was subject that was more conspicuous, more distressing, more dreaded than cleft palate and harelip, yet general surgeons had very largely passed it up. In operating for the correction of cleft palate and harelip the surgeon should so perform his operation as to leave the parts in just as nearly a normal condition as possible.

Arteriosclerosis of the Uterine Vessels.—Dr. JOHN W. PRICE, of Louisville, stated that a careful study of sections of this case was suggestive that the hemorrhages were the result of rupture of diseased arterioles in the submucosa. The evidence in favor of this view was, first, the arterioles in the submucosa were sclerosed as well as the larger vessels; second, there were areas beneath the submucosa containing recent hemorrhages undergoing fibrosis; third, there were other areas beneath the submucosa which appeared to be old hemorrhages

which had undergone fibrosis; fourth, there was seen in other places outside the vessels, evidence of repair; fifth, a patient had a single profuse hemorrhage three years before operation, and had no unusual bleeding during the following two years; a single ruptured uterine vessel would explain this hemorrhage as clearly as a case of hemiplegia could be explained by the rupture of a cerebral vessel.

From the consideration of such a small number of cases they could not arrive at any conclusions, but it seemed to him worth while reporting his findings as it might lead others who also had a small number of cases, to report theirs, and eventually a great mass of material would be accumulated from which conclusions might be drawn. Simpson had diagnosed the condition four times before operation. He was reasonably certain of the diagnosis in most of his cases. The history of the case, the character of the hemorrhages, and the appearance of the patient were the greatest aids in making the diagnosis in the absence of finding a palpable tumor. Where there was any doubt as to the presence of a cancer of the body of the uterus, he suggested the use of the curette or a hysterectomy. Where the bleeding had been as serious as in his case, no time should be lost in curetting, and the uterus should be removed as quickly as possible, and if found after removal to be in a malignant condition, then a more radical operation at once could be performed. All his cases except the last one had been treated previously by palliative and so called conservative methods, as had been the majority of cases reported. He felt that a continuance of palliative treatment for too long a time subjected the patient to unnecessary danger, and if the patient was suffering with a malignant condition, much valuable time was lost.

Recent Results in the X Ray Treatment of Menorrhagia, Dysmenorrhea, and Uterine Myoma.

—Dr. SIDNEY LANGE, of Cincinnati, said the x ray treatment of menorrhagia and uterine fibroids by the production of the artificial menopause had received a new impetus by the invention of the Coolidge tube. While results obtained by the use of the older style of tube were in a measure satisfactory, yet they were difficult and tedious to elicit and failures were common. If the proper technic was employed, the effect of Coolidge tube radiation upon the ovaries was the most certain of medical phenomena. The difficulty of selecting cases and excluding the possibility of malignancy was the only just criticism that could be directed against this method of therapy. The present paper was based upon fifty consecutive cases of menorrhagia, dysmenorrhea, and uterine fibroids treated by x ray. Satisfactory results were achieved, an artificial menopause, apparently permanent, occurring in every case regardless of the age of the patient. These cases were referred from many different sources, and while only ordinary care and skill was employed in their selection, malignancy had not developed in any case either during or following the treatment.

In this series of fifty cases, nineteen were treated because of persistent menorrhagia. The ages of the patients varied from seventeen to fifty years. The minimum x radiation required to bring about a permanent menopause was one treatment (100 X)

in a woman of fifty-nine years. The greatest amount given any patient was 800 X (eight treatments), which was required to abolish the ovarian function in a girl twenty years old. Another patient of seventeen years of age required 600 X (six treatments). A woman of thirty-two required 500 X. With increase in age of the patients the amount of x radiation required to abolish the menstrual flow rapidly decreased. Thus patients around forty years required 500 X (five treatments), while between forty-five and fifty years 100 X to 400 X (one to four treatments) usually sufficed.

Dr. LEWIS S. MCMURTRY, of Louisville, stated that the use of the x ray in treatment of diseases of the pelvic organs in women was new, but the present operative treatment of fibroid tumors of the uterus was the most successful of all operations known to surgery. The mortality from surgical treatment was lower than that from any other major operation, consequently there ought to be solid and substantial results from any treatment that was to take the place of the surgical treatment. In Professor Kronig's cases the patients came for treatment a long time, and while the symptoms were ameliorated in those cases he saw under Kronig the tumor had not disappeared.

Dr. CHANNING W. BARRETT, of Chicago, in sizing up the cause of hemorrhage from the uterus, said they should remember the uterus was an organ unlike other organs, in that it had a physiological hemorrhage, and any departure from that regular bleeding might be just a little change from the normal and the cause might be very slight. In weighing the different causes of hemorrhage they had to recognize that there was a material resistance to treatment due to a change in the bloodvessels themselves; often coming on at about the menopause, they should remember the uterus was a senile organ at that time. Instead of deciding that the uterus should come out if it was malignant, and ought to remain if it was not malignant, they should bear in mind that many of these uteri had to be removed at that time.

With reference to the x ray treatment outlined by Doctor Lange, he did not know that it would be satisfactory for those patients as regards the stoppage of hemorrhage, because they had been followed only until the hemorrhage stopped. The method of dealing with fibroid tumors of the uterus by taking out the ovaries in aiming to bring about cessation of the menses and an early menopause, had proved entirely satisfactory more than thirty or forty years ago, because there was a time in surgery when it was considered safe to take out the ovaries and decidedly dangerous to remove the uterus, and in that period of surgery the abdomen was opened and healthy ovaries were removed in order that the diseased uterus might give less trouble. He did not believe that the treatment which the doctor outlined would stand the test of time.

Dr. THOMAS J. WALKINS, of Chicago, as a remedy for temporary use in these cases, suggested an old but very efficient one, which consisted in packing the uterus with gauze saturated with iron, Monsell's solution or the tincture. The great advantage of this was that it was usually very efficient, and it was the only packing that could be left for

a long time without becoming offensive. It could be left for a week without disturbing conditions or developing odors.

Doctor LANGE did not offer this method of treatment for fibroid tumor of the uterus as a substitute for surgery, but for patients that either refused operation or for those for whom operation seemed inadvisable.

Kidney Lesions Diagnosed with the Aid of the Cystoscope and X Ray.—Dr. COURTNEY W. SHROPSHIRE and Dr. CHARLES WATTERSON, of Birmingham, Alabama, said their exact knowledge concerning lesions of these structures would depend on two factors, first, the cystoscopic examination including functional test and uranalysis; second, the x ray examination. The cystoscopic examination and functional test, together with careful uranalysis, was by far the most important. Next would come the radiographic examination and then would be placed in line the physical findings and the patient's history.

Within the past month in one of their hospitals a surgeon exposed the right ureter through its entire course in a search for stone which he was unable to find. The appendix was said to be diseased and was removed. No radiographic or cystoscopic examination was made or requested. They would have errors of commission on the part of the cystoscopist owing to lack of judgment in interpreting the results of his examination or to the failure of the radiologist properly to read his plate. Personally they placed little faith on shadows said to be within the kidney or ureter, unless they were shown positively to be within one of these structures by means of the shadow catheter, pelvic injection, or the stereoscopic plate.

Pelvic injection, one of the most valuable means at their command for diagnosing lesions of the kidney, was vigorously attacked some years ago by members of the medical profession who had very bad results, but since these results had been shown to be due to faulty technic, this procedure was no longer in ill repute. It was, therefore, the duty of the cystoscopist to insist upon procedures which were safe and painless when properly performed before having numerous x ray plates made, which were worthless even though the suspicious shadows were shown.

Caudal Anesthesia for Prostatectomy and in Other Genitourinary Surgery.—Dr. BRANSFORD LEWIS, of St. Louis, reported seventy-seven cases in which this method of anesthesia was used with gratifying results. The method was far preferable to the other methods which entailed difficulties and disappointments.

Dr. CHARLES E. BARNETT, of Fort Wayne, thought the mortality of prostatectomy was due more to general anesthesia than any other one thing, on account of the deficiency of the kidneys in these cases, and the sooner they could get away from general anesthesia, the less the mortality would be following prostatectomy, no matter what route they adopted in removing the prostate.

Dr. RICHARD A. BARR, of Nashville, said some three years ago, Doctor Brown, of Nashville, noticed an account in a German medical journal of this method of anesthesia, and he immediately adopted its use and advocated it, and it had been

quite generally used in his city by a number of different surgeons for rectal work. He had done a little rectal work and a few perineorrhaphies by the method and had found it entirely satisfactory.

Dr. FILIPP KREISSL, of Chicago, in regard to local anesthesia and nerve blocking, wished to recommend that the members of this association, who were interested in this subject, buy the book of Doctor Braun, a German physician, which was published four or five years ago, from which most physicians had obtained their information with regard to this method of anesthesia. The methods of local anesthesia for operations on the pelvis, bladder, and prostate were intraspinal, epidural or sacral, and parasacral. The dangers of injecting the epidural canal with novocaine, or cocaine, or the dangers of nerve blocking with the use of novocaine, were grossly exaggerated. If they kept well within established and safe limits of this drug, not using more than a definite quantity of a certain concentration, there was absolutely no danger from the use of novocaine.

Dr. STANLEY G. ZINKE, of Richmond, Kentucky, said as to caudal anesthesia, the sacral canal was a cavity or sac, and they required from thirty to ninety c. c. of the agent they used before they got the anesthetic effect. Why? Because the capacity of these little sacs differed. The anesthesia was due entirely to pressure and not at all to the novocaine, one half of one per cent. It made no difference what quantity was injected, it was the pressure that did the work and not the cocaine or the novocaine.

When Is a Prostatic Fit for Operative Procedure?—Dr. CHARLES E. BARNETT, of Fort Wayne, said after the maximum benefit from thorough preoperative treatment found the patient below par in fitness for operative procedure, the question of the anesthetic given should be the most considered. The less the fitness, the less the general anesthetic. Local anesthesia, when possible, and to the greatest degree when not possible, was the one to be chosen. It appealed to the speaker that if the general practitioner, who was the most deeply interested party in his patient's welfare, investigated the results of these simple tests, which were so positive for a favorable or fatal ending, then all parties concerned in the operation would be benefited.

Dr. BEN MORGAN, of Chicago, said the effect of local anesthesia on the kidneys was less deleterious. Local anesthesia in surgical operations upon the prostate should come first in conjunction with a general but mild anesthetic, and what general anesthetic should be preferred? Chloroform? No. Ether? Doubtful. Nitrous oxide? Yes.

Dr. W. D. HAINES, of Cincinnati, said they were living under very high pressure, mental and physical, but the surgeon's duty, especially in this type of cases, was to save life, not to save time. The preoperative management of prostatic disease was infinitely more important than what the surgeon was going to do at the operating table. It was not hard to take out the prostate. Almost any general surgeon could do it, but the experienced man who had handled many cases would have a high mortality if he did not heed well the warning this paper carried to us.

Dr. J. B. TAUBERT, of Lexington, was favorably impressed with nitrous oxide as an anesthetic. His experience with ether in doing prostatectomy had convinced him that in old men, where the system was run down, it was better to forego the operation than to risk a general anesthetic as ordinarily given, whether it was ether or chloroform. The safest method was to do a two stage operation under local anesthesia.

(To be continued.)

Letters to the Editors.

DIABETES AND THE SPITTING HABIT.

SAN ANTONIO, TEXAS, December 20, 1915.

To the Editors:

Having recently had in charge a male patient suffering from diabetes, my attention was called to a habit which seems almost universal among men, and which may well account for the fact that the disease is much more common in men than it is in women.

One of the causes of the disease is given as a lesion or degeneration of the islands of Langerhans—but the cause must be back of that; something must have caused the degeneration of the islands. The ultimate causes of most of the chronic diseases of nutrition afflicting the human race, must be sought in the habits of the race.

It seems to be established that the pancreas, adrenals, thyroid, etc., form a combination which must be in correct balance in order to work perfectly. I wish to beg that the salivary glands also be admitted to this combination, and to suggest that since these glands are largely under the control of the will, they are forced to become the primary cause of, let us say, diabetes, in cases where the islands of Langerhans are found degenerated.

It seems to be the main ambition of the male person constantly to stimulate these same salivary glands, and to squirt away the saliva. The assiduity and eagerness with which this form of self abuse is followed, are scarcely excelled by the most confirmed self pollutionist.

I timed a man who was revelling in this form of defilement, using tobacco to stimulate the glands, and he discharged seventeen times in five minutes. It is very conservative to estimate the amount of saliva discharged each time at one dram, and on this basis, and at this rate, in a day of twelve hours, the man would discharge a little over nineteen pints.

I suppose that not many men bleed themselves at quite that rate, but certain it is, that much saliva which is always intended for internal use, and containing important chemical constituents, is drawn off and wasted.

So I would suggest that the relation of this terrific waste of saliva, to diabetes, be investigated. Women do not waste the fluid so constantly, and they are not so frequently diabetic.

EMMA T. MILLER, M.D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Vagotonia. A Clinical Study in Vegetative Neurology. By Dr. HANS EPPINGER and Dr. Leo HESS, of Vienna. (Nervous and Mental Disease Monograph Series, No. 204.) Authorized Translation by W. M. M. J. A. M., M.D., and SMITH ELY JELIFFE, M.D., Ph.D. New York: The Nervous and Mental Disease Publishing Company, 1915. Pp. 110. (Price, 1.00.)

The pathology of the central and peripheral structures of the central and peripheral nervous structures is now fairly well understood, thanks to the intimate association of physiologists, pathologists, and clinicians, but the important domain of the conditions between the two remains almost unknown ground. A most interesting paper by Eppinger and Hess published the results of their clinical and phar-

macological researches on the physiology and pathology of this complex system of nerves and ganglia. Their work was published in German, however, and therefore remained beyond the reach of many who were unfamiliar with that language. The present volume, therefore, is more than welcome as a means of acquainting the medical profession more widely with the important work of these acute observers. It should be welcome, also, to those who can read German, for it is far easier to grasp the precise meaning of new subjects when they are discussed in one's native tongue, than when couched in a foreign language. Both the translators and the publishers are to be thanked for their efforts, and the best method of expressing this gratitude would seem to be by making the American monograph a success. Although the vegetative nervous system has two great divisions, the functions of which are almost diametrically opposed, the portion of it which is of greatest clinical interest is that embraced under the denomination of the "autonomic system," or, as the authors prefer to call it, the "extended vagus." The term "vagotonia" implies a disturbance within the system of the extended vagus which partakes of the nature of an increased activity or an increased sensitiveness of response to ordinary stimuli. Such a condition has been shown by the authors to be a common clinical occurrence, the diagnosis of which is easy and the recognition of which has thrown much light on the class of disorders commonly cloaked by the term "neurasthenia." Whether the hypotheses of Eppinger and Hess will stand the test of time remains to be seen, but their work gives much food for thought and should open the way to great advances in diagnosis.

The Work of Our Hands. A Study of Occupations for Invalids. By HERBERT J. HALL, M.D., and MERTICE M. C. BUCK. New York: Moffat, Yard & Co., 1915. Pp. xxvii-211.

This is a most meritorious and useful manual, designed to help the man and woman formerly doomed to idleness and dependence because of injury or some illness that made ordinary work apparently out of the question. Obviously it was suggested by the good results obtained in insane asylums by teaching the inmates to work. Several of the early chapters are devoted to telling what has already been accomplished in various parts of the country. The problem of the invalid of small means in the sanatorium is then taken up. There follows an important chapter on the training of teachers for the unfortunate workless invalids. The singular problem of the well to do unnecessarily idle patient suggests silversmithing, even blacksmithing as a way out. The special problem of the tuberculous patient has a short chapter. Handicapped labor and the law is the title of Chapter VIII. Part II begins with the actual teaching of the handicapped, the methods involved, the readjustment required on the part of the patient; then come about 100 pages that make the book of special value and interest to the medical reader. Work is envisaged from the viewpoint of several disease conditions, e. g., tabes, syringomyelia, chronic myelitis, poliomyelitis, caisson disease, hysteria, epilepsy, chorea, the various insanities, neurasthenia, etc. Special work for the aged receives attention. The illustrations are excellent; the economic questions involved are answered, and there are tables of useful statistics. We have only praise for this little book, which we hope will confer the greatest of blessings—work—on multitudes of people hitherto condemned to a brain destroying idleness, simply from lack of study of their problem.

The Health Care of the Growing Child. His Diet, Hygiene, Training, Development, and Prevention of Disease. By Isaac Friedman, M.D., Author of *The Health Care of the Baby*, *Infant Feeding in Health and Disease*, *A Text Book on Diseases of Infancy and Childhood*; Attending Physician in Charge of Babies' Wards of Sydenham Hospital, and to the Willard Parker and Riverside Hospitals, etc. New York and London: Funk & Wagnalls Company, 1915. Pp. xvii-341. (Price, \$1.25.)

This is another of the new numerous works designed to inform the layman upon matters of health and disease, and from its table of contents it seems to be a complete presentation of the subject of the growing child in health and disease. It does not require extensive study, however, to discover that the treatment is very general and not as thorough as could be desired, for many mothers know at

most as much as is to be found in the pages of this volume. There is much that is good in the book, and it should be of help to many who have the care of children, but it is marred by inaccuracies, both of conception and of statement. Some of the advice given might even be harmful; for example, the recommendation of cocoa as a suitable beverage for a child three to six years old. No one would sanction the giving of caffeine to such a child in the form of tea or coffee, and it seems illogical to recommend the use of the similarly acting theobromine in the form of cocoa. In his diets, too, Fischer seems to go too far in the recommendation of meats and proteins for the young child, at least he exceeds the recommendations of the best authorities of the present day in this respect. Here and there, also, there is an inexcusable laxity of expression; thus the meaningless and unscientific expression, "cooling" food, is used. We have enough meaningless phrases in use by the laity without fostering others by having them used with the weight of medical authority. On the whole, although the volume will doubtless meet the needs of some, it seems almost superfluous in view of the existence of other works of a similar nature which cover the field more satisfactorily.

Syphilis as a Modern Problem. By WILLIAM ALLEN PUSEY, M.D., Professor of Dermatology in the University of Illinois. Chicago: American Medical Association, 1915. Pp. 120.

In this very readable little volume the subject of syphilis is considered from the standpoint of the disease as it affects society and the individual; the work should, therefore, appeal to every educated layman as well as to the physician. In the names bestowed upon this disease by different nations we observe one of the niceties of international courtesy. Thus, "the Italians called it the Spanish or French disease; the French called it the Italian disease; the English called it the French disease; the Russians called it the Polish disease; the Turks called it the French disease; the Indians and Japanese called it the Portuguese disease." It is curious that no one ever called it the American disease; and yet its American origin is beyond dispute, as the author shows. We are surprised to see the American Medical Association giving its sanction to a book which speaks so favorably of "salvarsan"—a "trade name," if ever there was one.

Wish Fulfillment and Symbolism in Fairy Tales. By Dr. FRANZ RICKLIN, of Zurich. (Nervous and Mental Disease Monograph Series No. 21.) Authorized Translations by Dr. WILLIAM A. WHITE, of Washington, D. C. New York: The Nervous and Mental Disease Publishing Company, 1915. Pp. 90. (Price, \$1.)

The Freudian doctrines and conceptions of the almost universal sexual basis which underlies the production and significance of dreams and of disturbed mental states are becoming well known and seem to be gaining in acceptance. New material is daily being added which seems to lend support to Freud's views, in spite of the fact that their promulgation stirred up resentment in the breasts of a large proportion of the members of the medical profession. It seemed to be asking too much to require us to accept the view that sexual thoughts constituted the major portion of the motives of our daily life from infancy to senility, but we seem gradually to be moving over to Freud's side of the question. The monograph in hand carries the Freudian principles a step farther, and shows the general undercurrent of suppressed sexual desires in our much cherished fairy tales. Although throughout the work there are many instances in which the relationship between the symbol of the tale and sexual ideas seems strained, there are others in which the relationship is quite evident. It must rest with each to form his own opinion relative to the validity of the assumed relationship, but one can scarcely help feeling at times that a fallacy may enter the argument. This fallacy lies in the suggestion that the assumed relationship depends largely upon the arbitrary interpretation of the less evident symbols. We are not in a position to criticize the contentions, either of Freud or of Ricklin, but the latter author has certainly left several loopholes for severe attacks upon his interpretations. White has done a service, both to American readers and to the author, in giving us this translation, although the service would have been greater had he not indulged at times in sentences so involved in their construction as to be well nigh unintelligible. The work will probably find its audience largely

among psychiatrists, by whom it will be appreciated much more than by the average medical reader. It is regrettable that it detracts materially from the apparent innocence of some of our most cherished bits of children's literature, but the fact that relatively few will read it largely offsets this.

Interclinical Notes.

Under False Colors, by Paul Trench, is a most astonishing yarn of the United States army in the *Wide World Magazine* for January, 1916. The author states that he is willing to make statement on oath of the truth of what he has written, and his tale certainly deserves investigation, more as showing what can be done by foreign influence in our services, than what was accomplished in this particular case. E. J. Murphy contributes an excellent story of the supernatural, Mr. X's Ghost, to this number; the solution is the same as of many similar stories—mischief of young people—and explains why numerous mysteries of the kind are never solved, i. e., from fear of punishment.

In the *Survey* for December 25, 1915, there is a high tribute to Dr. J. C. Perry, senior surgeon of the Public Health Service, who has just been detailed as chief medical officer at Ellis Island. The organization of quarantine in the Canal Zone was due to his efforts, as well as the establishment of a permanent station at Culebra Island. He also did notable work at Hongkong and Manila.

The *Survey* for December 25, 1915, gives two full pages to health matters, the titles being Saving the Babies in this Country, Lessons of a "Do Care" and "Don't Care" Exhibit, Districting Mental Hygiene in Pennsylvania, For Health Insurance in America, and To Control White Plague in San Francisco. We read that during the years, 1912-1914, one eighth of all the deaths in San Francisco were caused by some form of tuberculosis, or 2,688 of 20,703. The department of public health of that city urges the need of a tuberculosis bureau, and of many more beds in sanatoriums and preventoriums, beside open air schools, free clinics, and at least twenty visiting nurses. It is of the opinion, moreover, that tuberculosis should be made a reportable disease and that criminally careless cases should be forcibly detained.

The *Outlook* for December 22, 1915, is a fine double number, with a capital story by E. Temple Thurston, an article on Russia by Sergius Sazonoff, one on forest fires by Thomas H. Simpson, on war work of the Y. M. C. A. by the editor, numerous editorial articles on many of the National, State, and city problems, many excellent pictures, some good verse, and a financial article by Theodore H. Price, editor of *Commerce and Finance*. A letter from Washington promises a lively session of Congress.

Leslie's for December 23, 1915, has more striking pictures of the great war. One of these shows a scene after the bombardment for seventy-two hours of Butte de Tahure, during which many of the defenders became insane. The wreckage is complete. Another picture shows the extraordinary procession of the *geisha* in Tokio in honor of the accession of the Mikado. A third depicts the desolation in Serbia, worse, it is said, than that in Belgium, because the country is more remote and money, clothing, and food reach it with difficulty. Much space is devoted to our navy, concerning whose needs there seems to be a wide divergence of opinion in Congress. There are several more of the interesting reproductions of pictures from the issues of *Leslie's* fifty years ago.

In the *New York Times* for December 26, 1915, Karl N. Llewellyn writes of the experience of an Ohio boy in a German hospital. Along with some other good music which this young man heard around Christmastide, was Handel's *Largo* sung by a nurse; he had never heard of the *Largo* being sung, he says. Indeed it does not seem to be generally known that the air was originally a vocal solo, My Plane Tree, simple, but extraordinarily difficult to sing well. We once heard a beautiful rendition of it as a flute solo accompanied by twelve stringed instruments. We wish that one of our numerous baritones would revive the words and so add something unusual to his bill of fare.

Meetings of Local Medical Societies.

MONDAY, January 3d.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Uica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, January 4th.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society (annual); Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society (annual); Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine (Section in Surgery), (annual); Ogdensburgh Medical Association; Oswego Academy of Medicine (annual); Medical Association of Troy and Vicinity (annual); Broome County Medical Society; Medical Society of the County of Yates (annual); Medical Society of the County of Orange (annual); Medical Society of the County of Cattaraugus (annual).

WEDNESDAY, January 5th.—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatrial Society of New York (annual); Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the County of Genesee.

THURSDAY, January 6th.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society (annual); Glens Falls Medical and Surgical Society; Gloversville and Johnstown Medical Association (annual).

FRIDAY, January 7th.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association (annual); Saratoga Springs Medical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending December 22, 1915.

Brown, B. W., Surgeon. Granted twelve days' leave of absence, effective December 18, 1915. **Clark, T., Surgeon.** Directed to proceed to Annapolis, Md., to confer with State Commissioner of Health regarding studies of school hygiene; directed to undertake studies of school sanitation and the physical and mental conditions of school children in Kent County, Delaware, similar to those undertaken in Frederick County, Md. **Cofer, L. E., Assistant Surgeon General.** Granted leave of absence for two days, December 27, 28, 1915. **Cumming, H. S., Surgeon.** Directed to proceed to New York City to testify in court cases under the Pure Food and Drug Act. **Fox, Carroll, Surgeon.** Granted three days' leave of absence, to be taken while at Key West, Fla. **Francis, Edward, Surgeon.** Granted ten days' leave of absence, beginning December 23, 1915. **Frost, W. H., Passed Assistant Surgeon.** Directed to proceed to Lexington, Ky., to advise the local board of health in regard to proposed plans for sewage disposal; detailed to attend the meeting of the American Society of Bacteriologists at Columbia, Mo., to be held on 30, 31, 1915, and present a paper. **Guiteras, G. M., Surgeon.** Authorized to take five days' leave of absence, granted November 23, 1915, at any time up to December 31, 1915. **Heterick, R. H., Assistant Surgeon.** Directed to report to Surgeon L. L. Williams, at the Marine Hospital, San Francisco, Cal., for temporary duty. **Kempf, G. A.,**

Surgeon. Directed to report to Surgeon T. Clark for duty in a sanitary survey of schools in Frederick County, Md. **McKeon, F. H., Passed Assistant Surgeon.** Granted one day's leave of absence, December 13, 1915, under paragraph 195 of the Service Regulations. **Mullan, E., Passed Assistant Surgeon.** Directed to undertake, under the direction of Surgeon T. Clark, a sanitary survey of schools in Kent County, Del. **Pierce, C. C., Senior Surgeon.** Directed to proceed to Paredo, Texas, on special temporary duty. **Prieb, Paul, Passed Assistant Surgeon.** Granted eight days' leave of absence on account of sickness, from December 2, 1915. **Ridlon, J. R., Passed Assistant Surgeon.** Granted twenty-four days' leave of absence on account of sickness, from November 20, 1915. **Sprague, E. K., Surgeon.** Authorized to deliver an address at the meeting to be held by the College Club, of Jersey City, February 10, 1915.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending December 24, 1915:

Allen, John H., Major, Medical Corps. Granted fifteen days' leave of absence. **Aydelotte, John T., Captain, Medical Corps.** Relieved from duty at the Letterman General Hospital, San Francisco, Cal., and will proceed to Alcatraz, Cal., and report to the commandant, Pacific Branch, United States Disciplinary Barracks, for duty. **Banta, William P., Captain, Medical Corps.** Directed to report to the commanding officer of the Army and Navy General Hospital, Hot Springs, Ark. **Jordan, E. H., First Lieutenant, Medical Reserve Corps.** Directed to proceed from the Presidio of San Francisco, Cal., and report for temporary duty at Camp at Calexico, Cal., and relieve First Lieutenant Ralph W. Newton, Medical Reserve Corps.

Births, Marriages, and Deaths.

Died.

Ansley.—In Indiana Harbor, Ind., on Tuesday, December 14th, Dr. Robert E. Ansley, aged forty-four years. **Baker.**—In Auburn, N. Y., on Wednesday, December 15th, Dr. Allen E. Baker, aged forty-three years. **Barnes.**—In Fitchburg, Mass., on Tuesday, December 14th, Dr. Francis H. Barnes, aged forty-eight years. **Davis.**—In Lansing, Iowa, on Tuesday, December 7th, Dr. John W. Davis, aged seventy-eight years. **Ewing.**—In Leonard, Texas, on Saturday, December 11th, Dr. O. S. Ewing, aged forty years. **Fraser.**—In Saranac Lake, N. Y., on Wednesday, December 15th, Dr. Roderick Fraser, aged forty-five years. **Gerbert.**—In Orange, N. J., on Sunday, December 19th, Dr. Herman P. Gerbert, aged fifty-seven years. **Green.**—In Cumberland, R. I., on Thursday, December 23d, Dr. William H. Green, aged eighty-nine years. **Hart.**—In Seattle, Wash., on Thursday, December 9th, Dr. Benjamin F. Hart, aged eighty-five years. **Hawes.**—In Denver, Colo., on Wednesday, December 8th, Dr. Mary Hawes, aged fifty years. **House.**—In Springfield, Ohio, on Saturday, December 11th, Dr. Robert Bruce House, aged sixty-nine years. **Knapp.**—In Caldwell, N. J., on Wednesday, December 14th, Dr. Cannon B. Knapp, aged forty-one years. **Metcalf.**—In Mount Carroll, Ill., on Thursday, December 16th, Dr. Henry Metcalf, aged sixty-one years. **Payne.**—In Des Moines, Iowa, on Sunday, December 13th, Dr. Louis D. Payne, aged sixty-three years. **Roe.**—In Rochester, N. Y., on Friday, December 24th, Dr. John O. Roe, aged seventy-five years. **Russell.**—In Hamler, Ohio, on Monday, December 13th, Dr. Arthur R. Russell, aged forty-three years. **Siegfried.**—In Sandusky, Ohio, on Monday, December 13th, Dr. John P. Siegfried, aged sixty years. **Spratling.**—In Wilksa, Fla., on Wednesday, December 22d, Dr. William P. Spratling, formerly of Sonoma, N. Y., aged fifty-two years. **Stuart.**—In Baudette, Minn., on Tuesday, December 7th, Dr. Frank H. Stuart, aged sixty-seven years. **Withhaus.**—In New York, on Monday, December 20th, Dr. Rudolph Withhaus, aged sixty-nine years. **Wolcott.**—In Chicago, Ill., on Thursday, December 9th, Dr. Laura Ross Wolcott, aged ninety-one years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 2.

NEW YORK, JANUARY 8, 1916.

WHOLE No. 1936.

Original Communications.

COMMON DISEASES OF THE EAR,*

Their Early Recognition and Treatment.

BY S. MACCUEEN SMITH, M. D.,
Philadelphia.

I am glad of the opportunity to discuss acute aural disease, inasmuch as upon its early recognition and prompt treatment will depend largely the efficiency of prophylactic measures, as well as our ability to alleviate or cure certain cases more or less advanced. As this is notably the day of preventive medicine, I will dwell somewhat at length on this feature of the subject. On account of the space allotted to the paper, I shall have to confine my remarks to a brief consideration of acute otitis media and mastoiditis, which are not only the most common diseases of the ear, but the former is the first stage of practically all of the serious diseases of the organ of hearing and their complications, and is, in turn, caused by a similar infection of the nasopharynx extending by continuity through the Eustachian tube.

The character of the general illness, of which the aural complication is often but a local manifestation, will frequently aid us in determining the necessity for early surgical interference. If, therefore, the organ of hearing becomes involved during an attack of one of the exanthemata, epidemic influenza, or pneumonia, the ear should be frequently examined and energetically treated. This is of especial importance in the case of children, particularly infants, so many of whom have died from meningitis or other complications while the underlying cause of their illness was entirely overlooked.

In gauging the severity of an aural lesion by the discharge, the value of a bacteriological examination by cultures and by the microscope cannot be overestimated. It is true of aural discharge, as of the lochia following labor, that sometimes the most virulent infections will be entirely odorless. On the other hand, although more rarely, a less dangerous discharge will have considerable fetor.

For obvious reasons it is impossible to dictate arbitrarily a definite classification of the various acute tympanic diseases, for, since the majority of all aural lesions originate as a simple catarrhal otitis media, this must be considered as the first or primary stage of an acute suppurative otitis media, it being impossible, in most instances, to state where

the acute catarrhal form ends and the acute suppurative begins. Practically all ear diseases, therefore, have their origin in an acute catarrhal otitis media, and this in many cases rapidly assumes the acute suppurative form, and, by extension, either by continuity or through the bloodvessels or lymphatics, involves the mastoid antrum and cells on the one hand, or may give rise to an infectious meningitis or sinus thrombosis on the other. Furthermore, if the case progresses to a chronic suppurative otitis media, which is simply an advanced stage of the acute purulent form, this latter condition may, as we are all well aware, continue for months, or even a number of years, without causing any inconvenience except the annoyance of a "running ear." Eventually, however, one of several conditions is almost sure to develop, the most common of which is a chronic mastoiditis, which may continue indefinitely without producing symptoms. Then, again, through carious erosion of the mastoid process or the floor of the tympanic cavity, the sinus may be involved in an infectious thrombosis; or, likewise by carious erosion of the tegmen antri or tegmen tympani, or by means of the bloodvessels or lymphatics, an intracranial abscess formation is very likely to develop.

It will be seen, therefore, that our most important, and at the same time efficient prophylactic measure, not only in the treatment of aural disease, but with a view of preventing its serious complications, is, in the first place, an early recognition of the primary lesion, to be followed by a free incision of the membrana tympani and thorough evacuation of the tympanic secretion.

Before considering the treatment of acute suppurative otitis media, let us briefly review the care of the catarrhal stage. The patient should receive divided doses of calomel, followed by a saline, and small, frequently repeated doses of tincture of acornite. Rest in bed is also of great value in checking the disease at this stage. Locally, blood letting by means of an artificial leech in front of the tragus and douching the ear with a normal salt solution as hot as can be borne, every second or third hour, will aid much; or, in place of the douche, warm drops of a ten to fifteen per cent. carbolic acid in glycerin, or equal parts of tincture of opium and tincture of belladonna can be used. However, if there is marked redness of the drum membrane, complicating one of the exanthemata, pneumonia, or influenza, surgical intervention is called for, as there is little hope of preventing the formation of pus; and if pus is present, its prompt evacuation by incision of the membrana tympani is demanded.

The classical indications for incising the mem-

*Read before a special meeting of the Philadelphia County Medical Society, November 24, 1915.

brana tympani are in some cases as unreliable and misleading as are the classical rules for operating on the mastoid process or the abdominal appendix. Generally speaking, it is well to wait until some bulging of the membrana tympani occurs, but a serious error will have been committed if we wait for this symptom to become prominent in ear diseases complicating the exanthemata, epidemic influenza, pneumonia, or other virulent infection. As these cases are usually purulent from their inception, an early incision of the drum membrane is the important factor, even though bulging has not occurred. This is especially true if the pain is severe and not influenced by blood letting, and the employment of other measures for relief. Should the suffering continue for some time after thorough evacuation of the pus, and an examination show the presence of the more virulent microorganisms in any considerable number, the patient's future health, as well as conservative surgery, will be best served by an immediate opening of the mastoid, even in the absence of more pronounced mastoid symptoms. Timidity or delay in this particular type of case is especially prone to favor the development of some intracranial lesion. The incision of the drumhead or opening of the mastoid process, under such circumstances, is positively imperative. The relative gravity of the procedure is nothing compared with the possibility or even probability of the grave intracranial complications likely to follow procrastination.

This free evacuation of pus from the tympanic cavity, however, can never be accomplished by a simple puncture of the membrana tympani. The membrane must be freely incised, the chief requisite being to carry the incision from the most bulging point downward to the lower border of the canal, the incision to be continued either in an anterior or posterior direction until about one sixth part of a circle has been formed. This will not only provide for good drainage, but will insure the opening remaining patulous long enough to admit of proper aftertreatment. The tympanic cavity should never be inflated during an acute inflammatory process.

Thorough aseptic precautions should be practised before incising the membrana tympani. From the fact that this procedure is usually very painful, it is best, as a rule, to place the patient under general anesthesia. In adults, nitrous oxide gas serves the purpose admirably. Under some circumstances, local anesthesia can be used, and while in some cases this may be more or less successful in relieving pain, it frequently fails. The best local anesthetic is composed of equal parts of cocaine, menthol, and carbolic acid crystals, a piece of cotton to be saturated and allowed to remain in contact with the membrana tympani for twenty minutes. This seems more or less thoroughly to anesthetize the membrane, which then admits of incision with a minimum of suffering. In children, ether is perhaps the safest anesthetic.

There are two principal reasons why so many cases of suppurative otitis media do not need treatment in the initial stage. In the first place, if the membrana tympani ruptures spontaneously, the opening thus formed is usually situated in the superior part of the membrane, which allows the pus to escape only by the process of overflow; furthermore, pressure sufficient to produce rupture fre-

quently causes maceration and peeling off of the tympanic mucosa, as a result of pressure necrosis. The osseous wall, being thus denuded of its protective coat and natural means of resistance, is exposed to the ravages of the various pathogenic microorganisms. This frequently is our starting point, by means of carious erosion, for the various labyrinthine and intracranial complications. Autoinfection thus occurs on account of the cavity being constantly filled with pus up to the level of the perforation. Again, the edges of the ruptured membrane are irregular, consequently they do not coaptate readily nor unite kindly, whereas a clean incision will always repair with the greatest facility. Furthermore, if only a puncture of the membrane is made, the opening is too small to provide for adequate drainage, even though it is properly situated. The logical measure, therefore, to be employed in the evacuation of pus from the tympanic cavity, which, in turn, is our best means of avoiding mastoid and other complications, is, as above stated, an early and free incision of the membrana tympani, but never the folly of simple puncture. Following a free incision, aspiration of the tympanic cavity is serviceable to relieve the congested mucosa of considerable blood and thoroughly evacuate the pent up secretion.

During the course of or convalescence from an attack of acute purulent otitis media, the patient may suddenly experience deep seated pain in the region of the mastoid process. The aural discharge, which has perhaps been gradually decreasing in quantity, may follow one of several courses, showing that recovery has been interrupted; it may suddenly cease, this abrupt cessation being accompanied by no amelioration of the patient's condition, and being followed in a few hours or a few days by a still more copious flow of pus; or the discharge may gradually increase in volume until it is necessary, on purely physical grounds, to assume the involvement of the tympanic accessory sinuses in order to explain the quantity of pus excreted during the twenty-four hours; or the long continuance of the discharge may warrant the inference of a necrotic focus more deeply seated than within the small tympanic cavity.

The most prominent symptom is pain over the mastoid process, which usually radiates in different directions, upward in the temporal region, posteriorly over the cerebellum, and downward and forward toward the teeth. It must be remembered that great destruction of the osseous structure, even exposing the dura and sinus, frequently occurs without producing much pain or inconvenience. Furthermore, the patient may present more or less grave toxic symptoms, with an almost entire absence of local manifestations save that of a discharging ear, which may, in turn, be slight and appear unimportant. A case of this character should be viewed with grave apprehension, as it indicates that the direction of the necrotic extension is inward, gradually involving the interior of the skull, instead of outward, producing a carious perforation through the cortex and discharging the offending mass over the mastoid process.

The temperature, which has probably run a normal course or returned to normal, may become ele-

vated, ranging from 99° to 104° or 105° F. As a rule, in simple, uncomplicated cases, high fever and chills are less frequent in adults than in children. A patient with extensive caries of the mastoid cells and with a carious opening into the cranial cavity may have a temperature but slightly above normal, so that a comparatively low temperature does not necessarily signify that the case is not one of considerable gravity. Indeed, cases presenting extensive necrotic changes, exposing the adjacent intracranial structures, are not uncommon, without notable rise of temperature for a time. In adults, the symptoms may continue for weeks before redness, heat, and swelling over the mastoid occur; they are very late signs. Surgeons have frequently waited for these symptoms, as well as for fluctuation. An operation should never be deferred until such late signs, as valuable time may be lost. In children, external swelling, redness, and heat are apt to come on very early, because here the inflammation is either a periostitis or the mastoid is very thin and perforation of the cortex soon occurs. In children, too, the auricle is early seen pushed outward and forward.

Unfortunately, many cases of acute mastoiditis run their course with complete absence of one or more of the foregoing symptoms. That extensive necrosis of the mastoid cells may occur with only a slight elevation of temperature is a fact now fortunately recognized. Where fever is slight and pain inconsiderable, the subjective and constitutional phenomena are naturally not very characteristic. Mastoid pain may be very slight, also, or at least not sufficiently marked to be complained of by the patient; however, sensitiveness on *deep* pressure is probably always present at the onset over some point on the mastoid cortex, and is usually a constant diagnostic symptom, especially when manifest over the emissary vein. Superficial pressure may elicit no pain or tenderness, pain being brought out only by deep pressure of the finger over the antrum or tip of the mastoid, and it is a matter of common experience that it is often entirely overlooked by the attending physician, who does not examine properly for it. A comparison of the two sides should always be made, the finger of one hand on the affected mastoid, the finger of the other hand on the corresponding point of the normal mastoid, and the patient will readily appreciate the difference between the two sides. Fortunately, there is one physical sign which is never wholly absent, unless the disease is confined to the tip; it is bulging and drooping of the superior and posterior wall of the external auditory canal.

If a case which has progressed to acute involvement of the mastoid process is seen by the physician in the first stage, or before the formation of pus, the patient should be put to bed, placed on liquid diet, and given divided doses of calomel until his bowels have been freely opened. Small doses of aconite, frequently repeated, and blood letting over the mastoid process are of distinct therapeutic value during the hyperemic stage.

At this particular time an ice bag, or cold applied by means of the Leiter coil, over the mastoid process is frequently of service in arresting an acute inflammation; but the measure of greatest prophylactic value for this purpose is a free incision of the

membrana tympani. The cold applications may be continued for from twelve to twenty hours, but when once removed should never be replaced, as any further continuation of the cold treatment is capable of masking symptoms much in the same manner as hypodermic injections of morphine.

I wish earnestly to advise against the employment of blisters, poultices, etc., in acute diseases of the organ of hearing, as well as the instillation of sweet oil and other germ propagating material into the external auditory canal; none is productive of good, and they are all capable of causing great and lasting harm.

The simple treatment above outlined will relieve the suffering of many patients, and abort the disease in a great majority of simple, uncomplicated cases. However, in those complicating influenza, the eruptive fevers, pneumonia, tuberculosis, and syphilis, the disease is frequently virulent, and consequently suppurative, from its very inception. A goodly number of such cases demand prompt surgical intervention. I am not unmindful of the fact that mastoiditis presenting even advanced symptoms will occasionally end in spontaneous recovery. However, the risk in taking such chances is too great to warrant consideration in the average case, from the fact that grave intracranial lesions may in the meantime develop; in other words, when the disease is allowed to continue unchecked, changes in the middle ear and perhaps the labyrinth are such that a resumption of normal aural functional activity is unlikely.

1429 SPRUCE STREET.

TUBERCULIN THERAPY,*

Its Present Status.

By HENRY L. SHIVELY, M. D.,
New York.

Lecturer of Clinical Medicine, F. H. M. University, Consultant Physician, Stony Wold Sanatorium; Visiting Physician, St. Joseph's Hospital for Consumptives, New York.

One whose interest in the treatment of tuberculosis extends back over a period of twenty-five years will recall the expectations aroused by the sensational announcements attending the discovery of tuberculin in 1890. Launched with the great prestige of the name of Robert Koch, it was heralded as the long expected panacea. But little attention was paid to the occasional protests against this extravagant enthusiasm or to the salutary warnings of its distinguished discoverer. We remember the insensate scramble to secure a few drops of the precious fluid. Not a few physicians and patients made a trip abroad to be among the first to learn the method of administering it and to obtain the treatment. With what curiosity we examined the first little vial of the brownish fluid, with its peculiar, aromatic, pungent odor! And what therapeutic sins were committed in those early days, the ignorant, haphazard selection of cases, the violent reactions, the pitiful exhibition of bad judgment and credulity on the part of a learned profession, the disregard shown for the plain and ele-

*Read at a meeting of the Clinical Society of the New York Poly-clinic Medical School and Hospital, November 1, 1915.

mentary teachings of pathology in administering a powerful poison of which so little was known to far advanced patients who could not benefit much by any treatment! For even an absolute specific could be of no avail for patients whose real need was new lungs. An absolute specific tuberculin was not in any sense. And then there followed the inevitable disappointment, the storm of denunciation and abuse, and the speedy consignment of tuberculin to the limbo of discredited and abandoned failures.

And yet even during this period of extravagant hopes and reckless administration, it was apparent to careful observers that in tuberculin we possessed a new agent of potential good as well as harm. In spite of excessive doses and faulty methods, there was not infrequently seen marked and rapid improvement in cases of lupus and glandular tuberculosis, and in some pulmonary cases there was striking if but too often only temporary amelioration of symptoms. Among those who early believed in the therapeutic possibilities of the new agent and who continued a cautious and rational line of experimentation with it, no one has done more in this country than the late Doctor Trudeau and his co-workers at Saranac. To them the profession is largely indebted for the establishment of tuberculin administration upon a scientific basis, and the fact that today in nearly all sanatoriums tuberculin is regularly used in selected cases is sufficient proof that it has won a legitimate place in the practice of conservative men. Koch himself lived to see the rehabilitation of the treatment largely along the lines and within the limitations he had originally defined.

Old tuberculin, as it is now called, is a glycerin filtrate of the dead bodies of the tubercle bacilli. It has been variously modified, the most important perhaps of the later products being bacillen emulsion, obtained by a long trituration of the living bacilli in normal salt solution. This is preserved in a finely comminuted state of suspension by the addition of glycerin, and thus contains in a sterile condition all of the elements of the tubercle bacillus instead of only the soluble extractives which compose old tuberculin. I have my doubts as to the therapeutic efficacy of those tuberculins which it is asserted have been so treated as to minimize the occurrence of reactions. We have not sufficient knowledge of the active and desired substances in tuberculin, which have never been isolated, to make it practicable to try to separate them from those which are poisonous or inert. It is well for a beginner to select one preparation, preferably one representing all the substances contained in the bacilli, and the best for all purposes is probably bacillen emulsion. He should familiarize himself thoroughly with it, prepare his own solutions, which can readily be done by means of a small one c. c. graduated pipette, and have his work, for a time at least, based on one standard, uniform preparation, instead of aimlessly trying a variety of tuberculins of varying strength.

It should always be remembered that tuberculin in itself has no curative properties; it is in no respect like diphtheria antitoxin; it is an active immunizing agent dependent for its useful effects upon its power to stimulate the production of anti-

bodies, protective substances produced within the body itself, which render its tissues unfavorable to the growth of the tubercle bacilli or perhaps directly inhibit their pathological effects. It is evident, then, that for the production of good results from the action of tuberculin, it is necessary that there should not be too great a depression of the normal physiological functions, a fact of practical importance, for it at once removes from the scope of possible tuberculin treatment a large class of cases. Patients with severe mixed infection or with grave complications, such as diabetes or nephritis, cases of acute miliary tuberculosis, and rapidly advancing cases of pulmonary tuberculosis with areas of softening and recent cavities, cannot be expected to react favorably to tuberculin. Also many incipient cases do sufficiently well with the ordinary dietetic and hygienic treatment, with the medical supervision and regulation of their mode of life, which can usually be best obtained in a well conducted sanatorium. The special field, then, for tuberculin is that large group of patients with fairly good resistance, with little or no fever, stationary or slowly progressive, who are ineligible for, or cannot go to the sanatorium, or who have failed to attain a cure or arrest of their disease while at the sanatorium. It is largely from this class that I have derived my experience with tuberculin, and upon results observed in such cases my favorable opinion of it is based. It is obvious that these patients offer a severer test of the tuberculin treatment than cases that coincidentally with the specific treatment receive the usual approved fresh air, diet, and rest cure. At the sanatorium it is often difficult to decide how much of a patient's improvement is due to tuberculin and how much to the favorable change in his environment and mode of life. When, however, the ordinary sanatorium régime has been tried for many months with little effect, the conclusion appears to be irresistible, when the tuberculin treatment is added, that such improvement as results may be fairly ascribed to the influence of tuberculin, and tuberculin alone.

There is a general agreement among sanatorium physicians that patients who receive tuberculin treatment lose their bacilli more readily than patients who do not, that a greater proportion are discharged arrested, a larger number are restored to working efficiency, and that after a period of years their cure is better maintained than that of patients who have not had tuberculin. Beside these regular routine effects which are gradually obtained over a long period of time and which are perhaps not very striking, but are after all of great importance to the individual patient who may thereby attain a practical arrest of his disease, there are the occasional spectacular cases, all too few in number, but which all who have much to do with tuberculin see at times. These are the fortunate ones who literally go ahead by leaps and bounds, for whom the tuberculin treatment is a real boost, imparting what appears to be just the necessary impetus to recovery and sustained resistance to their disease. I can recall a number of such cases, a few of which I will briefly describe:

CASE I. Jennie M., aged seventeen years, came under my care May 1, 1908. Her mother, two maternal aunts, and

an uncle had died of consumption and another uncle was ill with the same disease. She had typhoid fever seven years previously and had coughed for several years with purulent sputum, hemoptysis, chills, fever, profuse night sweats, loss of flesh and strength, dyspnea, poor appetite, and amenorrhea for two months. She was pale, ill nourished, and stoop shouldered. There was marked dullness and diminished breath sounds over both upper lobes. Afternoon temperature 99.4° to 100.8° F., pulse 100, respirations 22, weight 103½ pounds. No tubercle bacilli in sputum. By October, she had made, under dietetic and hygienic treatment, a gain of eight and one half pounds in weight, but numerous rales were present over the right apex. In December, she had a small hemorrhage, and in February bacilli were detected in her sputum. From March to October she was at the Adirondack Cottage Sanatorium, where she improved considerably in spite of one large hemorrhage. During the winter of 1909-10 she did badly and was kept in bed for several weeks, during which time her temperature ranged between 101° and 102° F. After her fever had subsided, although she was not considered a very favorable case for the treatment, she was given injections of old tuberculin and made a surprising improvement. She received thirty-one injections in all; her cough and expectoration gradually disappeared, her temperature became quite normal, and her hemoptysis ceased. The summer she spent in the country, and on her return in November she stated that for four months she had not coughed at all and it was impossible to obtain a specimen of sputum for examination. Dullness persisted over upper lobes, but she had no rales. In December, 1911, her improvement had been maintained, she was free from symptoms, and for the past four years she has had good health and has been regularly employed as a bookkeeper.

CASE II. An inspector in the park department, aged thirty-five years, had a cough for eight months with purulent sputum, loss of flesh and strength, chills, fever, night sweats, dyspnea on exertion, and one week before coming for examination on March 22, 1910, he spat up a small quantity of blood for the first time. He had lost twenty pounds in weight, and bacilli were present in his sputum. There was dullness, bronchovesicular breathing, whispering bronchophony, and fine rales at his right apex. His afternoon temperature was 99° F., pulse 102. He was unwilling to leave his work to take sanatorium treatment and, on March 31st, tuberculin treatment was started with an injection of 1/2,000 mgm. of bacillen emulsion. Injections, twenty-three in all, were continued twice a week, the dose being gradually increased up to a thirtieth mgm. June 14th, the date of his last injection, he had gained twenty-five and one half pounds, his rales had disappeared, temperature was normal, he had lost his cough and expectoration, and he considered himself perfectly well. He was examined again in November and frequently since; he has had no recurrence of his former symptoms, and all that remains of his morbid physical signs is a slight residual dullness at his right apex. His cure has been maintained for more than five years, during all of which time he has been at work.

CASE III. In October, 1911, a daughter of this man, aged fifteen years, came to me on account of small hemoptyses which she had had for five days, slight cough and morning sputum which had lasted for several months. When six years old, she had an abscess in the neck. She had slight dullness and increased breath sounds over the right apex and posteriorly over both apices fine rales were heard. Evening temperature 99° F., pulse 120, weight 106 pounds; no bacilli in sputum. She received tuberculin treatment twice a week from October 21st to February 1st. She had then lost her cough and expectoration, gained seven and one half pounds, had normal afternoon temperature, rales cleared up, and she felt very well. She was examined again in March when her condition was unchanged, and she has reported to me at intervals since. For more than four years she has remained in good health.

Did space permit, similar examples of rapid and lasting improvement might be reported, especially cases of cervical adenitis, which usually do better than pulmonary cases, even when large glands causing disfiguring deformity are riddled with chronic, discharging sinuses.

I do not cite these cases as illustrations of what will often be seen in the administration of tuberculin, but if the treatment were more extensively used in suitable cases, I have no doubt that more of these exceptionally favorable results would be obtained, for it is impossible without trial to say what patients will respond well to the stimulus of the injections, just as it is equally impossible to say why tuberculosis in some cases runs a rapid and fatally progressive course, terminating in a few months, and in others continues over a long period of years with relatively slight impairment of the health. In administering tuberculin we are dealing with an unknown reaction which cannot be predicted in advance, but which must be gradually determined by cautious and careful study for each individual patient. The mysterious factors of what, for want of a better term, we call the patient's resistance, are an important element, and it is certainly true that in many cases this can be developed and strengthened by immunizing doses of tuberculin.

Apart from the specific value of the tuberculin stimulus, there are certain incidental advantages in a continued course of tuberculin treatment which doubtless contribute in some measure to the results obtained. The tuberculin case is under better control, the patient feels that an effort is really being made to do something for him, and he is more willing to report regularly for observation and treatment. I have a suspicion that the intelligent patient with a chronic disease such as tuberculosis not infrequently feels on leaving his physician's office that he is not getting much of a run for his money. The cheerful platitudes regarding fresh air and the little familiar disquisition on the nutritive value of milk and eggs he often hears with rather languid interest, and he is strangely unmoved by our more or less trite admonitions regarding rest and exercises and our eloquent exhortations as to where and how he should deposit his sputum. He has probably been familiar with all this for months or years, and if this is all his doctor can do for him, he is quite likely to neglect the regular examinations which are of such real importance in the management of every case of tuberculosis. With the persistent follow up work and puller in tactics of the visiting clinic nurse, it is not always easy to induce even the patient who is receiving free treatment to continue long under observation. Right or wrong, he often forms the opinion after a few experiences at the clinic that his state of health is not materially changed by the frequent visits he is urged to make. Patients are generally willing to continue their tuberculin treatment, however, and are grateful for the personal interest and attention they receive in connection with it.

To secure the more extended use of the tuberculin treatment, it is necessary that it should no longer be limited exclusively to sanatoriums and the practice of specialists. As long ago as 1909, Koch stated that tuberculin in the hands of a skillful physician can be employed in private practice without danger and to advantage. Sahli, Weicker, and others have expressed the hope that tuberculin may be extensively used by general practitioners of medicine. I believe the time has arrived when every tuberculosis clinic at least should have its

tuberculin class. The well established principles of the treatment now generally followed, the proper selection of cases, the not too rapid increase in dosage, and the sedulous avoidance of reactions are not difficult to achieve, and I can see no reason why any well trained physician who is capable of administering vaccines or diphtheria antitoxin is not also competent, with the exercise of good judgment and the necessary patience, to give the tuberculin treatment. The technic has, I believe, been invested with unnecessary difficulties. A blood count, the determination of the opsonic index or a complement fixation test is of little practical value in the treatment of the patient. Also, a table of logarithms is not necessary in calculating the dose. Much time may be lost in beginning with or continuing too long the excessively minute and meticulous doses which followed the bad effects of the recklessly large amounts at first employed. It is probable that doses of one ten millionth or even a millionth of a milligram are practically inert. George Bernard Shaw, in his play, *The Doctor's Dilemma*, has amusingly satirized the difficulties in using the opsonic index as a guide in treatment. The problems in tuberculin therapy are essentially clinical and not of the laboratory, and the physician's best guide is a carefully recorded observation of his patient's temperature, pulse, weight, and general condition. Many doctors are too busy, some are too impatient, others perhaps are too lazy properly to administer tuberculin treatment. They should not attempt it.

303 AMSTERDAM AVENUE

THE MEDICAL TREATMENT OF EXCEPTIONAL CHILDREN.*

By TOM A. WILLIAMS, M. B., C. M., EDIN.,
Washington, D. C.,

Professor of Medicine and Medical Director, Harvard University,
and Lecturer in Medicine, School of Neurology and Psychiatry,
psychologique de Paris; Neurologist, Free-
Hospital, Paris, France.

Deviation from type may be due to the peculiarities of the germ plasm (1), or it may be the result of disease after the formation of the embryo, whether before or after birth.

Those differences from the normal which are occasioned by the actions of parasites, or caused by gross injuries, will not be considered in this chapter; for to do so would require textbooks on medicine and surgery. To consider in detail the anomalies of the apparatus of vision, hearing, posture, digestion, and nutrition in children would not be possible in this volume, and besides, the subjects are already considered in the best textbooks on pediatrics, and the specialties concerned.

It is a social rather than a medical problem. It is easier to manage the matter, save to say that such children, for the sake of the future generation, should not procreate; so that either their sterilization or segregation is an imperative social need. They can be cured

development of the other members. Cretinism, of course, is re-

What is not well considered in the textbooks, however, is the psychopathology (2) of the child; and the directions concerning the physical hygiene of the neurotic child are usually perfunctory, conventional, and guilty of sins both of omission and commission, especially regarding study, exercise, play, and food.

Accordingly, there will be considered: First, the treatment of some of the physical causes which produce neurotic behavior; second, of the chief psychological sources of disturbance to child life.

A.—PHYSICAL CAUSES.

1. Insufficient air and improper clothing, viz., too tightly fitting.
2. Incorrect food and drink.
3. Inadequate or improper exercise of body.
4. Imperfect elimination.
5. Disordered glandular action.

B.—PSYCHOLOGICAL CAUSES.

1. Mismanagement of attention: *a*, Inconsequence of thought and action, self control, suggestibility; *b*, its contrary, overstimulated attention. The sequences.
2. Mismanagement of emotion, sentiment, desires, and inclinations: *a*, Intemperance; *b*, its contrary, overrepression. Comprising:
 - I. Affection, altruism, religiosity.
 - II. Fear, anxiety, scruples, obsessions, shame.

A.—PHYSICAL CAUSES.

1. *The air.* Fretfulness after meals or after play is very often due to the improper atmosphere surrounding the child. It must not be forgotten that the heat production in a child is very active, and his need for oxygen much greater than in the case of the adult. It is only prolonged exposure which is dangerous in the case of children. But even the chilling of the extremities by exposure may not be detrimental, if the trunk, especially the abdomen, is kept warm. The sensations of a sedentary person with poor oxidation are a poor guide to the qualities of the atmosphere to be breathed by young children.

The thermometer is, of course, no guide: as a warm air may be quite pure and a cold air may be most noxious. Perhaps the best guide is the sensation of a sensitive individual returning from brisk exercise in the open air. If fetor is noticeable to such a person, the atmosphere is injurious to a delicate child. The best way to insure proper ventilation is the opening of windows from the top, with cross ventilation.

Many of the mechanical installations for changing the air are adequate only when a small number of persons are present. They are incapable of dealing with the discharges from a crowded room.

People who poo-poo what they call the fresh air fad should have their attention directed to the great advantage of the open air cure of tuberculosis, pneumonia, and run down conditions.

2. *Incorrect food and drink.* Some of the essential rules of a healthy diet are lacking in the regime of a great many children of our day. To insure sufficient bulk in the intestinal canal, an adequate amount of solids must be taken. If this is composed solely of digestible material, far more nutriment than an adult requires is assimilated and is converted into fat.

Now, much of the food given children has been deprived of its indigestible constituents, the husks of rice and cellulose. We are in the age of pap for the child to get enough bulk, eats too much

The sophistication of the food, furthermore, deprives the child of the opportunity to exercise its teeth; in consequence the jaws and blood supply of the teeth are imperfectly developed, and caries is apt to ensue. (Sim Wallace.)

But there is a third disadvantage of what is literally an emasculation of food. In the process of refinement unfortunately the food is deprived of mineral salts, especially phosphates, and of what are known as vitamins, that is to say, proteid (3) materials in very minute amounts which are necessary complements of the larger amount of better known constituents in nitrogenous food.

In consequence of the sophistication of the cereals, reliance for body growth is placed upon eggs and meat, and in the earlier years on milk. The objections to these foods are not only economic. Flesh contains considerable purin producing (4) material, and putrefies easily. Eggs rapidly undergo poisonous disintegration, and the albumin is too concentrated to be a good food for a species constituted as a mixed feeder. Milk is a food only for babies, unless especially prepared.

The best diet for a neurotic child, or any child for that matter, is a plentiful supply of such cereal foods as are prepared from entire (5) wheat, oats, and rice, supplemented by an abundance of fruit, especially the banana, the sugars of which supply energy easily, and the saline constituents of which favor the rapid metabolism of childhood. The proteins of Indian corn, barley, and rice are not in themselves sufficient for active growth, but must be supplemented by others, such as are found in wheat or oats or in flesh, eggs, and milk.

We are just beginning to learn about the intimate constituents of some of the proteins. Further study should enable us to substitute the inadequate corn and bacon ration of the farm by something less expensive than the abundant mixed dietary which is now being used in treating pellagrins. For instance, the nutritional disease, beriberi, can be prevented by the addition to the food of an infinitesimal dose of a substance obtained from rice bran, although the disease otherwise occurs in persons fed on milled rice.

The psychology of children's appetites, inclinations, and fads about feeding is very important, and will be considered in my remarks on psychopathology.

3. *Inadequate or improper exercise.* Rickets, usually regarded as a nutritional disease, is by some thought to be due to lack of exercise by poor children in cities kept off the streets for fear of accident; or of richer children paraded in perambulators by thoughtless mothers. All young mammals exercise actively; it is in their play that they develop. Children in cities, however, have so many inducements that they are apt to fall into sedentary or loafing habits. Hence it is important somewhat to systematize and supervise the play of children; for on account of the restrictions of civilization their play has to be somewhat artificial and is often too complex for the child capacity to manage. Sad to relate, it has become difficult for the child to play, and the difficulties are sometimes too great to surmount except by the most adventurous spirits. These facts are especially important for the parents of an exceptional child; for to these handicaps will be added

the stresses of adaptation to his fellows, whose unlikeness to himself may still further discourage his inclination to play, and thus prevent the proper exercise of his body. (See section on Fears and Scruples.)

Not the least important function of exercise and play is its value in psychological development. This will be discussed under psychopathology.

4. *Imperfect elimination.* Constipation, as is well known, has serious consequences. To avoid these, drugs which stimulate the movements and secretions of the intestines have been greatly used. The relief afforded by them is so rapid that the laity and many physicians have shortsightedly countenanced the frequent use of aperients, seeking only to find one which will have no weakening effect on the bowel. Of course such a purgative does not exist; because every artificial stimulation must be followed by a reaction, which makes the condition of affairs worse than before. For a long time cascara sagrada was preferred, having superseded the rhubarb of our grandmothers. Now the fad has become Russian mineral oil, recognition of the failure of cascara now being general. The objection to mineral oil is that it prevents the access of the digestive fluids to the food particles by coating them with an entirely insoluble substance. If purgation by lubrication is sought, an organic fat, such as olive oil or cream, is very much better.

But the proper way to prevent constipation is to adopt the principles given in the section concerning food and drink. For such principles give a proper residue with which to distend the intestine without at the same time furnishing an amount of putrescible matter much greater than can be rendered innocuous by the digestive juices.

The most important eliminating organ is the kidney; but when this is disordered, a physician must be consulted. Elimination by the lungs takes care of itself, if proper air is provided and clothing is not too tight, and if the respiratory passages are kept free. This demands examination of the nose and the back of the throat by a physician, and the escape from catarrh, by good hygiene, and the avoidance of contact with persons infected with catarrh.

Elimination by the skin is favored by proper bathing and change of clothing and the avoidance of too closely woven or heavy underclothes. Regarding bathing, indiscriminate advice has done much harm. The morning cold bath, erected into a fetish in England, does much harm to some constitutions. The danger of chill after a tepid bath is very great; but if a bath is taken very hot and remained in until the skin is thoroughly permeated by the heat, leisurely cooling while dressing will prevent active perspiration, which would cause liability to chill. The delicate or neurotic child is unusually susceptible to the effects of heat or cold, or both, and his bathing habits should be determined upon only after careful observation of his constitution, preferably by a physician familiar with nervous children. They should not be imposed arbitrarily according to a hard and fast rule. The same remark applies to bathing in the sea or river as to the taking of baths, for while nothing is more beneficial even to a nervous child than swimming, yet some children are

quite incapable of withstanding the great vasomotor strain of sea bathing in such a temperature as is afforded by the coast of Maine or the north shore of Massachusetts.

5. *Disordered glandular action.* The relations of the glands of internal secretion to the functions of the nervous system are very important. We already know a great deal about the thyroid, adrenal, pituitary, the thymus, and the parathyroid glands in relation to nervous disorders. The consideration of the subject is, however, very complex and a purely medical matter not suitable for full discussion here. A few remarks, however, may show the kind of symptoms which should lead to medical consultations for the child:

CASE I (pituitary disorder). Girl, aged eleven years, was brought by her mother because of loss of interest in her lessons, of which she had previously been very fond, grimacing of the face in spite of all correction, equivocation and fibbing in attempts to evade her duties, and greediness amounting to gluttony. She had always been a stout child, but had become enormous during the preceding year or so.

Exploration of a possible psychological cause for this change of behavior was fruitless; so psychomotor exercises were begun for the facial tics. The only effect of these was to arouse the patient's resentment, and they were not persevered with. Some time after, great somnolence manifested itself, the child becoming very lethargic and even dropping off to sleep in the middle of a task or at the table for a few moments. This directed attention to the function of the pituitary gland so this was immediately explored by the levulose test. As this showed great increase of the tolerance of the system to large amounts of sugar, it was decided that the pituitary gland was functioning insufficiently; great increase of weight, torpor, psychic inadequacy and its attendant changes in behavior being symptoms of lack of pituitary secretion. Feeding with increased doses of pituitary gland was at once begun. The child recovered completely in a few months, and after the onset of puberty was able to dispense with the pituitary gland; and now, four years later, is active and comparatively thin.¹

Thyroid disorder. Excessive secretion by the thyroid gland causes among other signs restlessness, excitability, moist skin, rapid heart, and malnutrition. It is apt to occur in a slight degree near puberty; and although it may disappear spontaneously after that, it often persists. Thus it is only prudent to take medical advice when the foregoing symptoms appear in one's child.

Deficiency of thyroid secretion is shown by many symptoms, the most noticeable being sluggishness of body and mind, coarseness of body and hair, thick voice, and stunted growth. Cretinism is only an extreme degree of this. Hypothyroidism, as it is called, is easily met by feeding with the thyroid glands taken from animals and appropriately prepared.

Adrenal disorder. What is commonly called weak circulation, cold extremities, incapacity for severe exertion or sustained work, and a general feebleness with lowered resistance to infectious diseases and other causes of illness, may arise from a deficiency of the adrenal gland. In case of any such child, this possibility should be carefully looked for by a physician conversant with the symptomatology of the diseases of the suprarenal gland.²

Thymus disorder. Children subject to croup, of pale flabby constitution, poor resistance to infection and poisons, likely to succumb suddenly during anesthesia, show an enlargement of the thymus gland, a condition which can be quite successfully dealt with medically.

B—PSYCHOPATHOLOGY (6).

1. *Mismanagement of attention.* Attention is directed by motive, and motive is excited by interest. In beings without memory, such reactions as movement, interest, attention are each subject to immediate activation by whatever presents itself. The power of recollection enables experience to be utilized in the accumulation of motives or interests. These are simply the selection from the environment, of the activities, of which of course thought is not the least. What interests shall be sought is a choice determined by two kinds of factors? The first of these is inherited disposition, which will not be considered in this chapter, which is concerned with children already born and not with eugenics. The second factor of choice comprises the influences which shape behavior, more especially those exerted in early childhood. In human beings these are of paramount importance, although they are innumerable and often unmanageable. Still in the degree to which they are understood and scientifically utilized do we have a proper education against a haphazard one, which, however, is sometimes successful by virtue of the child subjected to it being influenced by episodes which determine his course in fruitful direction?³

The character of the individual is a composite of psychological trends, and each of these is acquired by virtue of the cultivation of the attention toward each. A young infant will follow any bright object placed before it or any sound; an earnest student concentrated on his task does not notice the noises in the street, nor the moving objects there; his attention is elsewhere, as we say. A boy, even though preferring to think of what is going on in the playground, yet keeps his mind on his task from a more powerful motive, no matter whether this is a desire for accomplishment or a fear of failure or punishment. I need not enlarge upon the familiar directing of the inclinations away from pleasure which is comprised in the accomplishment of the tasks required for cultivation of a handicraft or profession.

But in the case of very young children, the need of directing the attention and guiding the inclinations is even more important. It is to the ignorance or neglect of this principle by parents that neurotic behavior is often due. The degree to which cultivation can be carried by an intelligent direction of the attention is illustrated by the famous case of John Stuart Mill, who could read Greek when four years old and could have entered the university at six, in consequence of his father's ingenuity in interesting him in subjects usually studied at a much later time of life. That Mill was not a *lusus nature* he himself frequently affirmed. This we can readily believe, as modern instances are not uncommon. Most people are familiar with the story of William Sidis, who knew much of human anatomy at six,

¹ See *Journal of the American Medical Association*, Chicago, Ill., 1922, Vol. 79, No. 1, p. 100.

² See *The Suprarenal Glands*, by W. B. Williams, M.D., New York, 1922, p. 100.

³ See *The Psychology of Intelligence*, by W. B. Williams, New York, 1922, p. 100.

entered Harvard at eleven, and is professor of mathematics at eighteen years of age.

The manifold accomplishments of Winifred Stoner are familiar to newspaper readers. Young Wiener of Harvard and Professor H——'s daughter, of Omaha, are only two others among many American instances of today. Quite apart from the advisability of such precocity, they all were possible by virtue of the same principle, viz., a directing of the attention and interests. They go to show how very ductile is human material.

Results of inattentiveness; hysteria. In the absence of direction of attention, the child wanders from matter to matter aimlessly. The misfortune of this is not so much the lack of learning, but the fact that he does not learn to concentrate his attention, and to master a temporary disinclination for the sake of an ultimate satisfaction. Study in a child is of far less value for the material gained than for the habits of thought acquired; not the amount, but the method is the important matter. A coherent, consistent plan for mentally occupying the child is particularly important if he is neurotic, especially hysterical in tendency.

This word is used to denote the type of individual prone to uncritical acceptance of the environment, and in consequence, easily influenced, in a word oversuggestible (see Case III). Such persons later in life become prone to imaginary ailments;⁴ for these they are apt to seek relief at the hands of charlatans. They comprise a large part of the following of the new movements, in which shibboleths so often take the place of thought. If there is a pragmatic sanction for a cult of this kind, it is sure to attract a large number of these uncritical individuals; for most of these belong to the class of "practical," unimaginative people. That is to say their imaginations remain crude, lacking breadth to develop a cultivated imagination like that of the poet, statesman, or man of science.

Why a child's mind needs work. Because they fear to overburden the child mind, parents hesitate to institute systematic education of very young children. As a matter of fact, proper mental labor is needed for sound psychic health. Physiologists know that a disused organ is more liable to disintegration or to become diseased than one which is regularly used. It is by suggestion, of which imitation is one avenue, that various fads and dislikes concerning food and drink are acquired.

I need not expand what is an axiom, but an impression prevails that growing organs should not be subjected to work. This is a gross error, for organs which do not work cannot grow well. Even the bones become tough, hard, and large in proportion to the stresses to which they are subjected by frequent and vigorous pulls where the muscles are attached. The comparison of the average male skeleton with that of the average female strikingly illustrates this fact. But proper development is possible only during the period of growth, the growth in adult structure being relatively slight, however great is the exercise of function. What is true of structure is true of functional power. From ballet dancers to violin virtuosi, artists must

be trained from early youth. It may be objected that this is so because muscular agility is required, but this objection is only superficial, for dexterity of an artist is made possible not merely from superior coordinations of movements, but by means of the superior speed and accuracy of the guiding mental processes which reside in the brain.

Now, as intellectual dexterity is also a function of orderly functioning of mental processes seated in the brain, it should be manifest that these, too, should reach excellence best when they are trained by a capable hand during the formative period of early youth.

To learn to concentrate keenly, games are best; therefore, the first fault to avoid in order to prevent neuroticism is an inattentive slovenliness of thought and act. The finest of all means for developing the power of attention in children are exercises and games, more especially the latter; because, if properly conducted, they counteract slipshod ways, and make for an efficiency the results of which are evident at once, giving a satisfaction which sustains the attention. But even games can be psychologically harmful if they are allowed to deteriorate into an inattentive go as you please, without zest.

Active play stimulates attention in two ways: First, by the interest and by the pleasure of accomplishment, and, secondly, by the emulation of others. On account of that very interest, however, games must be used moderately and as a means to an end, or they will speedily dwarf in the child's mind his interest in more directly useful accomplishment. The social function of play will be spoken of when the inclinations, altruism, anger, and anxiety are discussed.

Oversustained attention. Every athletic trainer knows that staleness supervenes when an athlete is taxed beyond a certain point. To be stale or overdone is the colloquial expression for what physiologists would call fatigue. Now, psychologists have by experiment proved that attention is very quickly tired; and the more intense it is, the sooner it fags, even while interest is maintained. Pedagogy shows the futility of prolonging children's work beyond certain hours, even for the sake of the work itself. For the sake of the child's health, physicians have long pointed out the iniquity of artificially stimulating the interest of a fagging child. Just as detrimental to concentration of attention as lack of training, is the exhaustion ensuing upon an effort too sustained for the child's capacity. The maximum concentration is only possible for a very short period, and even then is proportional to the favorableness of the conditions both bodily and psychological. For instance, it would be very wrong to compel a child to practise concentration while his energies are engaged in the digestion of a heavy meal, or immediately after strenuous muscular activity, or when in need of sleep. None of these well known dangers would be incurred by wise parents of a neurotic child.

But there is another aspect of overprolongation and insistence upon the attention of a nervous child; that is the cultivation of an overnice or scrupulous manner of performance and of thought. The development of this quality becomes interwoven with

⁴See my article, *The Nature of Hysteria*, *Internat. Clinics*, Aug., 1908; also in *Boston Med. and Surg. Jour.*, 1909, etc.

the deepest feelings of the personality; in consequence, its avoidance had better be considered after we have discussed the relation of the feelings to neuroticism.

Overintensity. Eagerness and overintensity not only exhaust, but frequently lead to ineffective effort, a kind of stammer of movement, a lack of directness and precision. Of course, this physical expression in movement is only a reflection of the action of the brain which is the director of the movements, which are merely the index to wavering thought. The remedy for this condition is to insist upon deliberateness and system, both in play and work. The practice of musical exercises is especially beneficial in teaching steadiness at gradually increasing velocity. The practice of recitation from memory and the systematic relation of incidents which have happened, are other useful methods in the correction of this defect.

Overeagerness may lead a child to neglect his meals and sleep, so that even when there is no mental stammer, and there is a high degree of dexterity at work and play, yet nervous instability ensues on account of imperfect repair of waste. For example:

CASE II. Boy, aged eleven years, was brought by his mother who was referred by Dr. Thomas Clayton because of grimaces and nervous movements which she knew presaged a breakdown such as he had had twice before, on account of which he had to spend two years away from school, rustication. He was a boy of extraordinary capacity, far excelling others of his age in all athletic sports, and when at school immediately springing to the top of his class. Conversation showed that he was no mere parrot, but had both common sense and poise. He even recognized his own overintensity; but his ambition made him unwilling to lay much stress upon it from the fear of being kept from school and athletics.

His good sense was shown by his retaining a friendly attitude even though forbidden the competitive athletics which he loved. This, however, was perhaps the easier as the other restrictions were minimal, consisting merely of a modification of the diet to make it accord with the principles already spoken of in the preceding section, and the enforcement of a half hour period of complete rest after meals. The object of this was twofold; first, to secure repose for digestion; and, secondly, indirectly to prevent hasty eating, as when he could not go out immediately after dinner, nothing was to be gained by bolting it. These simple measures produced astonishing results, the grimaces all disappearing, and the boy acquiring much greater stamina.

This boy's father is of the same temperament, a type whose mental processes are very much more rapid than the average individual's; so that in the same space of time, two or three times the usual amount of work can be accomplished, at a corresponding expenditure of nerve force.

These persons are nearly always subject to insomnia. This is not due to worry, nor even to a desire to think for the pleasure of it. It is because the energies have been so actively deployed toward the cerebrum that the body processes cannot settle down to the resting pace. The condition is quite similar to that produced in most people by tea or coffee. It has, of course, a purely physical basis, and is very likely due to an overabundance of substances of internal secretion which activate the tissues, as we know is done by the products of the thyroid gland, the adrenal, and the pituitary body.

In this variety of exceptional child there is need of very special treatment in the direction of shorter

hours of work, and great attention to nourishment and repose. If this is not secured, the vitality needed in the struggle of life will be dispersed prematurely, and the child will fail to complete his undertakings from lack of stamina.

2. *The mismanagement of emotion, sentiment, desires, and inclinations.* a. *Intemperance.* An emotion is an involuntary reaction within the body itself without reaction upon the environment. For instance, the word, pathos, expresses the idea of a suffering of the subject without any external action. This apparent difference between emotion and action has an anatomical foundation; for motion is accomplished by contraction and relaxation of muscles in which the protoplasm (7) is arranged in layers across the grain, and it is subject to direct control by what we express as the will; whereas emotion is accompanied by contractions and relaxations of nonstriated muscle which moves only such tissues as the coats of blood-vessels, the walls of stomach and intestines and other organs, the roots of the hair, the substances contained in the cells in the glands. So much is this so that the feeling derived from these movements is to some psychologists the emotion; and a person without these structures would feel no emotion even at the most distressing circumstances. But while the reaction of emotion cannot be influenced directly by willing it, yet it is for practical purposes under the influence of the central nervous system, that is to say through the impressions received by the senses, the sensations of which are by association elaborated into perceptions on account of the memory of similar allied, contiguous, or contemporaneous sensations. These are abstracted into what we call ideas, and the process of elaboration is called thought.

Now, every sensation is either pleasurable, painful, or indifferent; and likewise is each percept, idea, and process of thinking. The chance of any of the latter being entirely indifferent is very small. The feeling toward a thought is a species of emotion known as feeling tone. It is a practical axiom that the feeling tone depends upon the thought of that moment, and is a condensation of the numerous feeling tones concomitant upon the episodes of which that thought is the abstraction. Which element of a thought shall preponderate is a matter of attention; and as each thought has its sombre and bright elements, it may be made capable of affecting the feelings either pleasantly or unpleasantly. The popular expression, "looking at the bright side," has a real psychological foundation. By deliberate attention to the ugly or distressing aspect of the recollection of an episode, pessimistic feeling is readily induced, along with its various bodily reactions, muscular relaxation, shown by sagging back and shoulders, drooping mouth, slow movements, lack of ambition, the interference with digestion and assimilation showing themselves as indigestion, constipation, slowing of respiration, and interference with the internal secretions of the body.

On the contrary, if attention is focused upon the pleasing or beautiful elements in the concept, a feeling of satisfaction is engendered, shown by bright eyes, radiant face, brisk step, active breathing, good digestion, and enterprising mind. The degree to which the way of looking at things can affect one's

judgment, is illustrated on a large scale by various associations of optimists, whether these band together under a religious aspect or not.

Shakespeare has made Hamlet say, "There is nothing either good or bad but thinking makes it so." This is not a mere phrase. The effect of the way of looking at things upon the bodily reactions is most profound, as has been proved beyond refutation by most carefully controlled experiments.

Pavloff, by his experiments on the dog, proved that merely showing him the whip would suppress the flow of gastric juice. The dog was a victim to his imagination, and became ill to the extent of an incapacity to secrete gastric juice, which means very ill indeed. Indeed, psychogenic physical illness of this kind may reach such a degree as to cause death, as has been experimentally shown by Crile and others.

The sufferings induced by the "gnawing fox" of the Japanese are made possible only by a deeply rooted belief in its existence. For example, a woman after labor declared she felt the "fox coming"; this was her interpretation of the afterpains. The great parade of the neighbors in attempting to prevent the fox's attack only reinforced the patient's apprehension, and soon a horrible convulsion signaled her seizure by the fox. Terror and convulsions held her until the exorciser was called. He declared that the fox would leave her at four o'clock the next day, provided that certain offerings were placed on a certain tomb for it to eat. This simple suggestion caused her to dismiss her terror suddenly at the hour designated. The crudeness of the mechanism (7) in the case of this ignorant oriental need not make us smile, for some of our western cases are very little better. The following case illustrates the mechanism of tics (8) and insomnia by suggestion.

CASE III. A child had a series of tics, consisting of smacking the lips and bending down, touching the floor, resulting from her desire to avoid hurting others with her breath, which she believed was noxious, and to avoid hurting the floor with her hard heels. Therefore, she applied the "healing kiss" to the air which she expired, and the "healing touch" to the floor. After these had been removed in a sanatorium, she was thought to be too nervous for school, especially as she could not sleep for hours after her mother attempted to teach her. In reality this child was not "nervous" at all. She was neither apprehensive, nor fidgety, nor irritable, nor of a difficult temperament. She had stayed awake by suggestion, because her parents had let her see that they were afraid of it. The matter was explained to the child and parents, and in consequence of the step thus taken, the child has attended school and remained perfectly well psychologically ever since.^a

The seeming excessive reactivity of people who feel emotions deeply is not direct, but arises merely because the emotion gives a more imperative aspect to the notions in consequence of which they act. If the action is intemperate, it is not so much because the emotion is so, as because the ideation is not adequate to form proper judgment.

For instance, a boy of eight years was sent to me because he was subject to "fits," previously diagnosed as epileptic, which consisted of sudden attacks of fright and the imperative desire to rush away. I soon discovered that this was due to his fear of wild animals, induced by the general timorousness

inculcated by a foolish mother, who developed in him a timorousness which was the source of his impulse to run away. A simple explanatory talk and some psychomotor (9) exercises showed the boy how to obtain control, and after the interview he recovered completely from the consequences of his morbid fears.

This case illustrates the fact that even in children a realization of the situation is the important thing. It is only when a patient can intelligently interpret the symptoms of a psychogenic (10) disorder that he is in a position to cause them to disappear. The patient does not get well from the analysis, but because of the psychic procedure adopted therefrom. The reason this boy ran away was because he thought there was a wild beast; both the emotion of fear and the action of running away were natural enough in the premises. The fearsomeness of his surroundings had been inculcated by the attitude of an unwise mother.

Emotions. The most incommending and often dangerous of all the emotions is fear. In the case of the boy just related, it was the induced fear which caused him to rush away. The whole psychology of fear would take too long to amplify here; but as it is the foundation of most of the disturbances known as psychoneuroses (11), to which the neurotic child is most subject, it is necessary to consider its prevention. Perhaps this is best done by an illustration and the commentary upon that.

CASE IV. The formation of a night terror (12) was nipped in the bud in the case of a boy aged three years and nine months. For several weeks he had been visiting the zoological garden every afternoon in company with a French maid of exceptionally forceful character, and apparently free from the superstitiousness of the average nurse. For a long time all went well, until one evening he began to cry in bed soon after he was left for the night. At this unusual occurrence, I mounted the stairs and inquired the cause of the boy's trouble. He said there were lions in the house, and that he did not want to stay alone, as he was afraid they would eat him. The source of the idea had been that the lions had roared more loudly than usual on that particular afternoon, and he had been much impressed, standing for some time quite motionless before the cage, though unterrified. I soon convinced the boy that the lions had to remain in their cages, and could not get out, hence there were none in the house, so that there was no occasion for fear. Of course, it was first necessary to give him the feeling of security gained by embracing me, and secondly, to begin the conversation by talking of something else. In this way the state of terror was dismissed, and the feeling of protection was induced before we returned to the subject of the lions; then we made rather a joke of the funny roaring of the lions before we had finished, and he finally lay down with the solemn purpose of going to sleep and think, as I suggested, of the cars and motors passing outside his open window. It was all a very simple substitution (13), but it was the prevention of what might have become a serious fear psychosis (14) if injudiciously handled.

When the fears are already formed, the resources of a good neurologist should be invoked in order to disperse them. I give an illustration.

CASE V. Girl, aged sixteen years, was referred by Doctor Litchfield, of Pittsburgh, November, 1913, on account of great nervousness for years. She had never been regularly to school until the fall, when she had been sent to boarding school after convalescing from an appendectomy, but had become so nervous that she had to return in two days. Inquiry showed that she would frequently awake in the night very much afraid unless she were soothed by some one sleeping with her, so that she could never sleep alone. Further inquiries showed that a servant had told terrifying stories to her sister as a child; the horrors this brought ran

^aThe case is fully described in my paper, *Psychogenetic Disorders of Children*, *Amer. Jour. Med. Sci.*, 1912, and *Jour. Abnormal Psychol.*, 1912.

through a family of three children, but they passed away from all except from this patient. She had been much indulged between the ages of three and six years, and had been somewhat spoiled since, owing to a supposedly weak heart, and had always been considered a weakly child. Her father and her aunt had been timorous as children; the latter for nine years had not dared to be alone for a moment.

Her fears were either of fires or burglars, and they occurred only when she was in bed or asleep; she whined when dreaming and awoke frightened, but never screamed although she clutched her companion desperately for reassurance. She was sure she wanted to get rid of this sensation trouble. She could not remember the first occasion of fear. Noises, such as creaking floors, made her think there was someone in the house, although she knew positively there was not, but could not make herself believe it. She was ashamed of the emotion and would go to bed alone, although terrified, if there was someone else up stairs, but not unless, but would wait until her mother came unless they were there. She imagined a burglar might hurt her, if pushed to it.

Analysis showed that there was no definite fear of what he might do to her, but that the fear was of the unknown, and although it might help her to know it, it might be too terrible. Her agitation upon speaking of this she attributed to her shame of being "babysish." I explained there was no shame in what one could not help, but she could not recover, until an understanding was gained through analyzing the situation. She was not less frightened when away from home, but any person in the room would tranquilize her fear upon waking if she could touch her. The night fear was quite different from any fears in the daytime. After the analysis she was asked to go home and write out her impressions of the situation, which she did as follows:

"The earliest instance I can remember was about eight years ago, when my nurse sat in the next room while I went to sleep. For five or six years afterward some one was with me when I was going to sleep. If I woke up in the middle of the night—which I usually did—I would be terrified and go into mother's bed, with her, in the next room. It is only within the last few months that she has been sleeping in the same room with me the entire night. Before that I always went to bed in the room next hers, but rarely remained there all night. I cannot ever remember having the nurse put me to bed in the room and then leave me to go to sleep by myself. She was always in the next room. It made very little difference whether my mother, nurse, or sister were with me. I preferred mother, but would have any one rather than be alone. I was always worse in our city home than in our country home, because I thought there would more likely be burglars in the city than way off in the country. I would go to sleep more quickly in the country, but would always have some one with me. As long as I can remember I have dreaded the night. I always lie awake a long time after going to bed fighting with my terror of burglars. Every sound made me think of them and I used to hold my ears shut so that I could not hear the floor creak and try to go to sleep in that way. So when I thought of those long, sleepless hours I would wish there was no such thing as night."

Her dread was mingled with self contempt at her "silly babyishness." Three dreams were obtained. The first and second were of a burglar entering a window. The analysis showed only that the intruder aimed to shoot her sister who was standing up behind her; a dream of fears of elevators led to no pertinent associations (16).

As the dream analysis was so unfruitful, I believed it best at once to proceed to reconditioning (17) of the psychological reactions. This was attempted in the first place by studying the child's power of understanding of what I gave her to read about the psychology of fear, and by making clear to her what she could not understand alone. In the second place, she was given exercises in mental concentration, and as she became more proficient in these, was urged to apply them to the study of her own feelings of nocturnal apprehensions. The principle she was made to grasp was that fear and shame of her fears prevented her from facing and examining them, which was the essential preliminary to the understanding of their origin and their disappearance. In ten days she returned home, not yet able to sleep alone, but beginning to obtain mastery. A month

later, her mother wrote me that she was entirely well and when she awakened in the night would quietly turn over and go to sleep without troubling anyone, and was physically and in mental health better than at any time in her life. This child has been at school now two years, and is quite normal.

Concerning shame and anxiety. Shame played a large part in the foregoing case; but shame is merely social or moral dread, and physiologically speaking must be treated just as is fear. When the moral factor is very strongly present and the physical agitation is decided, the condition is termed anxiety. A great deal has been recently written about the victims of chronic anxiety; but most of the writers are too narrow in their conception in relation to the fear or shame which is its basis and have often strained their explanation to fit a preconceived theory. In this respect the work of Dr. Boris Sidis in this country, and of Dr. Pierre Janet and of Professor Déjérine in France are notable exceptions. Upon the foundation of anxiety are frequently developed scruples and little manias (18), or even tricks of manner, expression, and gesture. The grimaces which children make sometimes have this foundation. They are immediately due to a sensation of discomfort. When this is more purely intellectual, it gives rise to a feeling of incompleteness or inadequacy to a situation. When focused upon some particular idea the feeling of inadequacy may give rise to an obsession (19) concerning the difficulty presented. This besetment is always accompanied by a certain morbid dread known as a phobia (20). These various symptoms have the same psychological foundation and very frequently alternate in the same patient.⁶ These manifestations are termed by Janet, psychasthenia. Again the best understanding of the situation is furnished by an example, although the well developed disease is unusual in children, as the manifold symptoms require an intellectual bent which few children possess.

CASE VI (multiple manias). Boy, aged fourteen years, was not doing well at school; he would take hours to dress in the morning, and would go away and dream by the hour. Analysis of the situation showed that his condition was the result of reactions caused when the child was only three and one half years of age. He had been the only child, much petted and loved. When he was two and a half years old a little brother was born, and he was jealous of the newcomer, who immediately became the petted and loved one of the family. He was reproached by his parents. In consequence, he was made to feel hyperconsciousness because of his bad behavior, and forthwith developed little "manias" as expiations which led eventually to the more complex symptoms which had developed when I saw him. He felt that he was unreasonably jealous of the little brother and that he must do something to compensate for it—to touch wood or to put on his clothes slowly or in a particular way; and he had, as a result, built up this elaborate series of habits. He was cured in a few months.

Instances of manias of expiations are not uncommon, even among persons judged normal; thus many persons feel that the mere touching of wood or avoidance of the number thirteen wards off misfortune. People tend to do these things to be rid of an uneasy feeling. Whether or not these are interpreted in some definite way or not depends on the environment.

CASE VII (malady of scrupulosity). The son of a United States Senator was thirty years of age when seen.

⁶See a series of case reports on this subject, Multiple Psychasthenic Groups in a Psychopathic Hospital, NEW YORK MEDICAL JOURNAL, Feb. 15, 1914.

His condition had been very serious for a long time. He was cured in less than two years by a gradual education which freed him from extreme dependence upon oversolicitous parents. The young man would take two or three hours to dress in the morning, even when helped. He had lost all initiative, and before performing any act felt compelled to go through numerous trivial expiations.

Manifestations of this kind are not uncommon. The persons subject to them are sometimes mistakenly called neurasthenic (21). But the condition is usually psychogenetic and always arises from habits of thought and emotion which have been allowed to arise during childhood because the parents have not known of the danger of oversolicitude, excessive sympathy, or its contrary, neglecting the child's affections until it falls back upon self pity.

Rigid insistence upon discipline and routine is a fertile source of psychasthenia. In the United States it has not often been severe; but in Germany many hundreds of children have been so psychasthenic that they have committed suicide because unable to endure the stress of existence.

Overinsistence upon religious tenets, more especially when these have a basis of asceticism, has produced a great deal of this malady of scruples, as Janet has called it. This again is less abundant in the United States than in countries where the church has greater authority.

Especially prone to these dangers are children who from any cause are kept from close companionship with other children, e. g. an only child, a child in a family which thinks itself better than its neighbors, a delicate or much refined or unusual type of child who is too sensitive to the jibes and cruelties of youngsters, tends to lack the intimate companionship which would neutralize the morbid influences at home. Lastly, physical disorders themselves may give rise to a timorousness and scruples which make of life a psychasthenic thing.

Psychic hardening. Just as the bones and muscles become strong by arduous exercise in childhood and early youth, so does the psyche become resistant to the "slings and arrows of outrageous fortune" by practice against them during childhood, the formative period. It is a crime against a child not to give him practice in self mastery against rebuffs, snubs, slights, and discouragement; for if he encounters them for the first time when mature, the struggle against his feeling of injury will require enormous energy and seriously interfere with both happiness and efficiency; whereas a child soon rebounds against the insults, without undue melancholy, provided that the education is begun very young.

Shame of sex. A matter which causes distress of mind to some young people, more especially girls, is shame of the bodily functions. The painfulness with which what they have come to regard as a sacred mystery meets the shocks of what to them is a calous, ribald world, would have been avoided had their education been conducted with respect to their own physiology at the proper time, that is to say, when they made inquiries concerning what they observed. Instead of that, the barbarous idea of the shameful of a normal function is inculcated, implicitly at least; and the consequence is a large number of what have been called sexual neurasthenics, who are often too ashamed even to consult a doctor.

Hence they ask advice of advertising charlatans who only add to their horror and then exploit them for gain.

Shyness. Social timorousness, which is only a kind of shame, finds a powerful antidote in games; for these encourage the free play of the inclinations and initiative in dealing with persons on an equal footing; so that the timid child is often surprised into dealing with the situation just as anyone else does; therefore he gains confidence in his capacity and encouragement to try something else which his diffidence has prevented hitherto.

For the timorous child, social intercourse should be shorn as much as possible of conventional restrictions. Americans, especially in the west, can scarcely realize to what a degree conventionality and artificial class distinction has interfered with social life and the integration of corporate activity in monarchical countries.

To protect a thoughtful child from being victimized by social shame, which he would allow to eat his heart out rather than divulge, a good method is to explain to him the idea of social solidarity and his own place in the human cosmos; so that when treated rudely or superciliously, he will understand that he need feel no embarrassment; for it indicates merely a lack of good breeding on the part of the person who so treats him.

DEFINITIONS.

1. *Germplasm.* The portion of the ovary which does not take part in the development of the body of the embryo, but gives rise to the reproductive elements of the adult.

2. *Psychopathology.* A word used to denote abnormal behavior, not due to physical defect, but the result of impressions upon the mind. Peculiarities of temper, bad habits, perverted inclinations, morbid fears, annoying thoughts, irregularities and incapacities in movement, may each be the result of causes purely psychological. The science of their causation is called psychopathology. The science of their treatment is called psychotherapy.

3. *Protein.* The nitrogen-containing substances of living bodies as detected by chemical analysis. They are of different kinds, and are essential for growth and the maintenance of body weight. Their chief dietetic representatives are eggs, lean meat, milk, and cheese.

4. *Purin.* The substances which give rise to uric acid.

5. That is from the unmilled grain.

6. *Protoplasm.* The portion of the body which is alive as distinguished from bone, skin, and other substances manufactured by it.

7. *Mechanism.* A simile borrowed from mechanics to denote the constituent mental processes of the complete account of any psychological situation.

8. *Tic.* Is an abnormal movement, not produced by mechanical or chemical agents, but due to an act of the will. It has the character of compulsion and inopportune to the surroundings. It is usually derived from some purposive movement, the occasion for which has ceased. It acts as a relief to feeling of discomfort or tension. When the tic is frustrated by the will, much distress is caused at first. To cure a tic, either the discomfort upon which it depends must be discovered and removed, or else the patient must be taught to master the impulse to perform the abnormal movements. This is accomplished by disciplinary exercises in controlling those muscles subject to tic. This is facilitated by all kinds of training in self control.

9. *Psychomotor.* Movements inaugurated by psychological means as against automatic movements, and especially designed to develop the function of control.

10. *Psychogenetic.* That which is produced by the psyche, that is to say, the emotions, intellect, and will as against the soma or body, which comprises purely mechanical and chemical agents.

11. *Psychoneuroses.* Mental disturbances not caused by bodily disease, and which do not lead to dementia or other mental alienation.

12. *Pavor nocturnus* was once supposed to be a disease in itself, and a great deal of superstition gathered round its very alarming manifestations.

13. *Substitution*. The process of changing one idea for another which dominates the mind.

14. *Psychosis*. Is a term used in two senses. In psychology, it is equivalent to a psychological state or episode. In medicopsychological work it has been used to denote a condition involving insanity.

16. *Associations*. Process by which episodes occurring together or in sequence are linked in memory. The notion of causality is a matter of association. Analysis of unusual juxtaposition of ideas sometimes reveals circumstances which have led to psychoneuroses.

17. *Conditioning*. Is a term given to a changing of reaction to circumstance through modifying the ideas regarding it. It is a change of mental attitude. Its potentialities are enormous.

18. *Mania* has two senses; the best known one is that of violent insanity; the other meaning, used here, is of a little twist of thought, a slight obsession. The term monomaniac refers to this sense of the word.

19. *Obsession*. A morbid idea not so fixed but that the victim questions it and quite realizes its morbidity. The struggle for verification gives rise to discontent and distress. The doubting mania is a form of it.

20. *Phobia*. An obsessive fear not warranted by external circumstances. Very common is the fear of high or wide places, the fear of microbes, pollution, of assault, of animals, of the dark, of ruin, in fact of any situation of human experience; or even a fear of the unknown. They are entirely curable by modern psychotherapy.

21. *Neurasthenic*. A term which should be properly restricted to conditions of simple exhaustion or failing stamina of which the mechanism is physical. In this sense it is by no means so common a condition as was supposed at the beginning of the century.

1705 N STREET, N. W.

SARCOMA OF THE INFERIOR MAXILLA.

By J. DAWSON WHITALL, M. D.,
Philadelphia.

The writer reported a case of small round celled sarcoma of the lower jaw in the NEW YORK MEDICAL JOURNAL for February 24, 1912. The case was



operated in, in August, 1911, so that over four years have now elapsed. During this time the subject has had several courses of x-ray treatment and im-

tations of Coley's fluid twice. He seems normal in every respect—there having been no recurrence. An inflammatory process in the submaxillary gland made us suspicious one year after the primary

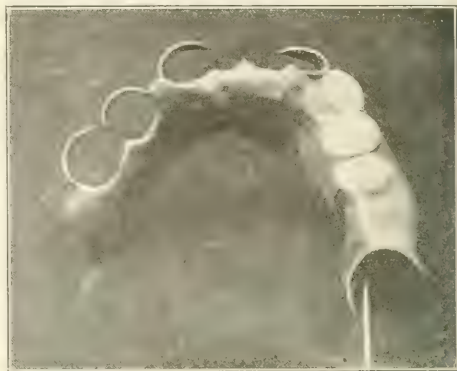


FIG. 2. Removable plate, with teeth, which keeps the jaw in position.

operation, so it was removed and carefully sectioned. No cancer cells were found, however.

Fig. 2 shows the removable plate with teeth which spans the last molar on the affected side and encircles the front incisors; virtually wedging apart the halves of the maxilla. I am indebted to Dr. L. E. Martin for the excellent reconstructive dental work.

2124 NORTH TWENTIETH STREET.

THE MINOR COMMUNICABLE DISEASES.

By S. W. NEWMAYER, M. D.,
Philadelphia.

The control of contagious and communicable diseases is the chief function of health departments. By the success or failure in this duty are judged those who are entrusted with the public health. Creditable work may be done in building hospitals and institutions for the care of the sick and dependent, public improvements for the health of the community may progress, yet if contagious diseases are epidemic and uncontrolled, the health department may be censured and even looked upon as a failure.

The major communicable diseases in large cities have been decreased materially; smallpox, owing to legislation making vaccination of school children mandatory, has been almost eradicated; scarlet fever and diphtheria have been decreased by stringent quarantine and laboratory surveillance. The intelligent cooperation of the medical profession and the extensive use of antitoxin for the curative and prophylactic treatment of diphtheria, have taken from this disease the danger of great ravages. Typhoid fever is fast receiving its quietus through better and safer water supplies and the control of food, including milk.

The minor communicable diseases, including measles, chicken pox, whooping cough, and mumps

seem to go on unchecked. This assertion is readily proved by studying the mortality and the morbidity of these diseases in any section over a long period of time. Some cities have deluded themselves into believing that they have a decrease, by noting a lower mortality for one, two, or three years, but they ignore a constant or increasing number of cases in recurring cycles. Only by close and intelligent survey of vital statistics is the true situation made apparent; the statistician must be mindful of such facts as that during epidemics of measles, physicians often designate on death certificates bronchopneumonia, gastroenteritis, and other sequelæ of measles as the primary cause of death. This discrepancy is evident when we note during an epidemic of measles or whooping cough an invariable increase in diseases known to be sequelæ of them.

Some physicians and most of the laity still cling to the unfortunate belief that measles, chicken pox, and whooping cough are a part and parcel of the life of a child, and the more quickly he gets them, the more quickly he is immune. These victims of a time worn and disproved belief are difficult to teach, and add to the menace of the diseases. They should know that measles causes about one per cent. of the total mortality in the United States; they should know that about five per cent. of the cases prove fatal.

Even in nonepidemic years, the mortality is great compared with other diseases considered grave. The following table shows the number of cases and deaths in 100,000 total population in Philadelphia during 1914; and when we consider that measles and whooping cough are diseases of childhood, chiefly in the age period under ten years, and should be compared to a population of the same age period, the extent and seriousness of these diseases are greatly emphasized.

RATE PER 100,000 TOTAL POPULATION, PHILADELPHIA, 1914.

	Cases.	Deaths.
Measles	484	44
Whooping cough	247	153
Compare with:		
Diphtheria	158	20.1
Scarlet fever	117	7.8
Typhoid fever	47.8	7.5

In the registration area of the United States, 1909-1911, there were 17,380 deaths from measles; 10.6 per 100,000 population; 14,067 of these deaths occurred in children under the age of five years. Here is a vulnerable spot for attack in campaigns to reduce infant mortality. Measles respects neither sex nor social position, and even age is no barrier, as over 800 deaths occurred in persons over the age of thirty years.

One who is acquainted with public health affairs would never doubt that a large number of cases of minor contagious diseases are unreported, owing to the neglect of physicians or unattended patients. These unreported cases would possibly increase the known number by twenty-five per cent. This is one of the inaccuracies of vital statistics; but a greater and more important error is found in accounting for the number of deaths and rate from these diseases. The foregoing assertions may be clearly understood and the dangers of the so called minor contagions are made apparent by a study of a few statistics

here submitted. These cover an epidemic of measles in Philadelphia in 1913. I desire to call attention to the number of deaths ascribed, in the two years compared, to measles directly, also the increase in deaths from pneumonia, especially bronchopneumonia. Draw your own conclusions as to the cause of increase in deaths from the respiratory diseases, and if the assertion that most of these deaths should have been labeled measles is true, then measure the correct and truthful fatality of these so called harmless diseases.

	1912.	1913.
Whooping cough. Cases	1,360	1,438
Deaths	100	106
Measles. Cases	2,270*	15,611†
Deaths	50	199
Bronchopneumonia. Cases	(?)	(?)
Deaths	100	1,049
Pneumonia. Cases	1,339 (?)	1,401 (?)
Deaths	837	1,434

* 1 case in November and December, 1912; 1913, January to July.

These statistics represent an epidemic of measles, which began in November, 1912, and lasted until July, 1913.

The vital statistics would here lead us to believe that 199 deaths were due to measles, but an analysis of the added deaths from the pneumonias give ample evidence that the actual number of deaths from measles was about 1,700.

The object of this paper is not only to substantiate the plea of many physicians that the profession and the laity should not consider these diseases of childhood a necessary evil and harmless, but also to suggest some remedy.

Most of the cases of measles, chicken pox, and whooping cough occur among children under ten years; children at school age are more susceptible, especially from four to six years of age. Institutions and schools are the hot beds of infection. There are men who believe that when a case occurs in a public institution, there is nothing to prevent every child not immune by previous attack from acquiring the disease. This is decidedly not true. They assert that the patient is infective for two or three days previous to the appearance of the rash and consequent diagnosis; and that the damage has already been done. I insist that an observing medical examiner can detect the average case of measles in the earliest stages, even before the rash. During an epidemic of this disease, the drooping, unnatural appearance of a child, a slight cough, watering of the eyes, or coryza, possibly Koplik's spots, are sufficient to exclude and isolate at once. Label these cases as suspicious and wait for developments. You will not be wrong in many cases.

Where there is school medical inspection, every class should be examined each day by classrooms. This is best done by the physician standing with his back toward a window, while the pupils pass in front of him in single file. Each child, as it approaches the physician with outstretched hands and head elevated to give a full view of the face, turns its hands to show both sides. The physician who is even fairly keen in observation, can readily detect cases of contagious disease. This inspection of a class of fifty pupils requires only from three to five minutes, so lack of time is no excuse for not performing such work. The author knows of a school of 500 pupils which, by this procedure, was kept

almost free from measles during an epidemic. A nearby school, during the same period and without such inspections, suffered from a marked decrease in attendance owing to the disease.

Not only are the pupils infected, but they often carry disease to younger children remaining at home with more or less serious results. Often an infant not out of the house or the mother in contact with outsiders takes the measles, while older children attending school seem to have escaped it. I believe that often the source of infection is a mild and overlooked case in an older school child. Classroom inspections will invariably prevent epidemics in a school and similar inspections in an institution will bring good results.

Parents should be instructed in the proper isolation of a case and the dangers from the secretions of the nose and throat.

The placarding of houses for measles, chicken pox, whooping cough, and mumps seems to be unnecessary, when we can obtain the cooperation of the parents, and this is generally the case. I believe the time is not far distant when placards for contagious diseases will be abandoned as worthless, as occurred with room and air disinfection. Several years ago, woe awaited the person who assailed health department disinfection, but now he is proclaimed sane and scientific. It remains for some daring layman or health officer in authority to abandon placards. When a health officer has not sufficient confidence in the occupants of a house where contagion exists, the case belongs in a hospital under the direct supervision of the authorities. A placard does not improve the integrity of the occupants.

Prompt notification to the health department is necessary to obtain satisfactory and effective isolation. Many physicians who, under present health procedures, ignore the reporting of minor contagious diseases, would cheerfully submit and assist the department if the placard was omitted. Parents who succeed in diagnosing the diseases without medical aid, often keep the facts from the physician, and try home remedies, and the physician is called only when a critical sequela has set in. Even then they hide from the doctor the fact that the child has had measles. This fact alone, I believe, is responsible for the incorrect labeling of a number of deaths from bronchopneumonia. Surely neither mothers nor physicians would lay themselves open to prosecution for failing to report a case of contagion, and supply the evidence on a death certificate. Abolish the placard and offer the afflicted seemingly more liberal treatment, the least inconvenience and publicity commensurate with the safeguarding of the family and the public, and there will be fewer unreported cases and the solution of a difficult problem.

Air disinfection has been wisely abandoned. However, the disinfection which consists of freely using soap water and scrubbing brush on floors and furniture, the liberal use of fresh air and sunshine, should be encouraged to take the place of the abandoned procedure. I believe the idea obsolete that the child with measles should be kept in a dark room to protect the eyes; the practice is detrimental to the patient, and should be abandoned.

In most homes, to procure the dark room, they close all windows, draw blinds, close shutters and doors; ventilation is an impossibility. The doctor invariably enters a foul smelling room. Beside the loss of fresh air, the dismal dark room must have a depressing effect upon the sensitive sick child. The dark room is a treatment, or a prophylactic, if you desire, for inflamed eyes. In many cases of measles the conjunctivitis is not severe enough to give photophobia. We do not have dark rooms in the wards for all eye cases, and only certain ocular conditions warrant their use. I would condemn the dark room in most cases of measles in order to encourage the obtaining of proper ventilation and add cheerfulness for the sick. The ventilation may reduce the number of cases of respiratory complications; the light may act as a better disinfectant than the darkness; the cheerful surroundings may aid the little patient to a quicker recovery or at least take the keen edge off the thought of being sick.

There are many ways to reduce the morbidity and mortality from the so called minor contagious diseases. Their existence and recurrence is a weak link in the chain of public health.

1834 GIRARD AVENUE.

THE NORMAL STOMACH.

Its Size, Position, Form, Tone, Peristalsis, and Mobility from a Radiographic Standpoint.

By C. WINFIELD PERKINS, M. D.,
New York.

Dr. John B. Deaver, the noted surgeon, in his splendid *Anatomy*, describes the stomach as the most dilated part of the alimentary canal, situated in the left hypochondriac and epigastric region, between the esophagus and the small intestine, and retained in position by the esophagus and by reflections of the peritoneum. The more capacious extremity of the stomach, which is directed toward the left side of the body, is the cardiac end; the narrow extremity, which is directed toward the pyloric side, is the pyloric end; and the intermediate portion is the body of the stomach. The portion of the cardiac end projecting to the left beyond the esophagus is the fundus, or great cul-de-sac of the stomach and the slight dilatation of the stomach at the pyloric end is the antrum of the pylorus or the lesser cul-de-sac. The stomach has an anterior and a posterior surface. These surfaces are somewhat crescentic in shape. The upper and the shorter margin of the stomach is the lesser curvature and the lower border is the greater curvature. The part of the stomach occupying the left hypochondriac region is the cardiac end of the stomach and the body, three fourths of the organ being in that region. The portion of the stomach occupying the epigastric region is the pyloric end, and is in contact with the under surface of the liver.

Such is the anatomy of the operating room and the post mortem table. Radiography has given us an entirely new anatomy, that of the living in a normal functioning capacity, and it is my desire in this paper to show the normal position and

physiological action of the stomach in comparison with the old anatomical viewpoint. Two types of stomach are in existence (Haudeck's classification), the steer horn and the fish hook. The "steer horn" as the name implies resembles a horn of the steer, having a broad base and a narrowing toward the pylorus. Its axis is always oblique in the abdomen. This type is comparatively rare and is usually as-

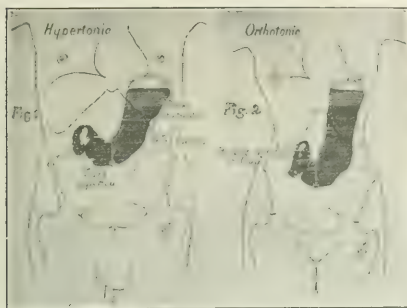


FIG. 1 illustrates the hypertonic type of stomach with its anatomical subdivisions, pars cardia, pars media, and pars pylorica.

FIG. 2 illustrates the orthotonic type of stomach with the filled bulbous duodenum, frequently called "cap," having a similarity to the Liberty cap of the French Revolution. (Drawings after Mills.)

sociated with deep chested and muscular men and rarely found in women. The common type is the fish hook or J type. Its axis is vertical and it is found in nearly all women and many men. Tonus is the ability of the stomach to hold its contents firmly. Stomachs are classified by Schlesinger according to the tone, as hypertonic, orthotonic, hypotonic, atonic, or subtonic. The hypertonic is the steer horn type, the orthotonic the fish hook or J type, and the hypotonic is broad at its base and the bismuth meal usually settles down, leaving the upper portion partially relaxed. The atonic or subtonic stomach hangs like a loose bag well down into the pelvis with the pars media and the pars cardia collapsed.

The capacity of the normal stomach ranges from twenty-four to thirty ounces, any departure from this being usually abnormal. The only positive fixed point of the stomach is the cardia; the other points or portions should be freely movable on palpation under the fluorescent screen. The gastric outline is smooth and regular. A slight indenture may often be noticed below the cardia, due to the spleen, and should not be mistaken for a deformity; a deeper depression is observed at the pylorus or antrum of the pylorus and also by the peristaltic waves. A peristaltic wave usually begins at the pars media and becomes deeper as it advances toward the pylorus. The wave is always more pronounced on the lesser curvature than on the greater. At the pyloric end it disappears and the food passes into the pars ascendens of the duodenum, usually outlining the bulbous duodeni. This is called a stomach cycle, a functional process that begins over again in the normal stomach in from fifteen to twenty seconds.

Following is the report of the examination of fifty-eight normal stomachs radiographed in the

vertical position filled with the bismuth meal (butter-milk and bismuth subcarbonate): Twenty-eight in females, ages from twelve to eighty-two years, thirty in males, ages from seventeen to sixty-six years, or fifty-eight cases in all. Types of stomachs found, males, hypertonic, 5, orthotonic, 22, two with hypotonic tendency, hypotonic, 1. Females, hypertonic, 3, orthotonic, 13, hypotonic, 12. The tendency of the male stomach is therefore toward hypertonicity, while that of the female is toward hypotonicity.

The axis of the stomach is the direction or position of the stomach in relation to the median line.

All the hypertonic stomachs had the axis oblique; thirty orthotonic stomachs had the axis vertical; nine orthotonic stomachs had the axis oblique; ten hypotonic stomachs had the axis vertical; one hypotonic stomach had the axis oblique. The average normal axis of the stomach is, therefore, vertical and parallel to the median line, but it sometimes may be slightly oblique.

We shall now discuss the position of the lowest point of the greater curvature in its relation to the interspinous line; the umbilicus is no longer used as a point of measurement, as it does not remain in a fixed position under the influence of various postures. Thirteen stomachs of the orthotonic type averaged from one to four inches above the interspinous line and from one to two inches to the left of the median line. In nine of the orthotonic type the greater curvature (lowest point) averaged one to two inches below the interspinous line and one to two inches to the left of the median line. In four cases the lowest point of the greater curvature was on the level with the line and one inch to the left. In seven cases the lowest point was above one and one half inch and median in position. One stomach of the orthotonic type was one inch above the line and one inch to the right. In one case the



FIG. 3 illustrates the atonic or subtonic type of stomach with a large bubble in the cardia, pyloric sphincter, pars ascendens, in the duodenum, and descending portion of the latter.

FIG. 4 illustrates the atonic or subtonic type of stomach, with zone of secretions, and pyloric antrum. (Drawings after Mills.)

greater curvature (lowest point) was one inch below and one inch to the right. Therefore, the position of the greater curvature (lowest point) in the orthotonic type of stomach may be from one to four inches above, at the same level as, or one to

two inches below the interspinous line and one to two inches to the left.

The lowest point of the lesser curvature of the orthotonic stomach in relation to the same line was as follows: In twenty-seven cases it averaged from one quarter to six and a half inches above the line and one quarter to two and a half inches to the left; in nine cases the lowest point of the lesser curvature was in the median line; in two cases the lowest point two and a half inches above and one half inch to the right; in one case the lowest point was at the level and to the left. The average position of the lesser curvature in the orthotonic type of stomach



FIG. 5.—Typical peristaltic rhythm of the stomach (after Reider and Grödel).

may be from one to six inches above the interspinous line and is usually to the left of the median line.

The position of the greater curvature (lowest point) in the hypertonic stomach was as follows: In four cases the lowest point of the greater curvature was from three to four and a half inches above the line and from one to two inches to the right of the median line; in one case, the lowest point was to the left; in three cases the lowest point was two and a half inches above the line and situated in the median line. Therefore, the lowest point of the greater curvature in the hypertonic stomach is usually three to four inches above the interspinous line and one to two inches to the right.

The lowest point of the lesser curvature in the hypertonic stomach was as follows: In eight cases the lowest point was placed from two and a half to seven and three quarters inches above the line and from one to three inches to the right of the median line.

The position of the lowest point of the greater curvature in the hypotonic type of stomach averaged in ten cases from three quarters of an inch to three and a half inches below the line and one to two inches to the left of the median line. In one case it was in the median line at the level of the interspinous line. The average position of the lowest point of the greater curvature in the hypotonic variety of stomach is, therefore, from one to three inches below the line and from one to two inches to the left of the median line.

The position of the lesser curvature in the hypotonic stomach in eight cases, averaged from one half an inch to two and a half inches above the interspinous line and from one half to one and a half inch to the left. In one case the lesser curvature was at the level of the line; in two cases the lesser curvature was at the level and placed in the

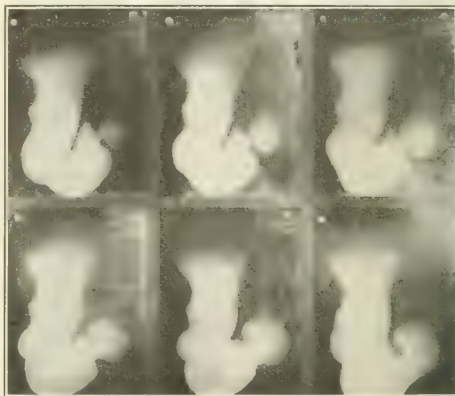


FIG. 6.—Phases of the peristaltic waves of the stomach as visualized with the fluorescent screen or serial plate.

median line; in one case the lesser curvature was three quarters of an inch below the line and to the left.

We shall now discuss the relative position of the pylorus, in the orthotonic stomach where the interspinous line is taken as the point of measurement (the measurement was taken at the first portion of the pars pylorica and not precisely at the pyloric ring) was as follows: In twenty-five cases, the pylorus was from four and a half inches to one and a half inch above and from one to three inches to the right of the median line; in twelve cases, the pylorus was placed from two to four inches above the interspinous line and in the median line; in three cases the pylorus was to the left of the median line and from two to three inches above the interspinous line. Therefore, in the orthotonic stomach the average position of the pylorus is from two to four inches above the interspinous line and one and a half inch to the right or in the median line.

The position of the pylorus in the hypertonic stomach was as follows: In eight cases the pylorus averaged three inches above the interspinous line and from one to three and half inches to the right.

The situation of the pylorus in the hypotonic

stomach, was, in eight cases two inches above and from one half to three inches to the right; in three cases, two inches above and in the median line; in one case two inches above and one inch to the left. The situation of the pylorus in the hypotonic stomach should be, therefore, from one to two inches above the interspinous line, in the median line, or about one inch to the right of the median line.

The length and diameter of the three types of stomach were found to be:

Orthotonic stomach. In thirty-five cases the length was six and a half to twelve inches with an

M



L

FIG. 7.—Orthotonic stomach, showing the relation of the greater curvature, lesser curvature, and pylorus to the interspinous line and the median line. The six hour meal is shown normally in the ileum and ascending colon.

average of eight to ten inches; in thirty-five cases the diameter was two and a half to seven and a half inches or an average of three to three and a half inches.

Hypertonic stomach. In eight cases this averaged seven to ten inches in length, and three and a half to four and a half inches in diameter.

Hypotonic stomach. In thirteen cases it averaged eight and a half to thirteen inches in length. The general average was eleven to thirteen inches. The diameter in the same cases was from two and three quarters to three and one quarter inches.

As to the tonus of the different types, in the orthotonic twenty-eight cases were normal, six exaggerated, three diminished; in the hypertonic, two cases were normal, six cases increased; and in the hypotonic, three cases were normal, ten cases diminished.

CONCLUSIONS.

Peristalsis does not seem to exert any influence on the tone of the stomach, for we may have exaggerated peristalsis with a hypotonic stomach and diminished peristalsis in a hypertonic stomach.

There are no determined fixed points of any type of stomach in the abdominal cavity, except the cardiac portion.

A stomach may be of any of the types and yet be normal from an x ray standpoint.

The average normal stomach is orthotonic. The

M



L

FIG. 8.—Hypertonic stomach (picture reversed in printing). The relation of the greater curvature, lesser curvature, and the pylorus to the interspinous line and the median line is characteristic.

usual position of the orthotonic stomach is as follows: Greater curvature (lowest point) one to two inches above the interspinous line, either median or to the left; lesser curvature (lowest point) three to four inches above the same line, median or one to two inches to the right.

The pylorus is placed two or three inches above the line, in the median position or one and a half inch to the right.

The axis of the stomach is vertical and parallel to the median line.

The length is eight to ten inches and the width three to three and a half inches.

The tendency of the male stomach is always toward hypertonicity, while that of the female is toward hypotonicity.

The stomach is not, as a rule, as high in the abdominal cavity as many textbooks of anatomy

narrowing of the pubic arch, lumbar lordosis, flattening and broadening of the ischial tuberosities, with horizontal coccyx. As to the upper extremities, at the wrist the lower ends of the radius and ulnar are enlarged; to a much less extent the lower end of the humerus is enlarged, while to a still less extent the upper ends of the humerus, radius, and ulna. As to the lower extremities, the lower end of the tibia is thickened at the junction area, and the epiphysis is enlarged; less enlargement takes

For the intelligent interpretation of the x ray findings in rickets, a knowledge of histology and pathology is necessary. The normal growth of bone

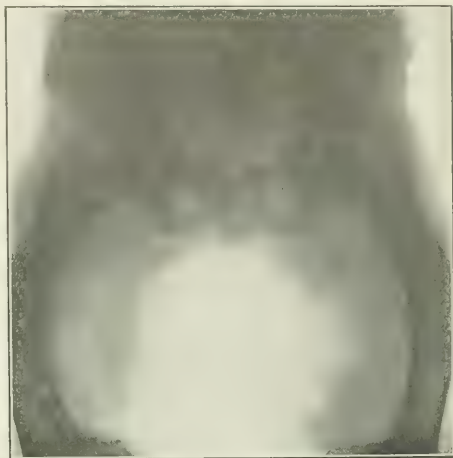


FIG. 2.—Rickets; changes in pelvis and femur.

depends upon the multiplication of cartilage cells in definite lines followed by the calcification of the



FIG. 3.—Rickets; epiphyseal and structural changes.

FIG. 1.—Rickets; spinal and costal deformities, and structural changes.

place in the upper end of the tibia, ends of the femur, and fibula. Bowing and knock knee result. Curvatures are produced by the exaggeration of the normal curves, and are much increased by the swellings of the epiphysis; then muscular action, atmospheric pressure, unnatural posture, weight of the limbs and body further distort the bones; for there is an unnatural flexibility due to deficient ossification.

The foregoing changes may be observed by the naked eye, but for the purposes of record and comparison with the x ray findings it is well to take photographs of the parts.

intercellular spaces for the entrance of bloodvessels with specific absorption of tissues, and the concentric deposition of bone within the medullary spaces.

In rickets, the cartilaginous and subperiosteal cell growth which produces ossification goes on with increased rapidity and in an irregular manner, both between the epiphysis and the diaphysis and beneath the periosteum.

In the zone of proliferation, the cartilaginous cells are not regularly arranged in rows around a definite zone in advance of the ring of ossification as in the normal tissue; but there is an irregular heaping up, sometimes in rows, sometimes not. The medullary spaces are increased in area so as to extend into the zone of calcification and sometimes through it. The deposit of bone tissue within these spaces is either absent, however, or very irregular and is for the most part replaced by a soft, friable substance consisting of bone tissue that is lacking in lime salts; this tissue is called "osteoid."

In the region of ossification (ends of diaphysis and epiphysis) bloodvessels and cartilage cells are increased. Calcification is disturbed or absent. The subperiosteal layers of cells which are normally thin become thickened. Beneath the periosteum is also to be found the osteoid tissue. In the medulla of the bone mucoid degeneration takes place with resorption of bone.

In convalescence, lime is deposited in the previously limeless osteoid tissue and the result is a thick and heavy bone. In fractures at this period callus formation is excessive.

For the purpose of Röntgen study, the pathological changes are classified as follows:

- The epiphysis and zone of proliferation.
- The outline of cortex and periosteum.
- The medullary canal.
- The general structure of the bone.



The epiphysis shows the delay in ossification (smaller than for the given age), and a lack of inorganic material in the bone, thus producing an increased radiability.

The zone of proliferation is much less than normal, showing irregular deposits of bone on the epiphyseal side, with a toothed appearance of the diaphysis. The degree of radiability in the zone of



FIG. 5.—Rickets; showing, as in Fig. 4, structural changes and deformities.

proliferation is more like that of cartilage than that of bone. The periosteum shows a definite thickening. The cortex is thinned. The deposit of bone cells is irregular. The medullary cavity is increased. Cystic formation of bone is present at times. Marked deformities sooner or later become apparent. Fractures partial or complete, with little tendency toward callus formation are frequently present. At points where the strain becomes great, a layer of new bone cells, according to Wolf's law, forms to prevent the bone giving way. This is common in cases of knock knee and bow legs in the lower third of the femur and tibia.

The x ray findings are shown in the five plates from the Hospital for Deformities and Joint Diseases. I am indebted to Dr. Henry W. Frauenthal, surgeon in chief, for the privilege of examination of these plates, and to Miss MacMillan for preparing the prints.

REFERENCES.

- 1. GRAY: *Atlas of Anatomy*. KEATING: *Cyclopedia of the Diseases of Children*. 2. FRANKEL and LORCY: *Archiv und Atlas der Röntgen- und pathologischen Anatomie in typischen Röntgenbildern*. 3. KILLY: *Symptoms of Rickets in Infancy and Childhood*. 4. COLESEN: *Medizin. Fortschritt und Röntgen*. 1908. 5. ARMSTRONG: *Neue Anschauungen über Rachitis Kinder-Ärzte*. 6. WINTERS: *The Pathology and Pathogenesis of Rickets*. *Am. J. Pathol.*, 1911. 7. ROTCH: *The Rickets*. *Am. J. Pediatrics*.

233 WEST 111TH STREET.

Treatment of Muscular Rheumatism.—L.

Brieger (*Zeitschrift für ärztliche Fortbildung*, November 19, 1915, from *Medizinische Klinik*, October 31, 1915) is reported to have found the usual antirheumatic drugs of little or no avail in cases of muscular rheumatism. The best results are to be secured from the application of moist heat, which may or may not be combined with the application of ichthyol. Cold sponging following the hot applications increases the tone of the vessels of the parts, and massage and exercise should follow this.

SYRINGING THE EAR.

By MAX LUBMAN, M. D.,
New York,

Chief Assistant in Ear, Nose, and Throat, Har Memorial Hospital.

Syringe the ear! is the usual and all embracing advice that a physician gives to a patient whenever the latter presents himself with any ear ailment, irrespective of what the pathological findings may be; be it an otitis externa or an otitis media catarrhalis chronica, be it impaction of cerumen, or an otitis media purulenta acuta, be it an otitis media catarrhalis acuta, or an otitis media purulenta chronica, with or without a drum, with or without granulation, syringing the ear a few times a day is the first therapeutic measure thought of.

The intention of the physician in advising syringing is undoubtedly good and sincere, for looking over the action of water, and its therapeutic effect when applied in disease, we find that it is the best cleansing agent; especially when it is impregnated with some antiseptic will it disinfect the parts quite thoroughly. It is soothing to pain when used hot. It softens and ripens inflammatory tissue to rupture and to discharge its contents. It helps in the absorption of edematous areas caused by inflammation; furthermore, it seems to be so simple in its application and so innocent in its action, that it can hardly be suspected of causing the patient harm or aggravating a pathological condition. I wish, therefore, to call attention to the fact that water has another action, that is, it acts as an irritant to chronically inflamed tissue, and therefore syringing the ear has at best a very limited field; to justify its use certain specific indications must exist, and I will venture to say, that when syringing is applied in the chronic purulent forms, it is not only without benefit, but does positive harm to the patient by aggravating the pathological condition already present.

That water is an irritant to chronically inflamed tissue is a well established fact. Take, for instance, a fistulous opening in any part of the body, where nature tries to keep the wound open for elimination. If, in order to treat such a wound, the syringing method is adopted, you will find that the mouth of the fistulous opening becomes hypertrophied with granulations, thus obstructing the outflow of pus and producing a swelling behind the opening.

A paronychia, where the pus bores under the matrix of the nail, will never heal when it is in contact with moisture, because the hypertrophy of the matrix thus produced through the moisture blocks the discharge. An eczema will never heal when its surface is in contact with water, for the water irritates the inflamed area and spreads the disease.

Water used in medicine is a therapeutic agent; why, then, not ask ourselves the following questions: What is our guide in selecting a therapeutic agent in disease? What is our dial to indicate when a certain therapeutic agent shall be used or when discontinued? On what scientific principle is therapeutics based? Our answer is, pathology. We diagnose each case by a proper interpretation of the pathological findings in the organ invaded and then carefully select a therapeutic agent by whose properties and actions we seek to overcome the invasion

and, if possible, help nature along to restore the afflicted organ to its natural physiological function.

Pathological findings frequently change in the course of disease for better or for worse. Therapeutics therefore must also be modified to fulfill the demand created by such a change; for example, pneumonia is clinically a self limited disease; still, pathologically we divide it into three distinct stages, the stage of congestion, the stage of red hepatization, and the stage of gray hepatization. The pathological findings in each stage are quite distinct and separate from the others. Accordingly our therapeutics will also differ in each stage; for while we may use with good advantage counterirritation externally, and tincture of aconite internally in the first pathological stage, we should not dare to use the same agents in the second or third stage for the simple reason that therapeutics depends on pathological findings. We must therefore study these findings in order to select a proper therapeutic agent.

In otology the pathological findings in the various ear affections differ materially one from the other; accordingly while syringing may be good and beneficial in one pathological condition, it must necessarily be either useless or even harmful in other pathological conditions. Therapeutics quite often depends upon the knowledge of the etiological factors. In otology, the etiological factors are of importance, for, as it happens, ear affections are mostly secondary, coming either through the nose or nasopharynx, or are directly due to some pathological condition of the Eustachian tube.

I have tried to prove conclusively that a therapeutic agent in whatever mode applied, must depend upon specific pathological findings. It will be in place, therefore, to consider the pathology of the various ear affections. Generally speaking, the different varieties of ear ailments will fall in the two following categories: 1. Acute and chronic catarrhal otitis media, and, 2, acute and chronic purulent otitis media.

In acute catarrhal otitis media the ear is affected secondarily through involvement of the Eustachian tube. The mucous membrane of the tube is red and swollen, resulting in a narrowing of the lumen of the tube—the air in the middle ear becomes absorbed, producing a negative pressure in the ear, thus allowing the external atmospheric pressure to push the drum inward. Nature, trying to compensate that negative pressure, produces a transudate in the middle ear in direct proportion to the negative pressure within the tympanic space, causing temporary blocking of the ear, with diminished hearing and increased resonance of voice. This condition may return to normal as soon as the negative pressure has been balanced physiologically. When this condition exists the patient may complain of pain in the ear, which is of a reflex nature only. Knowing the pathological condition of this particular ear affection, syringing the ear, though momentarily soothing pain, is useless to remove the pathological condition which exists in the Eustachian tube. To get the desired result, direct treatment only should be applied.

If, for any reason whatever, the pathological process continues, we get the otitis media catarrhalis

chronica, the pathology of which is as follows: The transudate undergoes changes in the formation of connective tissue, the mucous membrane of the tympanic cavity becomes thickened, a tendency toward adhesive band formation ensues, the elasticity of the drum membrane is lost, the light reflex may disappear, the malleus becomes dislocated owing to the retracted drum; the relation of the parts becomes disturbed, resulting in circulatory interference, the Eustachian tube may have adhesions, or may go on to stricture formation. These pathological changes produce the conditions in which the patient complains of tinnitus, noises in the ear, and diminished hearing, which precedes total loss of hearing. To syringe the ear, when these aforementioned pathological findings exist, is absolutely useless, for though the patient refers his complaints to the ear, still we know that this state of affairs is not directly due to the ear, but is rather the result of a pathological condition either in the nose, retronasal space, or Eustachian tube proper. Naturally our treatment must be based, not upon the symptom reflex, but upon the underlying cause which is undoubtedly responsible. We can never obtain a favorable result by neglecting the cause and treating the effect.

The pathology of the otitis media purulenta acuta does not differ in its early stages from the acute catarrhal form, except that the inflamed area is invaded by microorganisms which begin their growth in the transudate of the tympanic cavity, creating a purulent exudate. The membrana tympani becomes red and swollen, the lining mucosa of the tympanic cavity is also swollen; in other words, we have all the changes common to an acute purulent inflammation. If appropriate treatment is not instituted at this stage, and a spontaneous rupture does not take place, the pus in the tympanic cavity may accumulate until it reaches the upper channel of the tympanum, invading the aditus; if the pressure is still not relieved, the infection will naturally enter the mastoid antrum, causing an acute mastoiditis. Syringing the ear being soothing to pain, when used hot, is appropriate for the treatment of this condition; it also softens and ripens the tissue to allow rupture and relieve tension. If the drum ruptures spontaneously or is incised, syringing then acts as a cleansing agent, and helps to absorb edematous areas invaded in the inflamed territory. But as soon as all the acute symptoms subside, excepting the discharge, syringing should be discontinued, and dry wipes substituted, as the constant syringing invariably produces an external otitis, complicating the disease materially—so much so, that our attention is immediately directed to treat the otitis externa for fear that the swelling of the canal will interfere with proper drainage. Here syringing being in perfect accord with the pathological condition, its use is justified. If the acute form does not subside, either on account of adenoids, which act as a mechanical obstruction, keeping up the discharge through the Eustachian tube, or through nasal obstruction, or where the acute form is a complication of an infectious disease where greater destruction of tissue naturally occurs, or where the inflammation is of a very virulent nature—in all such cases the chronic form which follows may always be expected.

The pathology of the chronic purulent form is

hardly possible to describe in a paper of this scope, as the findings in each particular case differ so widely that each case has a pathology of its own. This is so for the following reasons: 1. Because of the complicated structure of the middle ear, which gives each particular part affected a significance of its own; 2, the length of time that the ear is affected, i. e., the longer the time the more involvement of parts is to be expected; then, 3, the mode of treatment that was originally instituted, for improper treatment aggravates the pathological condition and the patient would be much better off not to have had any treatment at all, since a chronic otorrhea *per se*, having no subjective symptoms, nature of her own accord will care for it sufficiently through the process of elimination. It is only because of the retention of pus that we are obliged to interfere. I will therefore try to give a résumé of the pathology and indicate the significance of each part involved.

The middle ear, exclusive of the accessory cavities, can be divided into three parts; the epitympanic space or superior portion; the atrium or the middle portion of the tympanic cavity; and the hypotympanic space or floor of the tympanic cavity. The superior portion is bounded inferiorly by the tendon of the tensor tympani muscle, and the Eustachian tube in its horizontal portion, containing the body of the incus and head of the malleus. The middle portion includes that part lying internal to the membrana tympani and its bony supporting wall; it is separated from the tympanic vault by the body and neck of the malleus, the anterior and external ligaments of the numerous reduplications of the mucous membrane. The floor is below and behind the inferior border of the sulcus tympanicus, and is in close relation in front with the internal carotid, and posteriorly it bears the same relation to the jugular fossa.

The pathological findings in the tympanum proper are as follows: The hyperemia which accompanied the acute stage subsides and the parts assume a much paler color. The mucous membrane becomes thickened because of a round cell infiltration, thereby compressing the bloodvessels and resulting in nutritive changes and in the formation of granular tissue, which may fill up the whole canal. Connective tissue bands form membranous adhesions and the ossicles are often bound to the wall of the tympanic cavity. The mucosa of the tympanic cavity undergoes still more hypertrophic changes with polypoid degeneration, and cholesteatomatous masses may fill up the entire attic and antrum.

The significance of perforation according to Leutert is as follows:

A perforation in the posterior upper quadrant indicates isolated caries of the long limb of the incus.

A perforation in the flaccid membrane extending to the periphery, shows that there is caries of the roof of the antrum, the posterior wall of the external auditory canal.

A perforation in the flaccid membrane directly above the short process, leads to suspicion of caries of the head of the malleus; if it is behind the short process, it indicates caries of the incus.

A perforation at the periphery of the tympanic membrane and extending to the anterior attic wall, will probably lead to caries of the anterior part of the attic wall.

Perforations which do not involve the periphery of the lower portion of the tympanic membrane are usually indicative of suppurative in the drum cavity.

When a perforation is in the lower anterior quadrant, the carious area is in the same position on the tympanic

wall. If the perforation reaches the anterior periphery about the middle of the drum, the Eustachian tube plays a prominent part in the suppurative process.

From a superficial description of the pathological findings in the chronic purulent form, we can readily understand that water as a therapeutic agent is absolutely unscientific and unsurgical. Not only are all of its actions useless, but it aggravates the condition by acting as an irritant to the chronically inflamed tissue, promoting growth of granular tissue, which is a barrier to the progress of curing the disease. In treating a chronic otorrhea the object should be to help nature along in its elimination process and not to retard it. Our desire is to prevent the growth of granular tissue. Granular tissue has a tendency to dry up in a dry medium. Dryness retards growth. Attention should therefore be directed to keep the canal clean and dry by means of a dry process and such medication as absorbs moisture. It is really surprising to see the change that takes place in a short time when syringing is replaced by dry wipes; the granular tissue begins to shrink, the process of elimination is restored, thus helping us to find the original focus of infection.

From the foregoing statement I think we shall agree that *syringing as a therapeutic measure in otology has at best a very limited field*. Its use must correspond with the pathological findings and should not be used indiscriminately in every condition. Apropos of therapeutic generalization, I am reminded of a story circulated about a lecturer on therapeutics who, coming to the subject of castor oil, said: "Gentlemen, we now come to a drug the use of which is good for everything, even for a fracture." This analogy might very appropriately be extended to apply to the present use of syringing in otology. From the kind of teaching obtained in our schools in special branches we do not wonder that the ear is so lightly considered by the general practitioner. The laxity of the instruction does not impress the unwary student with the special skill and experience necessary to treat a chronic running ear, in spite of the fact that the ear is so closely related to vital organs. It seems to me that much more skill and deftness are required to remove the little incus than to disarticulate a thigh.

A running ear is only a symptom of a pathological condition, just as fever is a symptom of a constitutional disease. To succeed in the treatment of a chronic ear one must locate the seat of the disease. Merely to cleanse away the discharge which is usually accomplished by syringing, does not effect a cure, but only delays and aggravates the condition, often leading to serious complications.

In conclusion, I beg leave to submit that an ear being an organ of special sense, any mistreatment may result in permanent irreparable harm. Surgery has progressed to such an extent that a person suffering from pyloric stenosis is relieved by performing a gastroenterostomy. A good part of the large intestines may be excised without apparent harm to the patient; but any injury, damage, or mistreatment of an organ of special sense, such as the ear, not only causes temporary inconvenience, but subjects the patient to permanent disability with all the possibilities of the nearby vital organs being affected.

616 MADISON AVENUE.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXV.—How do you treat ophthalmia neonatorum? (Closed.)

CLXVI.—How do you treat the constipation of sedentary men? (Answers due not later than January 15th.)

CLXVII.—How do you treat rickets? (Answers due not later than February 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXIV was awarded to Dr. William Martin, of Atlantic City, N. J., whose article appeared on page 24.

PRIZE QUESTION CLXIV.

THE TREATMENT OF INSOMNIA.

(Continued from page 25.)

Dr. C. C. Henin, of Springfield, Mass., remarks:

In cases in which no explanation of the condition is afforded by examination of the patient, in which visceral or diathetic disease is not present, a good plan is to institute partial rest methods. Their special benefit lies in the fact that they necessitate a strictly physiological plan of living and enforce regularity of habits. Frequently it is wise to modify the partial rest plan by instructing the patient to rise early, take a light breakfast, and exercise moderately in the open air. A short period of rest by lying down without sleep may be permitted after the midday meal. No mental work should be permitted in the evening; an early hour should be prescribed for retiring, and before preparing for sleep, it is often of value to give massage; hot milk is given after the massage. Bathing, moderately warm, just before going to bed is good. As drugs I use trional, sulphonal, and veronal. After a satisfactory sleep has been secured for several nights, the drug should be diminished or replaced by a placebo. The bromides, chloral, hyosine, and paraldehyde are variously employed. Morphine or opium is rarely required. If it is necessary to employ drugs for some time, they should be changed at intervals. In insomnia in which there is a gouty element it is wise to give a salicylate ten or fifteen grains with sodium bromide about twenty grains after meals. In hysteria and other causes of insomnia, suggestion in the way of a placebo often acts powerfully. Time and again a patient, if the suggestion has been made properly and forcibly, will promptly go to sleep on a five or ten grain capsule of starch or boric acid or prepared chalk.

Drugs, as I said before, should as much as possible be avoided, especially when the patient is not under immediate supervision, as is the case with office patients, whose renewals of prescriptions are often beyond the physician's control and who are, therefore, in danger of contracting drug habits. Insomnia is met with in a number of affections, in hysteria, mental disease, organic brain disease, such as syphilis, arteriosclerosis, and brain tumor. Dreams may occur owing to the condition of the digestive tract, the bladder, or the rectum. At other times they are distinctly sexual in character. No rule can be laid down for the control of dreams. General principles alone apply. In these cases I use small doses of hyoscine at bedtime. In conclusion, I would say that all cases of insomnia should be treated as follows: 1. Rest methods; 2, feeding; 3, the elimination of waste products; 4, next is to secure free elimination by the skin, kidneys, and bowels; 5, psychotherapy may be employed with advantage; 6, drugs should be used very little.

Dr. Frank A. Gordon, of Williston, N. D., advises:

Insomnia occurs in many diseases as a result of pain, the alleviation of which is all that is necessary to produce sleep. Thus for the pain in acute inflammations an ice bag to the part involved is often all that is needed. As a general rule, I give opium and its derivatives only when sleep cannot be secured in any other way; likewise other habit forming hypnotics, and then only when I feel that the loss of sleep will prove more dangerous and will overbalance the danger of forming a habit. Those cases, of course, such as appendicitis, salpingitis, oophoritis, cholecystitis, osteomyelitis, etc., requiring surgical treatment should receive it as soon as possible. An ice bag aids and may be sufficient, but morphine sulphate, grain one quarter, should be given hypodermically when necessary.

In pneumonia the pain in the side and the dry cough of the onset are a combination that demand some relief so that the patient may sleep. Codeine sulphate grain one quarter, four times a day, should be given for a few days. Also the insomnia of cardiac and renal asthma may be treated with codeine for one or two nights until the case can be brought under control. In acute pleurisy strapping the affected side of the chest with an adhesive bandage usually brings relief and rest.

The few cases in which only insomnia seems to be the trouble are the nervous high strung people who lead the "high pressure life." Their habits are irregular; they are often constipated; they drink too much; smoke too much; and worry excessively. They seldom exercise and the strain and rush of modern business gives their brain but few chances to relax. As an example, a man, after a sleepless night, in order to keep fit during a busy exacting day, when he is beginning to feel drowsy, seeks stimulation in the form of coffee, high balls, an endless chain of black cigars, and last and worse, some pernicious preparation containing acetanilid, antipyrine, caffeine, etc. Then at a reasonable hour for retiring he must attend a banquet or some other social function at which he eats unwisely and too well. So that getting home

after midnight he "wraps the draperies of his couch about him and lies down" to a long night of tossing and insomnia; and then the next day the same follies are repeated.

After a complete physical examination and inquiring into the daily life of the patient, if nothing radically wrong is found, advise him to eat at regular hours, the last and heaviest meal at five or six o'clock. Let him smoke mild cigars, one after each meal, and possibly one during the evening. Prohibit or reduce alcohol to three drinks a day. Advise against social functions at night for a while and after that not more than once or twice a week. He should retire at a certain hour every night, not later than twelve o'clock, and take a walk every afternoon or evening, the distance depending upon his strength, two miles on an average. He should take a warm shower or tub bath every night before retiring. Give trional, grains fifteen, in a glass of hot milk for one or two nights, immediately after the bath; often it will not be needed. If the patient follows your instructions faithfully for a week or two, he will continue to do so, for his reward will be ample.

A few patients with high blood pressure should have it reduced by right living, dieting, and hydrotherapy rather than drugs. Correct constipation, when it is found. Nervous anemic women should be given iron or arsenic or both. They should have plenty of fresh air and sunshine and moderate exercise.

Study your patient; learn his state of mind. Many people worry incessantly about trifles; they lie on their pillows, with their eyes wide open, planning and scheming. Show them the folly of it. Have them realize the injury they are doing to themselves; that at bedtime they must dismiss everything from their thoughts, except sleep; that good health is the most valuable thing in the world; and that without the proper amount of sleep they cannot keep well.

Issues and Events.

THE PROSPECTS OF THE AMERICAN COLLEGE OF SURGEONS.

By JOHN G. BOWMAN, M. D., F. A. C. S.,

Chicago,

Director of the College.

The American College of Surgeons begins the new year with an announcement that it has secured from its Fellows an endowment fund of \$500,000. This fund is to be held in perpetuity, the income only to be used to advance the purposes of the college. By this means lasting progress toward the purposes of the college is assured.

The college, which is not a teaching institution but rather a society or a college in the original sense, now lists about 3,400 Fellows in Canada and in the United States. Without precedent for swiftness of development it stands today a powerful factor both in the art and in the economics of surgery.

Primarily the college is concerned with the train-

ing of surgeons. But the significant fact, in connection with the endowment just secured, is that it has come from the surgeons themselves, inspired by a motive for better service to the patient. Ideals in the profession of medicine are living things. Probably no more convincing proof of this fact exists than the sacrifice which the surgeons of this continent have made willingly in order to raise this fund.

To begin with, these ideals are to find concrete expression along the following lines of activity:

1. Since the whole problem of the training of specialists for the practice of surgery is the primary purpose of the college, the regents propose at an early date to present a clear conception of the college to the undergraduate medical students of this continent. The regents, further, will ask each senior student of this group who has it in mind to specialize in general surgery or any branch of surgery to register with the college. As these students, then, serve later as interns and as surgical assistants, they will be requested to report these facts to the college. The college, in turn, will systematically seek information as to the ability and character of such men; and the information thus obtained becomes the basis of admission to Fellowship in the college. In addition to this procedure, the regents will insist upon the proper keeping of case histories, and they will endeavor to stimulate in these men in training right ideals of medical practice. In this program they ask the active cooperation of the faculties of the medical schools and of all practitioners of medicine.

2. Inasmuch as proper training in surgery is inseparably involved with the conduct and efficiency of hospitals, the college will seek accurate data on all matters which relate to hospitals. From time to time it will publish studies upon hospital problems, the purpose being always to be helpful to the hospitals. These publications, further, will inform recent medical graduates as to where they may seek adequate general or special training in surgery. To be concrete, the college will deal with such problems as, *a*, the proper equipment for medical diagnosis, *e. g.*, well equipped laboratories for chemical, pathological, and x ray work; *b*, the proper forms for case histories and the facilities for keeping these records; *c*, the management and the curricula of the nurses' training schools; *d*, the specialization essential in any well organized hospital.

3. The college will ask the faculties of medical schools to consider the advisability of conferring a supplementary degree of proficiency in general surgery and in the various specialties of surgery.

4. The college will issue readable monographs, educational in nature, to the press, to the general public, to hospital trustees, and to the profession of medicine upon subjects of medical procedure and the whole meaning of fitness to practise surgery.

The entire impetus of the college springs from within its own membership. Necessarily that impetus implies reform. But there is a vast difference between reform preached at men and reform innate in the hearts of men which finds expression at their own initiative. Whatever impetus the college possesses, it originates among the surgeons themselves. It is not an extraneous force or an "uplift" move-

ment. But rather, out of the widely divergent views on many subjects among the Fellows, the aims of the college rise as those time tried aspirations which are inherently the basis of all that is valuable in the vocation of surgery. The purposes of the college are concerned directly with matters of character and of training, with the betterment of hospitals and of the teaching facilities of medical schools, with laws which relate to medical practice and privilege, and with an unselfish protection of the public from incompetent service; in a word, they embody those ideals which have stood the test of centuries. Upon these the Fellows are united. These are the ideals which each Fellow, single handed, has endeavored to foster, and the expression of them today through the college comes as a sort of mass consciousness of the whole body of Fellows. The splendid fact is that the Fellows have grasped in an instant the meaning of the college by a process of fusion and they have gladly made sacrifices for its success.

As one comes into wide acquaintance with the Fellows of the college and catches some fair notion of their earnestness, he sees the future of the organization not by means of logic. There is something more subtle and potent than argument. A determined optimism carries a momentum of its own. Without a logical process it seeks concrete expression; and, more than this, it really recreates circumstances through all shifts of weather or play of incident with a certainty not excelled by an utterly rational course. The Fellows of the college, in their widely scattered districts, fuse their consciousness of the organization with a splendid hope in their hearts to advance all that is important and valuable in the profession. This very attitude of mind is the first promise for the future of the college. It is a promise that admits of no defeat. It is a pledge of loyalty to medical patriotism which means loyalty to the public welfare exercised through intellectual sincerity and scientific accuracy. It means a safeguard to the public, for it indicates where honest and adequate surgery may be found.

Contemporary Notes.

The Marriage of Defectives.—It is never a good thing to interfere with the liberties of the individual except when such interference would prove a good to the public, remarks the *Canada Lancet* for December, 1915. When the welfare of the public is at stake, good government demands that the liberty of the individual be restrained. In no phase of modern life is it more justifiable to interfere with the liberty of the individual than in the matter of curtailing the ease with which mental and physical defectives may marry. We do not propose going into any of the theories about heredity. One thing stands out as the result of wide observation that parents who are healthy of body and sound in mind are by far the most likely to have children who will partake of these two fine endowments—*mens sana in corpore sano*. We endorse very cordially the views of Dr. C. K. Clarke, medical superintendent of the Toronto General Hospital, to the effect that he "condemned the present marriage system under which imbeciles and mental defectives are able to

obtain marriage licenses and be married without difficulty." This raises the wider question that there should be some institution¹ for the care of the feeble-minded. They must be gathered up and segregated. This is by far the most economical way to deal with them, as it is both humanitarian and preventive. In some instances these persons might be taught some trade; but in all cases they can be kept out of harm's way, and the propagation of their kind arrested. This latter is by far the most important result to be gained by the isolation of these people. All the Provinces of Canada should give this matter earnest thought. Much has been done; but much remains to be done. Because much has been done is no reason why more should not be done. We urge now, as we have urged many a time in the past, the establishment of an institution for the care of the feeble-minded.

Arteriosclerosis and Kidney Disease.—These two diseases are respected by the laity as well as by medical men. "Hardening of the arteries" is a phrase with which the laity is very familiar, and to their mind it represents a condition that is quite serious. Toxic substances, some of which are known and some of which are not, are believed to be the causative factors in producing this pathological change. The localization of the "hardening" is a matter of very great clinical and pathological importance, remarks the *Journal of the Indiana State Medical Association* for December 15, 1915. The brunt of the sclerosis may be in the ascending arch of the aorta where it forms the clinical picture of what is regarded as syphilitic aortitis; it may be in the coronary arteries, causing angina pectoris; it may be in the cerebral vessels, giving rise to the symptoms of cerebral arteriosclerosis; it may be in the vessels of the kidney, producing an arteriosclerotic nephritis; it may be generalized, or it may be localized more particularly in any part of the body.

The involvement of the kidney in the course of arteriosclerosis obviously must vary in different cases, and the extent to which this may vary the symptomatology will vary. In a case with slight kidney changes there may be no clinical manifestations pointing to renal disease, for much of the renal tissue may be destroyed without renal function being seriously impaired. On the other hand, in a case with marked kidney changes the symptoms of renal insufficiency may be pronounced, but there should be no mistake in such cases in recognizing that these symptoms are due to the changes in the kidney that follow as the result of a general arteriosclerotic process.

Since the clinical course of cases of that type is somewhat different from those in which the primary pathological change is in the kidney, the differential diagnosis is often not difficult. The physical condition of the arteries throughout the system tells the story. The radial, brachial, and temporal arteries often show in an unmistakable way what the disease is. Changes in the retinal vessels are of great significance and of the utmost value as an aid in the diagnosis. Arterial hypertension as a symptom is found in proportion to the extent of kidney involvement. Associated with the sclerotic changes in the arteries are found the secondary cardiac changes,

such as hypertrophy and dilatation of the heart, relative insufficiencies, and so on. These cardiovascular changes constitute a more or less definite clinical picture which is usually easily recognized.

In chronic nephritis, or Bright's disease, the kidney is the starting place of the degenerative process. Sooner or later in the course of the disease secondary degenerative changes in the cardiovascular system also follow. In this condition arterial hypertension is a constant and diagnostic symptom. Increased blood pressure is practically conclusive evidence of the presence of chronic nephritis. Certain changes in the retinal vessels known as albuminuric retinitis may be found even early in the disease, and when found are of diagnostic value. Polyuria, nocturia, changes in the urine, such as low specific gravity, albuminuria, cylindruria, and a lowered phthalein excretion in the urine are constant findings. Dyspnea, edema, headache, and so on, often come on in the more advanced stages. When involvement of the circulatory system has reached a sufficient degree the resulting cardiorenal symptomatology can also be recognized quite easily.

In disease processes in which more than one system is involved it is necessary to form a clear conception of the sequence of pathological changes, for only then can a rational system of therapy be instituted. Certainly this is true of arteriosclerosis and kidney disease. The general interest taken in these types of disease is shown by the great number of articles accumulating in the literature in which these subjects are discussed. There is always something new that we can learn about them.

Women Physicians Greatly Needed in England.

—This war, which physicians more than any other class deeply deplore, has been the means of opening many doors to women physicians heretofore tightly closed. Positions on London hospital staffs, which have always been held exclusively by men, are now offered to women, says the *Woman's Medical Journal* for December, 1915, and the demand is greatly in excess of the supply.

The only London school of medicine which has been able to show an increase in number of entries is the London School of Medicine for Women, where the increase is a record one. Dr. Florence Willey, of this school, says that the call for women to take the place of men in the medical profession is being met by the great number of students entering the profession, and that she thinks for years to come there will be this need of more women physicians. Young men who usually would be entering the profession are enlisting in army or navy, and the supply of men students will probably for many years be greatly diminished. This is the medical woman's opportunity for service at a time in the world's history when that service is sorely needed.

Before the war an infirmary physician in the Whitechapel district, London, always a man, received \$500 a year and emoluments, while now the infirmary is advertising for a woman physician, and offering a salary of \$1,000 a year and emoluments. It is reported that the Woman's Medical School of England has trained 600 women physicians, and that 220 students are registered there.

¹ The University of Toronto, Canada.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 8, 1916.

SURGEON GENERAL GORGAS ON HEALTH
AND WAGES.

In the December number of *Health News* (monthly bulletin of the New York State Department of Health) there is sounded by Surgeon General W. C. Gorgas, of the United States army, an inspiring call, not only to young physicians and sanitarians, but to all who are young in hope and mind. Under the title of Tropical Sanitation in Its Relation to General Sanitation, Colonel Gorgas gives a résumé of the incidents associated with the discovery of the mosquito as an enemy and the war upon her in the tropics.

The personality of the author gives his narration an intimacy which is both interesting and occasionally amusing, as when he recalls the agitation against his sanitary work in Panama in 1905. At that time his superiors were asking that he and his coworkers be "relieved and men more practical and sane replace us . . . The request for our dismissal was made by the commission in June, 1905. In September, 1905, the last case of yellow fever occurred in the city of Panama, and only one case has occurred in the Republic since that time."

But it is not for the description of special sanitary measures that this article is notable. Its unique value lies in the fact that Colonel Gorgas sees the

greater things, the indirect, often hidden predisposing disease factors of social and economic significance, as clearly as he sees the more immediate things. In reply to the often repeated inquiry as to what was responsible for the great general improvement in health conditions in Panama, in addition to the antimosquito work, Colonel Gorgas says: "I am satisfied that to this improvement in social conditions, caused by our high wages, we principally owe our extraordinary improvement in general health conditions."

Colonel Gorgas defines "natural wages" as what "each man produces, not a cent more or a cent less," and says that were such wages paid now in New York "all the poverty, sickness, and degradation caused at present by low wages would be rapidly ameliorated." He concludes: "I have been fortunate enough to labor as health officer in a field where very great health results have been produced, but they would be small compared with the health results produced by securing for mankind natural wages. It stirs my enthusiasm to think of the glorious opportunities before the young health officer just commencing life. I have spent my sanitary life killing tropical mosquitoes, and I hope have thereby benefited my fellowman. I would give a good deal to spend another sanitary life in the ranks of the coming generation of health officers, doing my share in the fight that is before us, the fight for the greatest of all sanitary measures, natural wages."

DIET AND PELLAGRA.

Recent events, as noted in the columns of the JOURNAL, suggest certain reflections upon the question of diet and pellagra. A few years ago, when the pellagra problem rather dramatically thrust itself, in very concrete form, upon the medical profession, the American student approached its study in perhaps characteristic fashion. The maize theory which dominates European thought made but a feeble appeal to his judgment, and this, along with much valuable accumulated experience, was cast aside without that careful examination which history teaches to be salutary if we are to avoid the errors committed by others. A more thoughtful examination into the history of pellagra might have spared us much vain theorizing and wasted effort. It is becoming increasingly evident to the American student that diet is a very important factor in the cause and control of pellagra. This conclusion, however, has come with effort; yet the record has taught this truth in unmistakable terms ever since the disease was first known. It has taught also that the essential component lacking in the diet is the nitrogenous component; and that both in

therapy and in prophylaxis the basic factor is the supply of nitrogenous food.

This thought and this teaching are spread broadcast throughout the literature of pellagra, among writers both early and late. It was born with Casal (1735), who first described the disease, and in one form or another may be found in the writings of Odoardi, Fanzagò, Albera, Gherardini, Sette, Strambio, Soler, Videmar, Facheris, and other writers of the early period—latter eighteenth and early nineteenth centuries. Cerri (1795) is reported even to have fed ten pellagrins experimentally for one year on a good diet containing an abundance of animal protein. The following spring the symptoms of the disease did not appear. Lusana and Frua (1856), from the point of etiology, therapy, and prophylaxis, advocated with skill the preponderating influence of nitrogenous food. They supported their views with carefully collected data—experimental work, economic investigations, dietary studies, including a consideration of the relative value of vegetable and animal proteins, compilation of statistics, review of literature, etc., and suggested carefully elaborated methods of applying their ideas in a broad prophylaxis. Among later writers Roussel and Lombroso appreciated the importance of nitrogenous food in pellagra as well as many others whose opinions are of less importance. The practical result of this teaching is seen in Italy today, where, under governmental supervision, free food with a large nitrogen component is distributed at sanitary stations in pellagrous regions. Recent studies by officers of the Public Health Service (see editorial columns of the *JOURNAL* for November 27, 1915, page 1104) have again, in this country, sharply focused attention upon the great significance of nitrogenous food in this disease.

Important as all this is, and must be in future study and practical work upon pellagra, let us not again fall into error by overestimating the value of the conclusions reached or of the work done—however brilliant these may be. Even with the full acceptance of the reported results our knowledge of the etiology of pellagra is still far from complete. We know only proximate causes, not ultimate ones. The relation between the diet and pellagra must be established with far more exactitude before we can say we understand the etiology.

Diet may, and does play an important part in many diseases, but only as one of several agents. Who knows just how dependent upon diet may be the origin of infectious processes, and just what interrelations diet and infection always bear? If pellagra is dietetic purely, what is its nature? Is it a deficiency disease, some kind of food poisoning,

a variety of metabolic disturbance, some form of inanition, a species of protein sensitization, or a dietetic disorder? We must be in a position to answer, more or less definitely, questions of this character before we can say we know the cause of pellagra; and if we may judge by the past, this knowledge will come slowly and only with much effort, probably on the part of many.

AN OPPORTUNITY FOR AMERICAN MEDICINE.

At this particular time American medicine has a wonderful opportunity for rapid and extraordinary advancement. There is no question about the energy of the American surgeon or physician of today. His one desire is to learn and do, to give to mankind that which will be beneficial in the upbuilding of health and the preservation of life.

At the present moment the medical profession in Europe are busy with the war. They have in the main been forced to forsake the laboratory and give up research, except in cases where they are desirous of working out some new treatment of disease or injury that the modern soldier is heir to. All the information gained by the profession abroad will in due time be imparted to us. Again, many of our own surgeons and physicians are coming home daily with new ideas to be spread broadcast, through our colleges and otherwise.

This information, in addition to that which we ourselves shall compile in the way of surgery and research work and the everyday diagnosis and treatment of disease, should do wonders and give us, not only the desire, but the impetus to establish ourselves as the leaders in modern medicine.

SMALLPOX AND QUARANTINE.

Although comparatively little has been said about the attitude of physicians toward smallpox, quarantine, and vaccination, the fact remains that it is an inconsistent one. If vaccination is a complete protection, why should there be so great an insistence on quarantine? The logical position seems to be, that as long as we are protected, why bother about taking precautions that must be unnecessary if our premise is correct? That this attitude is being held by many physicians is evident, particularly as every time a case of smallpox is quarantined it acts as an argument for the antivaccinationist. We must either believe or disbelieve in the efficacy of vaccination in order to present a consistent front to our antagonists.

Yet the physician is put in an awkward position by adhering closely to either of the foregoing

alternatives. If he was dealing with a community of which every member was a firm believer in vaccination and had himself been vaccinated, there would be no necessity for quarantine; the disease would be soon stamped out. On the other hand, there is no place so advanced that numerous antis of all kinds may not be found therein. If quarantine is not maintained among such people there is sure to be an increase in smallpox, possibly amounting to a real epidemic. As an object lesson it would be most illuminating, but it seems questionable if the health authorities would be justified in pursuing such a course. We know that typhoid fever can be obliterated by means of bacterial vaccination, yet other most elaborate precautions are taken to prevent transmission of the disease. If typhoid should become as prevalent and endemic as it was some years ago, the members of the community might be so frightened that they would all willingly undergo prophylactic treatment. In the meantime hundreds of lives would be lost.

The conditions, so far as smallpox is concerned, are analogous. Those of us who have been vaccinated and believe in the efficacy of vaccination would be safe and would not be alarmed. Even then we should not deliberately expose ourselves. On the other hand, those who have not been vaccinated would be susceptible, many would contract the disease, and even if they recovered would retain to a greater or less extent its scars. It hardly seems justifiable for the guardians of the public health willingly to expose any one to such a disease, no matter how ignorant or obstinate he may be.

It is true that Minnesota has taken the attitude of no quarantine for smallpox, that several other places have done so, and that the Board of Health of the State of Iowa is inclined to favor that stand. It seems, however, that it is a move that requires very thoughtful consideration. If we knew something concerning the causative agent and its cycle of existence, or could make vaccination compulsory, we then might possibly abolish quarantine. Until that time comes wisdom lies in caution.

SUBCUTANEOUS USE OF DISTILLED WATER FOR MULTIPLE ULCERS.

Dr. G. Arbour Stephens communicates an interesting case to the *Lancet* for December 18, 1915. His patient was a woman, sixty-three years of age, who had been suffering for over six months from ulcers of the thighs and breasts. On the front of the left thigh were six ulcers, one and one half inch in diameter, separated from one another by narrow bands of skin and with edges undermined. They were discharging considerably and looked almost

gangrenous. On the back of the right thigh was a healed ulcer, two and one half inches in diameter, while on its anterior surface was one of similar size, but showing no signs of healing. On the right breast was an unhealed ulcer and on the left a nearly healed one of similar size.

Mercury and iodides had been tried internally and lotio nigra, red wash, and fomentations externally had been tried with no success, so the writer suggested that a subcutaneous injection of distilled water be given, and if necessary repeated two or three times. At the same time the patient was given three grain doses of calcium iodide three times daily for four weeks. After the first injection, which was given on August 19th in the loose tissue below the shoulder blade, her general condition was greatly improved, while the ulcers looked healthy and healing. The second injection was given on August 26th and the third on September 13th, by which time nearly all the ulcers except that on the thigh had closed and the smaller ones were covered with healthy skin. At the same time the patient's general appearance was greatly improved. No blood test was employed, so it is difficult to state definitely that the ulcers were syphilitic, but the appearances were very suggestive.

As a local dressing Doctor Stephens used gasoline to wash the wounds, and when this had quite evaporated, boric acid was dusted on.

THE QUICK DETECTION OF SPIROCHÆTA PALLIDA.

Dr. W. H. S. Stalkart, of the Royal navy, communicates to the *British Medical Journal* for December 18, 1915, a method for the speedy detection of *Treponema pallidum*, which he says is well known, although its originator is lost to fame. Doctor Stalkart's directions are as follows:

Take a smear of blood and serum from the sore, the exudate being obtained after cleaning and rubbing or scraping the sore, or making a small incision in its margin. The sore should not previously have been treated with antiseptics, or, if it has, should be dressed for several days with a simple saline dressing.

1. Fix in one per cent. glacial acetic acid and eight per cent. formaldehyde solution. Rough dry the slide.
2. Wash in alcohol and flame off.
3. Gently heat in a five per cent. solution of tannic acid.
4. Wash in water and stain with slightly warmed ammoniated silver nitrate solution. (To a five per cent. solution of silver nitrate add ammonia solution until the precipitate first formed is just dissolved; add a few more drops of silver nitrate solution until the precipitate just reappears.)

5. Wash in distilled water and dry.

The films should be chestnut colored. If they have only become yellow the staining from the tannic acid onward should be repeated at once.

The slides must not be mounted in balsam, but examined in neutral cedar wood oil in the ordinary way. The spirochetes are very clearly demonstrated by this method.

Obituary.

GEORGE THOMAS JACKSON, M. D., of New York.

Doctor Jackson died of pneumonia at his home, 602 West End Avenue, New York, on January 3d. He was born in this city in 1852 and was educated at the College of the City of New York and at Columbia University, where he took his medical degree in 1878. After some six years of general practice, he confined himself to dermatology, and was professor in that specialty at the Women's Medical College as well as visiting surgeon to the Presbyterian Hospital, the New York Infirmary for Women and Children, etc. He was the author of *Diseases of the Hair and Scalp*, of a *Reference Handbook of Dermatology*, and of numerous papers on dermatological subjects, many of which appeared in the NEW YORK MEDICAL JOURNAL. Doctor Jackson left a widow.

CHARLES CLIFFORD BARROWS, M. D., of New York.

Doctor Barrows died at his residence, 63 East Sixty-fifth Street, New York, on January 1st, after an illness of two weeks. He was born in Jackson, Miss., in 1857, and studied in the academic and medical faculties of the University of Virginia, obtaining his M. D. in 1879, and the same degree from University Medical College, New York, in 1880. During the following year he was intern in Bellevue Hospital, and was then commissioned assistant surgeon in the United States army, serving in Indian campaigns under General Crook. In 1887 he returned to New York to begin the practice of medicine and become instructor in gynecology at University Medical College, a position he also assumed on the foundation of the Cornell faculty in 1893; in 1913 he took full charge of the department. He was surgeon to the New Rochelle, Manhattan, Maternity, Peekskill, and Har Moriah Hospitals. Mrs. Hettie Curtis Barrows, formerly of Prescott, Ariz., also a daughter and a son survive him.

JOSEPH J. O'CONNELL, M. D., of New York.

Doctor O'Connell died of myocarditis on January 1st at his residence in the quarantine station of the Port of New York. He was born in Brooklyn in 1866 and was educated in St. Francis College and at Long Island Medical College, where he graduated in 1887. For many years he was sanitary inspector of the Brooklyn board of health, alienist to the Kings County Hospital, and a practitioner of large experience. He was lecturer on hygiene in New York University, lecturer on public health at Long Island College, and *ex officio* member of the Department of Health of the City of New York. He was appointed by Governor Dix health officer of the port in 1912 and proved to be an able and intelligent public servant. He effected several changes in the quarantine service, among them the construction of the Quarantine Pathological and Bacteriological Laboratory, one of the best institutions of its kind in the

world. During the typhus visitation in New York harbor in 1914 Doctor O'Connell worked out a scheme of typhus sanitation of persons and their clothing, which prevented the occurrence of a single secondary case of the disease, and which has since been adopted by the German and other medicomilitary forces of Europe to prevent the spread of typhus.

Doctor O'Connell was the author of works on hygiene, sulphur, and sanitation, studies of the possibility of choleraic infection in the waters of New York Bay, the world war and maritime commerce, and other health subjects.

Earlier in his professional career Doctor O'Connell served as visiting physician at St. Mary's Hospital, visiting surgeon at the Hospital for Mental and Nervous Diseases, and surgeon at St. Mary's Female Hospital.

Doctor O'Connell filled the various posts to which he was called with distinguished ability. He was popular personally, of firm but generous disposition, and, had he lived, would have proved a bulwark against nationalization of the port. He is survived by a widow, two sons, and a daughter.

ISAAC OTT, A. M., M. D., of Easton, Pa.

Doctor Ott died at his home, Easton, Pa., on January 1st. He was born in Northampton County in 1847 and was educated at Lafayette College, which later conferred upon him an honorary A. M., and at the University of Pennsylvania, where he obtained his degree of medicine in 1869, after which he took postgraduate courses at Leipzig and Berlin. After practising for some years in Easton, he became professor of physiology at the University of Pennsylvania, and subsequently dean, in 1895, of the medical faculty of Medico-Chirurgical College, Philadelphia. He was also consulting neurologist to the Norristown Asylum. At one time he was president of the American Neurological Society. He was the author of several excellent textbooks on neurological subject, of an excellent work on the internal secretions, published in 1910, and of many papers, a number of which appeared in this JOURNAL. Mrs. Katherine K. Ott survives him.

News Items.

Changes of Address.—Dr. Morris J. Clurman, to 4504 Fifteenth Avenue, Brooklyn.

Dr. H. Reiter, to Broad and Central Avenues, Leonia, N. J.

Grippe Epidemic in Chicago.—According to reports issued by the Department of Health of Chicago, the epidemic of grippe has assumed alarming proportions in that city. Hospitals are filled to capacity and are operating with insufficient forces because of the great number of nurses who are ill. During the last four days in December, 201 deaths from pneumonia were reported.

Industrial Insurance Legislation.—The council on health and public instruction of the American Medical Association has appointed a committee to cooperate with the American Association of Labor Legislation in drafting a model bill for the establishment of industrial insurance in each State. The members of the committee are Dr. Alexander Lambert, of New York, Dr. H. B. Favill, of Chicago, and Dr. Frederic B. Cotton, of Boston.

Har Moriah Clinical Society.—A regular meeting of this society, postponed from January 3d, will be held at the hospital, 138 Second Street, New York, on Monday, January 10th, at 8:30 p. m. An attractive program has been arranged and all who are interested are invited to attend. Dr. Selian Neuhof is president of the society and Dr. Hyman Goldstein secretary.

The Herter Lectures.—The University and Bellevue Hospital Medical College announces that a course of five lectures, under its Herter Foundation, will be given by Professor Victor C. Vaughan, of the University of Michigan, on Poisonous Proteins. The first lecture will be delivered on Monday, January 10th, at four p. m., at the Carnegie Laboratory, 338 East Twenty-sixth Street, and the others will follow daily at the same hour.

A Correction by Doctor Hallarman.—A request has been made for a correction in the communication by Dr. H. Hallarman in our issue for December 25, 1915, on Pharyngeal Stenosis. It appears that it was through the urgency of the consulting—not the attending—pediatrist, that the child referred to in column 1, page 1283, was operated on. The feeding formula was given by the attending pediatrist, and it was owing to the mother's negligence that pneumonia developed.

Marriages of Diseased Persons.—The Supreme Court of the State of New York holds that a marriage may be annulled because one party conceals from the other the fact that he is suffering from tuberculosis. The Supreme Court of Wisconsin has decided that a marriage should be annulled because one party was infected with gonorrhea at the time of the marriage. The essential part of the opinion in the latter case is published in the December 31st issue of the *Public Health Reports*.

Surgical Instruments for French Hospitals.—Announcement is made by the committee appointed to collect surgical instruments in Philadelphia and throughout the State for the small French hospitals, that the profession has responded very generously. This committee, of which Dr. Joseph Leidy, Dr. W. W. Keen, and Dr. J. W. White are members, will be glad to receive further contributions, being in constant touch with these hospitals where the demand has greatly exceeded the supply.

Health Week in Boston.—Next week will be "health week" in Boston. National, State, and city health departments, churches, hospitals, nurses, and associations of business men are cooperating in this campaign for public education in health betterment. It is aimed to give publicity to the latest ideas in matters relating to health, and a series of lectures will be given, pointing out the health resources of the community and the use and abuse of institutions. There will also be exhibitions, charts consisting of models and moving pictures, which are free to the public. The first lecture will be given on Sunday afternoon, January 9th, by Dr. Hugh Cabot, his subject being Individual Responsibility for Community Health.

Symposium on the Fauical Tonsils.—A regular meeting of the Philadelphia Laryngological Society, held Tuesday evening, January 4th, was devoted to a discussion of the faucial tonsils. The following papers were presented: Dr. George Fetterolf, The Surgical Anatomy; Dr. G. Hudson-Makuen, The Conservative Treatment; Dr. Ellwood Matlack, Treatment by Means of the Actual Cautery; Dr. A. B. Hirsch (by invitation), Fulguration of Tonsils, with exhibition of instrument; Dr. George C. Stout, The Operative Point of View; Dr. George B. Wood, The Dangers of Tonsillectomy; Dr. Ralph Butler, A Comparison of the Various Methods of Tonsillectomy. The discussion was opened by Dr. D. Braden Kyle.

Merger in Drug Laboratories.—Heretofore all drugs and medical and surgical supplies required in the hospitals, clinics, and milk stations of the city department of health were supplied through a drug laboratory maintained by the department in connection with the Willard Parker Hospital at the foot of East Sixteenth Street. Beginning January 1, 1916, this work was taken over by the General Drug Department of the Department of Charities and the Health Department Drug Laboratory will pass out of existence. The new procedure concentrates under one control the purchase, care, and distribution of drugs and medical and hospital supplies for the hospitals and dispensaries of the department of charities, the department of health, and Bellevue and Allied Hospitals. It is expected that the plan will reduce overhead charges and give to these city departments more efficient service.

Washington Medical Societies to Honor the Memory of the Late Dr. George M. Sternberg.—On Wednesday, January 26th, a joint meeting of the committee on the prevention of tuberculosis and the Medical Association of the District of Columbia will be held, to pay homage to the memory of the late Brigadier General George M. Sternberg, United States army, retired. General Sternberg was formerly president of the committee on the prevention of tuberculosis and was prominently identified with the medical association. He was also at one time surgeon general of the army.

The Harrison Antinarcotic Law.—A physician who had registered and paid the tax under the Harrison antinarcotic law was indicted for an alleged violation of that law. The charge was that he prescribed drugs enumerated in the act in quantities more than were necessary to meet the immediate needs of the patient and that he did not prescribe the drugs in good faith and as a medicine. The United States District Court for the Western District of Tennessee held that the law does not limit the amount of drugs which a physician may prescribe and that the indictment did not charge an offense under the act. The opinion is published in full in the December 24th issue of the *Public Health Reports*.

Bronx County Medical Society.—At a regular meeting of this society, to be held on Wednesday evening, January 12th, Dr. Charles H. Mayo, of Rochester, Minn., will read a paper on Gallbladder Disease, Its Etiology, Symptoms, and Treatment. Among those who will discuss the subject are Dr. Charles H. Peck, Dr. Charles A. Elsberg, Dr. John F. Erdmann, Dr. Franz Torek, Dr. John Rogers, Dr. Irving S. Haynes, Dr. William P. Healy, and Dr. Benjamin T. Tilton. At the close of the meeting a dinner will be served in honor of Doctor Mayo, to which all are invited. The tickets are \$1 each, and in order to facilitate arrangements, should be purchased before January 8th. Address communications to Dr. Herman T. Radin, 654 East 165th Street.

Doctor Lydston Wins His Suit against the American Medical Association.—The Supreme Court of the State of Illinois has rendered a decision in the case brought by Dr. G. Frank Lydston to determine the legality of the election of the board of directors of the American Medical Association. Doctor Lydston contended that since the association held a charter from the State of Illinois, the annual meetings of the association for the election of officers must be held within that State. He began the suit five years ago. The Appellate Court rendered a decision in favor of his contention. On December 20th, the Supreme Court confirmed this decision and ordered the removal of the present board of directors. The attorney who represented Doctor Lydston in the case is quoted by the newspapers as saying that a new election of directors will have to be held in Illinois, that a national charter would have to be taken out, and that under this charter the "rank and file" would have something to say about the operations of the society. Dr. George H. Simmons is quoted as saying that the decision would not be upheld.

Death Rate From Grippe and Pneumonia Higher Than Last Year.—During the week just ended there was a great increase in the number of deaths reported from grippe and pneumonia in New York, compared with last year. Thus there were 74 deaths from grippe compared with 5 in the corresponding week last year; similarly there were 272 deaths from pneumonia to 140 last year. Estimating the number of cases from the number of deaths, probably not less than 2,000 new cases of grippe and pneumonia occurred in the city last week.

Evidently New York is in a state of siege from this disease, and it behooves the individual to be in a state of preparedness. Preparedness can best be obtained by following the advice recently given, by the department of health, to avoid overcrowded and overheated places, to dress sufficiently warm when going outdoors, to keep away from those who cough and sneeze, to avoid alcohol, and to secure plenty of rest and an abundance of fresh air.

The total number of deaths reported during the week was 1,752, compared with 1,592 during the corresponding week of 1914, the respective rates being 15.91 and 14.87 per 1,000 of population. The increase in the mortality during the past week was in the middle age groups, the mortality under one year and under five years being considerably lower than during the corresponding week of 1914.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, January 10th, Samaritan Hospital Clinical Society; Tuesday, January 11th, Pediatric Society; Wednesday, January 12th, County Medical Society; Thursday, January 13th, Polyclinic Ophthalmic Society, Pathological Society; Friday, January 14th, Northern Medical Association, Psychiatric Society.

New York Academy of Medicine.—At a meeting of the Section in Pediatrics of the New York Academy of Medicine, to be held on Thursday evening, January 13th, the following program will be presented: Progress in the Treatment of Intestinal Parasites; A Case of Hookworm Disease in a Boy of Eleven and a Girl of Ten; Microscopic Demonstration, by Dr. Sara Welt-Kakels; Cutaneous Reactions in Cases of Food Idiosyncrasy, by Dr. O. M. Schloss; Progress in Knowledge of Hemolytic Diseases, by Dr. Reuben Ottenberg; Progress in Serological Diagnosis of Children's Diseases, by Dr. Hans Zinsser; Progress of Knowledge of Tuberculous Infection, by Dr. Mark S. Reuben; Progress in Treatment of Skin Diseases, by Dr. George M. Mackee; Progress in Pediatric Surgery of the Brain, by Dr. William Sharp.

Standard Diets for Health Department Hospitals.—In order to establish standard dietary methods in the hospital service of the department of health, the director of the bureau of hospitals some time ago appointed a menu committee composed of the resident physicians, supervising nurses, matrons, and the dietitian of the department's hospitals, directing it to prepare standard menus, a basic dietary table, and rules and regulations for the guidance of the employees in the kitchens and dining rooms. At the time of its appointment, this committee was instructed to make certain that the quality of the foods in the new menus would not be below that of the food in use at that time.

The new dietary methods were introduced in January, 1915, and have given complete satisfaction. Not only has the quality of the food been above criticism, but, as shown by the report for the first three quarters of the year 1915, a saving has been effected amounting to nearly \$10,000 in nine months in the contagious disease hospitals alone. In comparison with 1914, this represents a reduction of three and two thirds cents in the average per capita food cost. This saving has been accomplished in three ways: First, by actually diminishing the amount of high priced food (meat) in the various dietaries, and substituting other foodstuffs which were equally nutritious and agreeable. This substitution, of course, was made without the knowledge of the employees and patients; secondly, by eliminating waste in the preparation of the food, an elimination made possible by the use of standard menus, and thirdly, by giving the employees the kind of food that they wanted, thus reducing plate waste.

Personal.—Dr. John F. Anderson, formerly director of the Hygienic Laboratory, United States Public Health Service, and a frequent contributor to this JOURNAL, has sailed for Europe, where he will study the methods used by the English and French armies for the prevention of wound infection.

Dr. D. N. Jones, of Minneapolis, Dr. Werner Hemstead, of Brainard, and Dr. L. P. Wolf, of St. Paul, have been named members of the Minnesota State Board of Health, following the retirement of Dr. Frank Burton, of Minneapolis, and Dr. O. J. Haben, of Moorhead.

Dr. George P. Norton, of Fitchburg, Mass., has been appointed medical examiner of the Fitchburg District, succeeding Dr. Frederick H. Thompson, who served in that capacity for about fifteen years.

Dr. Samuel G. Dixon, State Health Commissioner of Pennsylvania, has been elected president of the Academy of Sciences, Philadelphia, for the twenty-first time, and its executive curator for the twenty-fifth time.

Dr. Frederick Janney Smith, chief resident physician of the private medical wards of Johns Hopkins Hospital, Baltimore, has resigned to become superintendent of the Henry Ford General Hospital, Detroit.

Dr. Garland Sherrill, of Louisville, has been elected secretary of the Jefferson County, Ky., Medical Society, to succeed the late Dr. Ap Morgan Vance.

Dr. Stewart Hamilton has been appointed superintendent of Harper Hospital, Detroit, to fill the vacancy caused by the death of Dr. Wayne Smith. Doctor Hamilton was formerly assistant superintendent and medical director of the institution.

Annual Professional Elections in Philadelphia.—The officers elected to serve the Philadelphia Clinical Association during 1916 are: President, Dr. Benjamin F. Deirth; first vice-president, Dr. James H. McKee; second vice-president, Dr. M. P. Warmuth; treasurer, Dr. William McKeage; secretary, Dr. William Ruoff.

At the December meeting of the Section in Otolaryngology and the College of Physicians, the following officers were elected for the ensuing year: Chairman, Dr. George C. Stout; clerk, Dr. Benjamin D. Parish.

The South Branch of the Philadelphia County Medical Society on December 17th elected the following officers to serve during 1916: Chairman, Dr. Andrew Callahan; clerk, Dr. Edwin S. Cooke; vice-president of the County Medical Society, Dr. J. E. Sheckle.

At the December meeting of the Philadelphia Medical Examiners' Association the following officers were elected for 1916: President, Dr. Ernest Kelsey; vice-president and treasurer, Dr. Norris McDowell; secretary, Dr. Victor A. Loeb.

Operations for Adenoids and Diseased Tonsils.—Several years ago, because of the lack at that time of adequate facilities for the operative treatment of diseased tonsils and adenoids, the department of health established a number of clinics where school children suffering from these conditions and in need of operative treatment could be suitably treated. Nearly one third of all the operations on school children for tonsils and adenoids in the city during the past three years, have been performed in the clinics of the department of health. In the judgment of the Board of Estimate and Apportionment, the time has come when the dispensaries and hospitals should take care of this important work and, accordingly, no provision was made in the health department budget for the maintenance of these clinics. Anticipating just such action, the Associated Out Patient Clinics have for some time past been studying this question and have recently called the attention of the various clinics constituting the members of the association, to the need of making suitable provision for the operative treatment of adenoids and tonsils in school children. The matter has also been taken up by the State Charities Aid Association and by the Public Health Committee of the New York Academy of Medicine, and both of these organizations are of the opinion that all adenoids and tonsil operations on children should be done under general anesthesia, and that hospitals where adenoid and tonsil operations are performed should be equipped to keep their patients in the wards for at least eighteen to twenty-four hours after operation.

New York's Death Rate in 1915 Slightly Below That of 1914.—During the year just closed there were 76,193 deaths reported in the city of New York, giving a death rate per 1,000 population of 13.61, which is slightly lower than the rate for 1914. Influenza and the acute respiratory diseases showed an immense increase over 1914 and were responsible for the city not having a lower rate than 13.61 for the year; 12,000 people died in the city of New York from influenza and pneumonia during the past year, an increase of almost 1,500 over 1914. Estimating the mortality of these diseases as twenty per cent, there were 60,000 cases of these diseases in the city during the last year. The contagious diseases showed a decrease of 186, despite the prevalence of measles during the early part of the year. The degenerative diseases showed but a slight increase, namely 106 deaths. The deaths from cancer were 186 more than during the previous year. This gradual increase in the mortality of cancer has been going on for the past fifteen or more years. There was an actual decrease of ninety-four in the number of deaths reported from tuberculosis.

There were 13,872 deaths among infants under one year of age, an increase of 500 over last year. The infant death rate was 99 compared with 95 last year. This increase in the mortality of children under one year of age was due principally to three causes, gastroenteritis, measles, and pneumonia; 141,356 births were reported during the year, giving a rate of 25.56 compared with 140,642 births and a rate of 25.65 for 1914.

The marriage rate was lower during the past year than during 1914, the respective rates being 9.11 and 9.67. The number of marriages reported were 50,998 and 53,052.

To the financial depression and the loss of immigrants caused by the war are to be attributed this decrease in the marriage and birth rates.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Olivet, Mich.

Department of Biology, Olivet College.

First Communication.

Introductory. In all discussions of the use of drugs in the treatment of disease, it is highly desirable that we recognize at the outset certain definite facts. The foremost fact is the actual limitation of our knowledge in regard to the action of drugs as modified by the toxins of disease. We possess a vast mass of data concerning pharmacodynamics as proved by animal experimentation, and much of this is directly applicable to man. Some drugs, however, produce divergent actions with different animals. Ergot, for example, produces a well marked vasoconstrictor action in cats, but a very feeble one in rabbits. Epinephrine produces uterine contractions in the rabbit whether pregnant or not, but has a relaxing effect on the nonpregnant uterus of the cat. In rabbits potassium chlorate produces symptoms due to the potassium ion, whereas in dogs, cats, and man the toxemia is due to a corpuscular susceptibility to the chlorate action. After the administration of phosphorus the ammonia excretion is increased in dogs and in man, but is not altered in rabbits.

Many such variations have been noted by different observers, with the inevitable conclusion that all of our earlier pharmacological findings should be checked by related experiments on man. There has thus been gradually accumulating a series of observations that give us a more definite idea of how the normal human mechanism responds to the action of drugs. However, these investigations are far from being complete. To obtain justly trustworthy averages many such experiments must yet be carried out, on subjects of normally wide divergencies, and by experimenters of scientific capability. From all such data we may then draw conclusions of some weight.

We must, however, avoid the error of too broad generalizing. It is unsafe, as well as unscientific, to conclude that strychnine, for example, will have the same average effect on the sick as on the well. In the sick, new and unmeasured factors have arisen. Toxins are present in the blood stream other than those introduced in the drug, and these may augment the action of the drug administered or may partially or wholly counteract it. Certain drugs may show one activity at 37° C. and a different degree of energy at 40° C. A purge may irritate the normal intestinal musculature into increased peristalsis, and yet produce no effect whatever when the activity of those muscles has been reflexly inhibited by a nearby serositis.

The extent to which the toxins of disease may affect the reaction of the tissues to drugs, and the

manner of such modifications, are matters concerning which our information is extremely meagre, despite the fact that the great desirability of such extensive investigations has time and again been urged upon the attention of the deans of our leading medical schools. Except for some scattered isolated investigations on caffeine at the Massachusetts General Hospital, and on digitalis at the Rockefeller Institute, practically no scientific investigation has been made of this problem. As a consequence we accept the traditions and the relatively superficial observations of our clinicians, compound them with the relatively accurate conclusions of the laboratory men, and designate the ensuing conglomerate the science (!) of therapeutics. And this is about all we shall have until some institution, medical or other, recognizes the needs of the time and finances an extensive scientific investigation of drug action as modified by the toxins of disease.

Meanwhile, a succinct review of our present therapeutics as affected by advanced pharmacological investigations, may be of sufficient value to warrant its presentation. The average physician wishes to do his very best for his patients, but he depends largely on the investigator for new light on old problems. The general practitioner may be considerably perturbed by the wholesome skepticism held by the pharmacologist as to the therapeutic merit of many drugs in common use, but he nevertheless has much respect for the evident sincerity with which the investigator states his present conclusions. Out of such cordiality of spirit and singleness of aim, must arise a common benefit.

All truths are relative. All conclusions reached by the scientist are held as such only tentatively, awaiting further confirmation or actual disproof. An investigator may speak with conviction, but not with finality. His propositions may be tersely definite; they may not be dogmatic. Therefore, throughout my articles it should be understood that the conclusions stated are those which present evidence indicates as justifiable, the evidence being derived chiefly from the laboratory and only partly from the clinic. If I fall into unintentional error in my conclusions, I intend it shall be on the side of therapeutic conservatism and in favor of the suffering patient.

Treatment of Hemoptysis in Pulmonary Tuberculosis.—Elmer H. Funk states in the *Pennsylvania Medical Journal* for December, 1915, that rest is most essential. If there is a tendency to syncope, the foot of the bed should be elevated; otherwise the absence of a pillow is all that is necessary. No exertion should be allowed. The patient should be kept in bed for from three to seven days after the disappearance of blood in the sputum. In the severe hemorrhages small pieces of cracked ice are allowed, in others, fluid diet; medicinally, opium is

given in small doses, repeated often. Calcium lactate in doses of fifteen to twenty grains, three to four times a day, with the idea of causing coagulation of the blood, has been employed. Emetine has recently been used, the dose being from 0.04 to 0.06 gram of emetine hydrochloride, injected subcutaneously. It is of especial value in cases where there are repeated small hemorrhages. The local ice bag is no longer used. In cases where blood gushes from the mouth, indicating rupture of a large vessel, ligatures should be placed around the extremities. These ligatures should be removed gradually to prevent sudden increase of pressure; the patient may have to be stimulated with camphor oil, pituitrin, or atropine. Intravenous injections of ten per cent. salt solution have been used with great benefit. The bowels should receive careful attention, preference being given to the salines, especially magnesium sulphate.

Hypophyseal Extract in Bronchial Asthma.—

E. Riese (*Berliner klinische Wochenschrift*, July 19, 1915) suggests that the belief that bronchial asthma is due to bronchial spasm is incorrect. He contends that the affection is due to the opposite condition—to a state of paresis of the bronchial musculature with loss of tone and diminution in the normal elasticity and contractility of the bronchi. He supports his contention with plausible arguments, among which is the fact that epinephrine, which stimulates the sympathetic nervous system and produces contraction of smooth muscle in the uterus, etc., produces beneficial effects in bronchial asthma. It is well known that hypophyseal extract acts in much the same way as epinephrine and on the same structures, but its action is more prolonged and it tends, in addition to direct stimulation, to increase the tone of involuntary muscle. The author has used this latter agent in a large number of cases of bronchial asthma with the most satisfactory results. The remedy not only proved capable of relieving the acute attacks, in which its action was somewhat slower than that of epinephrine, but also tended to produce a more or less permanent cure of the condition when its administration was repeated at intervals over a considerable period of time. The latter, more permanent effect was probably referable to the power of the drug to increase the tone of the muscles and to an improvement in their contractility through continued stimulation analogous to the strengthening of voluntary muscles by athletic training.

Use of Heated Air or Oxygen for the Early Sterilization of Wounds.—

Reverchon, Vignat, and Vaucher, in *Presse médicale* for October 28, 1915, call attention to the relative inefficiency of the measures hitherto applied in the treatment of deep wounds, even where careful exploration and cleansing of the wound have been carried out. Often infection starts at some remote point which neither mechanical cleansing nor the subsequent antiseptic dressing have reached. Recently the authors have obtained good results in a large proportion of cases by an attempt at complete sterilization of the wound with a jet of hot air at 700° C. or of heated oxygen. The patients, at the first treatment, are anesthetized, the wound carefully

cleansed in all its recesses, all foreign bodies, including detached bits of muscle tissue, removed, and the wound surfaces then treated with the hot air or oxygen so that an eschar a few mm. in thickness is formed over all possibly contaminated areas. An aseptic dressing is then applied, which is renewed daily. Subsequent treatment consists in irrigations of the wound with sterile normal saline solution and milder applications of hot air or oxygen, used at such a temperature as will not cause pain, i. e., not exceeding 50° C. The nozzle used in this procedure is large—about the size of a watering can spout—and the air current should be continued at least twenty minutes, preferably three quarters of an hour, with the nozzle thirty or forty cm. from the wound surface. With a short, straight nozzle, a temperature of 200° to 300° C. may be used, but the jet must be carried continually from point to point over the wound by the operator, to avoid an effect more pronounced than that desired, which is a simple hyperemia of the tissues. Under this treatment, provided that aseptic precautions were taken at the dressings, healing took place much more rapidly than with other methods. In eight of the twelve illustrative cases reported complete sterilization of the wound was secured with the first hot air or oxygen treatment, cultures showing that wounds known originally to have been infected contained no more bacteria after the sterilizing application; suppuration and fever did not occur. In the remaining four cases sterilization was not secured, apparently because the wounds were not thoroughly enough opened up and cleansed.

Treatment of Wounds with Artificial Light.—

In *Medizinische Klinik* for November 7, 1915, Breiger reports on the therapeutic value of the white light obtained from a carbon arc lamp in hastening wound healing. In a series of seventy cases, comprising 107 different wounds, complete healing was secured in thirty-nine and twenty-four others were discharged when healing had progressed so far as to require no further treatment. Only one patient failed to respond to the light. The best results were obtained in the earliest stages of the wound treatment and healing was often complete within ten days. Light will often bring about fairly rapid healing, even in cases of long standing in which all other measures have failed. Even where there is bone injury the results are usually satisfactory and the casting off of sequestra occurs promptly. Infected wounds become sterile and heal kindly. The two most striking results of this therapy, however, are the prompt alleviation of pain and the excellent cosmetic results in scar formation. The action of light rests on the production of an active and persistent arterial hyperemia. Other properties of radiant energy may come into play, but of these we cannot speak with certainty. Quartz lamps give good results, but are inferior to the carbon arc lamps as sources of therapeutically valuable light.

Control of Diphtheria Carriers.—Long clinical experience showed William Ewart (*British Medical Journal*, December 11, 1915) the curative value of a coating of oil applied to the nasopharyngeal mucous membrane in diphtheria, influenza, per-

tussis, tonsillitis, etc. For this purpose jasmine oil was found to be the most satisfactory, since it is free from irritating properties. With the patient reclining and head thrown far back, half a medicine dropper full of the oil should be introduced into the nostrils drop by drop. The position should be retained for a minute after completing the instillation, after which the head should be rotated first to one, then to the other full lateral position. As the head is then raised, the oil slowly runs down the back of the nasopharynx and it may either be swallowed, or may be allowed to spread over into the larynx and trachea. The treatment should be frequently repeated. The local inflammatory condition is promptly relieved and cure of the infection accomplished. It has proved serviceable in ridding diphtheria or influenza carriers of organisms.

Treatment of Carbohydrate Indigestion.—

Dealing with the disorder as it is encountered in adults alone, Wilder Tileston (*Journal A. M. A.*, December 25, 1915) states that the treatment should be mainly dietetic. The total carbohydrate intake should be markedly reduced, and articles such as potato, sweet potato, cabbage, beans (except string beans), and chestnuts should be entirely excluded on account of their known ready tendency to fermentation. In the obstinate cases we may have to resort to a strict protein-fat diet for a time. Such a diet may be made up of eggs, meat, fish, bouillon, butter, and tea or coffee with a small amount of cane sugar and fruit jellies. When such a diet has been taken for a few days the guarded restoration of small amounts of carbohydrates may be started. Sugar, cream of wheat, toast or zwieback, macaroni, and rice may be added, one at a time in the order stated. It is best to continue the exclusion of potato for a considerable period of time. Where there is no diarrhea, carrots, turnips, squash, egg plant, and string beans, all of which have low carbohydrate content, are usually well borne from the beginning. They are best served sieved and buttered. The results of such dietetic measures are gratifying and dyspepsia of long duration may disappear in a few days. It may even be said that if relief is not prompt the diagnosis is probably wrong. Drug treatment of carbohydrate indigestion is of little avail alone, but combined with dietetic regulation it may be helpful, though it seems superfluous. The salicylate preparations and beta naphthol are the most likely to give relief, diastatic preparations help occasionally, and belching may be promoted by the use of volatile oils, such as peppermint or menthol in half grain doses.

Luteum Extract in Menstrual Disorders.—

A. P. Leighton, in the *American Journal of Obstetrics* for November, 1915, reports having obtained good results in the treatment of dysmenorrhea cases of the "ovarian deficiency" type from the use of corpus luteum extract. Although it failed in some cases, others were afforded absolute relief by its use, and the author has become convinced that in some cases of dysmenorrhea the main causal factor is deficient action of the normal corpus luteum. Still better, i. e., more constant results were obtained in cases showing severe nervous symptoms attendant upon the menopause,

physiological or artificial, and in the functional amenorrhea of young women. The author attributes some cases of obesity with amenorrhea to ovarian inactivity, some to diminished thyroid function, some to pituitary disturbance, and many more to functional failure in more than one of these organs. In patients who, during their menstrual life, show irritability, malaise, and depression, accompanied by headache and scanty menstruation, corpus luteum produces a rapid change for the better. In other cases, however, its action is not immediate, but cumulative. Doses of fifteen to thirty grains a day nearly always suffice. Prolonged administration of the drug brought about no untoward effects in Leighton's cases, with the possible exception of slight gastric disturbance in one or two instances. Emphasis is placed on the fact that the drug must be given continuously and with perseverance to obtain as well as maintain results.

Action of Opium Derivatives on the Human Intestine.—

From x ray studies on a series of twelve patients, Henry K. Pancoast and Arthur H. Hopkins (*Journal A. M. A.*, December 25, 1915) found that there was no uniformity in the phenomena produced by the administration of morphine in varying doses. Small doses produced more marked effects in some cases than large ones did in others. Women seemed to be more susceptible than men. A high spasmodic hourglass contraction of the stomach was rarely observed and no instance of a similar constriction near the pylorus was seen. In some cases no appreciable changes in the stomach were produced, but in most there was more or less spasm of the pylorus with increased peristalsis and a prolongation of the emptying time. Decreased motility of the small intestine was almost a uniform effect of morphine and seemed to be due to lack of propulsion rather than to spasm. It was most pronounced in the upper portions. The effect on the large intestine was variable and of little significance. The effects from oral administration were practically the same as those from subcutaneous injection.

Picric Acid in the Treatment of Pellagra.—

W. T. Wilson, in the *Texas Medical News* for August, 1915, calls attention to the value of picric acid, administered internally, in the treatment of pellagra. The results obtained with this drug in 100 cases by himself, and 100 additional cases treated, also with picric acid, by other physicians are reported. The author's patients ranged in age from sixteen months to eighty-two years; no case was diagnosed as pellagra in the absence of the characteristic skin lesions, either in dry or moist form. The dose was one half a dram (2 c. c.) of a one per cent. solution of the acid, administered at intervals of three, four, or six hours. It is suggested that the pharmacist be directed, in making the solution, to place the acid in a mortar, next add some water, then some alcohol, and finally, enough water to make up the required volume. Seventeen per cent. of alcohol is required to make a clear solution. In severe acute cases, one dram (4 c. c.) of the one per cent. solution was given every six hours for a few days, and the dose then reduced. Evi-

dences of disturbance of the heart or kidneys indicate a reduction in dose. In most of the author's recent cases a gargle of 0.5 per cent. picric acid solution was also prescribed. In mixed infection of the hands and feet local dressing with picric acid gauze seemed beneficial.

The results constantly obtained from the picric acid treatment were as follows: Control of oral symptoms and other symptoms involving mucous membranes in from five to seven days; control of abdominal pains, about three days; of intestinal disturbance, from ten to fourteen days; and of the eruption, in about three weeks. Relief from toxic symptoms was procured in two weeks, and from insanity, in three weeks. The treatment soon placed the patient in a condition to take food without pain. Digestion soon became normal, and the return of appetite was found to mark the beginning of convalescence. Of the 200 patients, only three died—two of tuberculosis and one of nephritis—and only eight patients later showed recurrence. These had been treated only a short time, and responded at once when the medication was resumed. In two cases the picric acid treatment was followed by disappearance of all symptoms, except the diarrhea, which apparently was increased. Relief from severe local burning was in many instances obtained by the external use of a two per cent. solution of picric acid.

In the feeding of pellagra patients, egg albumin comes first in nutritional value. Egg strained through gauze is easily taken. Buttermilk is the next best article of diet. When improvement begins, great care should be taken in increasing the food supply, as too hasty methods often bring on an attack of acute indigestion, together with other evidences of a return of the disease. Idiosyncrasies in the taking of food being frequently met with, selection of the foods best suited in individual cases is necessary. Personal supervision of the convalescent's diet is a vital point of the treatment, as written instructions are worse than useless. Sweet milk, if given, should be diluted or pasteurized, and whenever gastric symptoms appear the stomach should be at once washed out and a change in the diet made.

Autoserotherapy in Pleurisy.—E. A. Pierce draws attention to the fact that a very large proportion of the cases of pleurisy with effusion are of tuberculous origin and contrasts the value of artificial pneumothorax with that of autoserotherapy in the treatment of this affection. (*North-west Medicine*, December, 1915.) Against artificial pneumothorax are, that pleurisy with effusion is common and must often be treated under conditions which would render the successful application of compression and its maintenance almost impossible; that the method is not entirely safe, even in the hands of experts; that the pleura is damaged with respect to its phagocytic and bactericidal powers; that normal air cells are compressed; and that when adhesions are present danger of perforation of a tuberculous focus into the pneumothorax may be considerable. In favor of autoserotherapy are, that it is very simple, that it leads to absorption of the exudate in a short period of time in the majority of cases, and that it is entirely free from danger

so long as we are careful to inject only perfectly clear serum removed from the chest. The simplest technic is to use a large all glass syringe and a long needle. The needle should be introduced into the chest near the upper border of a rib to avoid the danger of injuring the intercostal vessels, and at least ten c. c. of fluid should be aspirated into the syringe. If this fluid is clear the needle should be partly withdrawn and its point thrust further under the skin, and the contents of the syringe, not to exceed ten c. c., are injected subcutaneously. If at the end of a few days the fluid in the chest has not begun to recede, or if it stops receding after an initial diminution, the procedure should be repeated. There are no contraindications to the procedure. Frequent careful examinations of the chest should be made during the treatment to determine changes in the level of the fluid.

Alopecia and Its Treatment.—W. Knowsley Sibley remarks in the *Practitioner* for December, 1915, that congenital baldness is very rare. The senile form is usually seen in men of advancing years, preceded by gray hair. The premature form may occur without recognizable cause, except hereditary predisposition, or may be symptomatic of various general or local diseases. Prognosis and treatment depend on the cause, so this must be determined first. In the majority of cases in young people the treatment resolves itself into one of seborrhea, for if this can be cured, and is not of too old standing, a regrowth of hair will occur. The scalp should be shampooed about once a week with equal parts of soft soap and spirit. Then quite a number of drugs may be prescribed, but a two per cent. solution of resorcin is generally the most efficacious, if rubbed into the scalp once a day, but it will slightly stain light or white hair. An alcoholic solution of euresol may be substituted when the hair is light colored. If resorcin is used care must be taken that no alkaline soap or other preparation is applied to the scalp, or a considerable dyeing of the hair will ensue. If, therefore, it is desired to add an oil to the preparation, some tincture of soap bark, tincture of quillaia, may be used as in the following:

R	Resorcin,	gr. x;
	Olei ricini,	℥xxx;
	Tinctura quillaie,	℥xv;
	Aque rose, ad	℥i.

M.

Of the tarry preparations this is useful:

R	Olei cadini,	℥x to ℥x;
	Spiritus rectificatus,	℥i.
	Paraffini liquidi, ad	℥i.

M.

If the scalp is red and inflamed, the following are useful:

I.		
R	Liquoris carbonis detergentis,	℥xxx;
	Aethi hydrocyanici diluti,	℥v;
	Glycerini,	℥x;
	Aque rose, ad	℥i.

M.

II.		
R	Liquoris plumbi subacetatis fortioris,	℥x;
	Liquoris carbonis detergentis,	℥xv;
	Glycerini,	℥xxx;
	Aque rose, ad	℥i.

M.

An alcoholic solution of salicylic acid is beneficial

in cases of an oily seborrhea. Sulphur or ichthyol may be used in suspension or solution, but the color and odor of the latter are objectionable.

Having cured the seborrhea, a more stimulating preparation may be substituted, watch being kept to detect the least recurrence of the seborrhea. We may use ammonia, cantharides, carbolic acid, chrysarobin, or formalin, but a one to ten per cent. solution of lysol is the most efficacious, if the objection to the odor, which is difficult to disguise, is not insuperable. In many old cases a massage that raises and frees the scalp from the bone is of great help.

Irradiation in Gynecology.—In an article on modern gynecological practice (*Lancet*, December 11, 1915) Victor Bonney discusses the use of x rays in the treatment of fibroids of the uterus and expresses the belief that their effects are no more than those due to oophorectomy. It is known that this procedure will lead to retrogression of fibroid growths in a certain proportion of cases, and that it fails entirely in others. The same is true of irradiation, which is known to destroy the functions of the ovaries and is not known to have specific effect on the fibroid tumors themselves. From a wide experience with the use of radium in the treatment of cervical carcinoma, the conclusion was reached that this treatment is of less curative value than is often believed. In many cases radium will produce a remarkable improvement in all symptoms and even apparent disappearance of the growth, but these effects are seldom of long duration and the author has seen no case which has been cured on the basis of absence of recurrence for three years. In addition to its shortcomings, radium is followed in some cases by fistula formation into the bladder or rectum. The discomfort of the patients may also be greatly increased by radium through the development of dense fibrosis.

Prostatic Obstruction and Its Sequelæ.—J. Swift Joly, in the *Practitioner* for December, 1915, remarks that inasmuch as prostatic obstruction, if left to itself, invariably tends to shorten the patient's life, and renders his declining years miserable, chiefly on account of its complications, and as catheter life is a dangerous makeshift, the question of early removal of the prostate should be carefully considered whenever definite symptoms of prostatic obstruction are present. The mortality from prostatectomy, which is the only certain cure, is about seven per cent., and over sixty per cent. of this is alleged to be due to delay.

Treatment of Ringworm.—Salinger, in the *Correspondenz-Blatt für Schweizer Aerzte* for September 18, 1915, advises painting the spot with tincture of iodine at least twice a day. Use of the following ointment will bring a result more quickly:

R. Acid salicylici, ʒij;
Beta naphtholis, ʒiss;
Resorcin, ʒi;
Adipis lane, ad ʒiij.
M. Fiat unguentum.

A thick layer of this ointment is spread on gauze and fixed in place by a bandage. A fresh application is made in twenty-four hours and after another

twenty-four hours the skin will have blistered. The blister is opened and dressed with an inert powder like talc.

Iodine is of no service in the deeper affections. For these the ointment is mixed with

R. Acid salicylici, gr. xlv;
Olei rusci, ʒij;
Olei olivæ, ad ʒiij.

The affected area is washed with a one to 2,000 alcoholic solution of bichloride of mercury and the mixture of ointments is then applied. This is repeated daily, and it is asserted that it will cure the most obstinate case without epilation.

Radium in Nonmalignant Conditions.—Walter B. Chase, in the *Long Island Medical Journal* for December, 1915, recalls that radium has been used with benefit in the treatment of such conditions as tuberculous glands of the neck, metrorrhagia from polypoid endometritis, and compound fracture of the leg with sinus formation. Bissell, in the *Medical Record* for July 19, 1915, records unequalled results in the treatment of local infections and blood dyscrasias, particularly pernicious anemia and the persistent anemia following surgical injuries. These results are contradictory to the general opinion that radium is used only in malignant conditions.

The Use and Abuse of Drugs.—W. T. Little (*Colorado Medicine*, December, 1915) makes some interesting remarks on this pertinent subject. He says that the practice of giving cardiac stimulants for cerebral anemia as in syncope, shock, hemorrhage, etc., indicates an erroneous conception of the nature of the condition, for by stimulating the heart in hemorrhage we are opposing nature's effort to check the bleeding, while in shock the heart is not weak, but is only apparently so, owing to the vasomotor paralysis. Measures to combat the latter condition are indicated. The combination of digitalis, strophanthus, nitroglycerin, and belladonna, known as the Da Costa heart tablet, is stamped as a pharmaceutical absurdity, for the ingredients have more or less opposed actions. *Cactus grandiflorus*, which is so widely advocated as a trustworthy heart stimulant has been shown to be worthless. The author unhesitatingly states that the so called intestinal antiseptics are valueless as such, except to the druggist who sells them, as has been abundantly shown by capable investigators. Much the same, he believes, can be said of the digestive ferments, such as pancreatin, malt, taka-diastase, etc., which, while converting starch in the test tube, have little or no action when administered to man, in part because the doses used are too small and further on account of destruction in the stomach by gastric digestion. The tonics may have some use, but are usually of little value. Pharmacology is gradually weeding out the drugs which are of uncertain or no value, such as the expectorants, the hypophosphites, viburnum, strychnine, etc., but the pharmaceutical manufacturers are still flooding us with a deluge of polypharmacy. The correct use of any drug demands a knowledge on the part of the physician of its physiological actions, and drugs should be given only when the indication for them is clear.

Pith of Current Literature.

PRESSE MÉDICALE.

October 25, 1915.

Rapid Method of Differentiating Typhoid from Paratyphoid Infections, by Lévy and Valéry-Radot.—The procedure described has for its purpose to combine and simplify the several cultural methods required in the differentiation of the typhoid, the paratyphoid A, and the paratyphoid B organisms. By means of it a certain distinction can be made between them within twenty-four hours and with the employment of only a single culture medium. The materials required in the preparation of the latter comprise agaragar prepared with peptone of good quality, a sterile thirty per cent. solution of glucose, and a sterile five per cent. dilution of the French official solution of lead subacetate. The individual test tubes are prepared by adding to eight or ten c. c. of liquefied agar four drops of the glucose solution, two drops of the lead solution, and shaking vigorously. The tubes may be inoculated from the primary blood culture either in the cold or with the agar liquid, but with the temperature not exceeding 40° C. The required results are obtained in from two to twenty-four hours, according to whether the inoculation has been made with the medium still hot or in the cold. The typhoid bacillus sometimes causes the medium to turn brown, but never breaks it up. The paratyphoid A organism breaks up the medium without causing it to turn brown. The paratyphoid B organism likewise breaks it up, and also causes it to turn brown. The colon bacillus causes changes in the medium similar to those produced by the paratyphoid organisms, but this organism is almost never present in the blood and is therefore not of importance as a source of error.

Fractures of the Inferior Maxillary Bone in Military Practice, by L. Imbert and P. Réal.—From experience with a large number of cases the authors have been led to establish a clinical division into fractures of the anterior group, in which the line of fracture is somewhere between the canine teeth and the midline, and fractures of the posterior group, in which it is lateral to the canine teeth. In the former group the displacement is not sufficient to cause overlapping of the fragments, the teeth on the side of the fracture practically retain their normal relationship to the upper teeth, and the functional result, provided that bony union takes place, is not very bad. In fractures of the posterior group, on the other hand, asymmetry results from overlapping of the fragments. The chin is displaced toward the fractured side and the unaffected side appears more prominent, though regular in profile. Again, there may be abnormal prominence on the affected side, due partly to outward displacement of the short fragment partly to swelling of the soft tissues, and perhaps partly to the presence of callus. Behind this prominence, the profile appears flattened, owing to obliquity of the short fragment and disappearance of the angle of the jaw from the surface. An important sign of this variety of fracture is elicited by taking three points on either side of the jaw—the angle, condyle, and midline—and joining these by imaginary lines.

SEMANA MEDICA.

September 9, 1915.

Cæsarean Section for Prolapse of the Cord, by E. A. Boero.—Irreducibility of a prolapsed cord, regardless of the proportion of the size of the head to the pelvis, is an indication for Cæsarean section. When the cord can be reduced and when disproportion exists between the head and the pelvis, then early section is preferable to late symphysiotomy, both for mother and child. A case occurring in a woman of twenty years was treated by section, with recovery.

Aerophagia and Uncontrollable Vomiting, by R. G. Pizarro.—A case occurring in a woman of forty-one years is described, which was successfully treated by mental persuasion, administration of tonics containing phosphates, and arsenicals, and the rigid diet and hygiene proper to neuropathic patients.

Abscess of the Brain, with Meningitic Syndrome, by L. J. Facio and J. A. Borghi.—This rare combination was seen in a girl, seventeen years old, where a diagnosis was made of cerebrospinal meningitis possibly of a tuberculous nature. Autopsy showed an abscess seven cm. in diameter in the left temporooccipital lobe.

September 16, 1915.

Hill's Sign in Aortic Insufficiency, by R. A. Bullrich.—Investigations by Bullrich fully confirm the observations of Leonard Hill, published in 1909, regarding the difference of arterial tension in the forearm and ankle in patients with aortic insufficiency. It seems to be demonstrated that in patients without aortic insufficiency the maximum tension differs in the forearm from that of the ankle by forty to seventy mm. Hg. with the patient reclining; whereas in cases of insufficiency this difference is from 110 to 115 mm.

CANADIAN MEDICAL ASSOCIATION JOURNAL.

December, 1915.

Aids in the Diagnosis of Surgical Conditions of the Stomach, by J. W. Dewis.—Physicians, by constantly training themselves to take and interpret histories, can detect a large majority of the stomach ulcers and cancers, and suspect many cancers in their early stages. Some physical examinations show nothing abnormal, though a grave lesion may be present in the stomach or other parts of the abdomen, but negative findings decrease in proportion as the physician has trained himself to observe and has practised palpation and percussion. An elusive point in the physical examination may be the most important and deciding factor in the diagnosis. The simple laboratory tests are of great value; observances of the gross appearance of the stomach contents; a test to determine the absence, deficiency, or excess of free hydrochloric acid; one for occult blood in the stomach contents and feces; another for bile in the feces. When we cannot make a clear diagnosis by ordinary methods, we should employ every special aid, the Wassermann test, an examination of the spinal fluid, and the x ray. The last, like every test in medicine, is often inconclusive and is not a short cut.

INDIAN MEDICAL RECORD.

October, 1915.

Early Diagnosis of Cancer of the Rectum, by Alfred J. Zobel.—A digital and proctoscopic examination should be made in every patient who gives a history of a discharge of blood, mucus, or purulent material from the rectum, persistent diarrhea, unusual constipation following previous regularity of bowel movement, pain, tenesmus, bearing down, or other abnormal sensations in these parts, unaccounted for loss of weight, obscure digestive disturbances, especially when accompanied by stool irregularity, or of any symptom which would be caused reflexly by a cancerous growth. It is far better to make many seemingly unnecessary examinations and find an absence of malignant growth than to look back with regret at a failure to have done so in just one instance in which a life might have been saved or prolonged.

BOSTON MEDICAL AND SURGICAL JOURNAL.

December 23, 1915.

Mental Features of Congenital Syphilitics, by J. H. Baseley and H. M. Anderson.—There is increasing authority for considering the endogenous psychoses and the psychoneuroses to be the last offshoots of luetic heredity. The laboratory findings afford the best basis for classification of congenital syphilis, on which six possible groups are formed. Of children under fifteen years constituting social problems, the congenital syphilitics form the more serious. Among them are more cases of backwardness in school, more feeble-mindedness and retardation, more defects in the mental processes, more delinquencies, more defects in vision, hearing, and speech. If we consider the single patients with one or more defects, then among the syphilitics there are more with plural defects in the mental processes, more with plural delinquencies, and more with plural defects in sight, hearing, and speech. The difference in the mental development of the children is clearly marked in families in which the syphilitic infection appeared after the birth of the older children.

Diagnostic Value of Lange's Gold Sol Test, by Harry C. Solomon, Hilmar O. Koefod, and Edward S. Welles.—Fluids from cases of general paresis will give a strong and fairly characteristic reaction in the great majority, very rarely one that is weaker. Fluids from cases of syphilis of the central nervous system other than general paresis often give a weaker reaction than the paretic, but in a fairly high percentage give the same reaction. Nonsyphilitic cases may give the same reaction as paretics; these cases are usually chronic inflammatory conditions of the central nervous system. When a syphilitic fluid does not give the strong paretic reaction, it is good presumptive evidence that the case is not one of general paresis, and the test offers a valuable differential diagnostic aid between general paresis, tabes, and cerebrospinal syphilis. The term syphilitic zone is a misnomer, as nonsyphilitic as well as syphilitic cases give reactions in this zone, but no fluid of a case of syphilitic disease of the central nervous system has given a reaction out of this zone, so it may be used negatively, and any fluid giving a reaction

outside of this zone may be considered nonsyphilitic. Light reactions may occur without evident significance, while a reaction of no greater strength may mean marked inflammatory reaction. Tuberculous meningitis, brain tumor, and purulent meningitis fluids characteristically, though not invariably, give reactions in higher dilutions than do the syphilitic. The unsupplemented gold sol test is insufficient evidence on which to make a diagnosis, but used in conjunction with the Wassermann reaction, chemical and cytological examinations, it offers much to aid in the differential diagnosis of general paresis, cerebrospinal syphilis, tabes dorsalis, brain tumor, tuberculous meningitis, and purulent meningitis. No examination of the cerebrospinal fluid for clinical purposes seems to be complete without the gold sol test.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

December 25, 1915.

Rectal Examination in Labor, by Rudolph Wieser Holmes.—It is generally agreed among modern authorities that vaginal examinations carry a certain risk of infection, even with the greatest regard for aseptic technic. Abdominal palpation aided by clinical evidence provides as much, if not more information regarding the mother's condition and the progress of labor than do vaginal examinations alone. It will be a distinct advance in obstetrics if we eliminate the necessity for vaginal examinations during labor, or reduce them to measures of absolute exigency. Rectal examination was suggested by Kroenig years ago, but has not become popular in this country, although it has been widely employed abroad. By rectal touch almost everything can be discovered that can ordinarily be made out by vaginal examination, and the dangers of infection of the parturient canal are virtually nil. The examination should be conducted with the hand covered with a rubber glove and great care should be taken that the external fingers do not touch the vulva. Virtually the only disadvantage of rectal examination lies in the fact that by it one cannot measure the pelvic cavity. The method of rectal examination is peculiarly appropriate in cases of contracted pelvis where the patient is to be given the test of labor when a Cæsarean section may be required.

The Rat as a Carrier of a Dysenteric Ameba, by Kenneth M. Lynch.—By feeding both common and white rats on fecal matter from patients with amebic dysentery, it was found possible to infect the animals with the parasite. In some the disease was severe and fatal, in others it was mild and chronic. From these observations it was determined to examine a series of common rats caught in the region of Charleston, where amebic dysentery is more or less prevalent. Several animals examined were found to be infected with amebas which were indistinguishable from the *Endameba histolytica*. The proportion of infected rats caught was small, but such as were infected came from regions in which amebic dysentery was known to be present. It is well known that rats feed readily on human fecal material and the conclusion that these animals may constitute carriers for the disease seems highly probable.

MEDICAL RECORD.

Role of X Rays in Diagnosis of Ureteral Calculus. by Willy Meyer.—In most examinations the clinical examination and diagnosis should precede an x ray examination, but in cases of suspected ureteral or renal calculus the x ray should come first, as it may often save the patient repeated cystoscopic examinations with catheterization of the ureters. However, to rely on x ray examination alone is wrong, inasmuch as fallacies may arise from insufficient preparation of the patient, poor condition of the tube or plate, bad development of the plate, obscuring of the shadows by the pelvic bones; while a very small stone may cause temporary urinary obstruction so that its shadow is overlooked. A negative x ray result with absence of a scratch on the wax tip ureter stylet may be accepted as proof of the absence of ureteral stone. The x ray examination should be stereoscopic and include both sides of the urinary tract. It seems, in general, better first to locate the stone with the x ray and to use the wax tip stylet at a second sitting.

Severely Impaired Audition in Childhood, by Lester Mead Hubby.—Severe deafness occurring from the fourth to the eighth year often results in loss of speech notwithstanding didactic efforts, whereas after the seventh year deafness seldom leads to mutism. Severe deafness in childhood may be congenital or acquired, the majority being acquired. Heredity and consanguineous marriages play an important part. In the acquired form Love has found one third of the cases follow meningitis, one third scarlet fever and measles, and the remaining one third typhoid, diphtheria, mumps, whooping cough, syphilis, etc. In prophylaxis the intermarriage of the congenitally deaf should be avoided, while physical defects of the nose and throat should be remedied at as early an age as possible to avoid the dangers of middle and internal ear inflammations. The majority of deaf children are well endowed mentally; hearing exercises should be persistently tried and such instruments as the Zund-Burguet electrophone will accomplish this more quickly than the unassisted voice. There are three methods for educating the deaf or deaf mute child; the manual, the oral, and the combined. The majority of the schools for the deaf are using the oral method exclusively, while many still use the combined method; the manual method has been almost

sixty-three cases the creatinin was estimated by a modified Folin method, oxalated and laked blood being saturated with picric acid, filtered, treated with sodium hydroxide, and then compared colorimetrically with a standard creatinin solution of known strength, to which the alkali has also been added. A rise in the creatinin above 2.5 mgm. to 100 c. c. of blood was found to signify renal involvement almost invariably. Creatinin values of from 2.5 to three mg. are to be viewed with suspicion; from three to five mg. as decidedly unfavorable, and over five mg. as probably indicating an early fatal termination.

Determination of the Plasma and Total Blood Volumes, by N. M. Keith, L. G. Rowntree, and J. T. Geraghty.—An anemia may be more apparent than real, as it may be due to an increased volume of blood plasma; on the other hand, polycythemia may not mean an absolute increase in red cells, as it may be due to a decreased volume of plasma. To obtain absolute values for either red cells or hemoglobin, data relative to plasma volume and total blood volume are essential. The procedure devised by the authors for this purpose involves the intravenous injection of the nontoxic dye known as "vital red" in a sterile 1.5 per cent. solution in the dose of three mgm. for each kilo of body weight. Three minutes later, and again two or three minutes after, blood is removed from the opposite arm, oxalated, centrifuged at 3,000 revolutions a minute for twenty minutes (to ascertain the ratio of erythrocytes to blood plasma, and then compared colorimetrically with a standard dye solution made with the subject's normal plasma. From the results obtained the plasma and total blood volumes are calculated. The blood was found to constitute normally 8.8 per cent., or 1/11.4, of the body weight, of which forty-three per cent. by volume consists of blood cells and fifty-seven per cent. of plasma. In pregnancy, before term, the blood and plasma volumes were found increased. In obesity, they were relatively small. Many cases of anemia showed a relatively large plasma volume. In anasarca accompanying myocardial insufficiency the blood volume was sometimes absolutely increased. A small volume was shown in many cases of marked hypertension; the latter is, therefore, not dependent on a large blood volume.

Sputum Cultures in the Diagnosis of Nontuberculous Infections of the Respiratory Tract, by J. A. Luetscher.—If a suitable culture medium is used, viz., fresh blood agar plates, practically pure bacterial cultures can be obtained in ninety-one per cent. of the acute nontuberculous respiratory infections in adults. In a study of over 600 sputum cultures from 450 cases, the pneumococcus was found the cause of 6.4 per cent. of all nontuberculous infections below the larynx, and the influenza bacillus, of 28.5 per cent. These two organisms caused 74.96 per cent. of laryngeal infections and 41.4 per cent. of infections of the nose, throat, and sinuses. The streptococcus rarely caused laryngeal infection, but in infections of the blood caused the pneumoniae, and, especially in the throat, the streptococcus may cause fatal pneumoniae and empyema. Abscesses of the lungs

ARCHIVES OF INTERNAL MEDICINE

Diagnostic Value of Estimations of the Creatinin of the Blood in Nephritis, by V. C. Moore and W. C. French.—Creatinin is of the creatinin of the blood creatininuria sign cannot so valuable as a diagnostic and prognostic test. The increase of creatinin in the blood is considered a fair index of the functional percentage of the kidneys than that of urea or uric acid because creatinin is a substance that is constantly excreted in origin and its formation is very constant, whereas the formation of urea and uric acid is subject to many variations in the body.

was found in pure culture in three out of thirty-seven cases of acute rhinitis, and in five out of thirty-eight cases of acute laryngitis. There was observed a unity of infection of the respiratory tree, the organisms causing the bronchial and lung infections also causing the infections of the nose, sinuses, and larynx. Sputum cultures are recommended as an easy, quick, and trustworthy method of diagnosing pulmonary infections and as a guide in treatment and prognosis. The influenza bacillus and pneumococcus were observed at times to produce chronic lesions extending over many years.

Proceedings of Societies.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-first Annual Meeting, Held at Lexington, Kentucky, October 19, 20, and 21, 1915.

The President, Dr. HUGH CABOT, of Boston, in the Chair.

(Continued from page 46.)

President's Address: Medicine, a Profession or a Trade?—Dr. HUGH CABOT, of Boston, said medicine had always been regarded as one of the learned professions, and indeed this was a distinction of which they were particularly proud. But the tendency of a profession to degenerate into a trade was ever present and was a danger from which more than one learned profession had been unable to escape. If medicine were to avoid the downfall which had overtaken the law, it would be because its members were more conscious of the dangers or more alert to check at the beginning undesirable developments.

To him a profession was an occupation requiring an education in science and pursued for its own sake. It must have the advancement of science or the benefit of mankind as its chief end, pecuniary advantage being always a subordinate consideration. A trade, on the other hand, was an occupation which was pursued chiefly, if not wholly, for the purpose of acquiring wealth; this wealth with its ability to advance the interests of the individual being the chief end.

In estimating the importance of any development in medicine, they could best do so by comparing present conditions with those of the past. The changes which had taken place and the effect which they had produced upon the prevailing type of practitioner stood out clearly if they looked back and pictured to themselves the type which was looked upon as the highest twenty years ago and compared it with the best that they were producing today.

The big men of twenty years ago had, without exception, gone through the school of general practice and had risen to the ranks of eminence by sheer force of character, being largely without assistance of the laboratory, and having few instruments of precision. They had trained their faculties of observation in the hard school of experience and had come to rely upon their individual judgment, unsupported by clearly demonstrable facts. They were more astute judges of men, with a larger comprehension of the strength and weakness of human

nature and a wide sympathy. They were characterized by a certain boldness less seen today, and bred of the necessity of staking their reputations upon much less certain evidence. They seemed to have been broader minded and rather more in touch with affairs other than those of medicine. Their devotion to the ideals of medicine were sounder.

Instead of being required to weigh probabilities, they were today able to assort facts. Judgments of character had given place to assortments of data, and whereas the practitioner of a generation ago was profoundly influenced in his decisions, by his study of the individual, the consultant of today might almost arrive at his opinion without ever seeing the patient. The amount of technical knowledge required of the physician today was enormously greater than was required of his predecessor, and it could not successfully be denied that he was far more likely to arrive at a just appreciation of the facts.

With this advance had gone the necessary division of medicine into specialties, a division which the rapid accumulation of knowledge had rendered inevitable, and this had sounded the death knell of the general practitioner. His place had been taken, or rather was occupied, by the medical group, an aggregation or conglomeration of specialists who, having pooled the results of their investigations, were able with greater accuracy to come to a diagnosis. These groups had developed either around the hospital as a centre or around some individual, who finding that medicine was passing away from him, had surrounded himself with assistants and associates equipped with special knowledge. Almost every internist or surgeon of large practice was in fact the head of a group, only it was unorganized and unnecessarily extensive. Each had an aurist, an oculist, an orthopedist, a dentist, a röntgenologist, a chemist, a pathologist, a serologist, who examined his patients and on whose selective opinions, his own diagnosis, prognosis, and treatment must rest.

Address in Medicine: Some Medical Problems.

—Dr. F. T. MURPHY, of St. Louis, directed attention to the hospitals, advocated the proper training of the medical student, and said the true functions of the hospital were to render aid to patients, to advance science, and to teach students. The record of scientific development was a proud one. Small clouds which at times appeared upon the horizon did not necessarily mean a storm. Conspicuous evidence of selfishness in the profession, be this evidenced by individuals or by groups, did not mean that the ideals of the past were being lost, but such clouds might be potential tempests. Even their appearance behooved them to strive for conscience as eagerly as they strove for scientific knowledge.

Typhus Fever.—Dr. RICHARD P. STRONG, of Boston, said the great epidemic of the black death, which caused the unprecedented mortality of one fourth of the population of the earth, appeared in Europe about 1348, after devastating Asia and Africa. From a focus in the Crimea it spread by Turkey, Greece, and Italy, northward and westward over the whole of Europe, also attacking it from a second focus by way of Austria. It broke

out anew at intervals up to the seventeenth century. Sweeping everything before it, this terrible plague brought panic and confusion in its train, and was said to have broken down all restrictions of morality, decency, and humanity.

The epidemic of this disease which recently raged in Serbia, as had been intimated, was the most severe that had occurred in modern times. A few cases of typhus had occurred in Serbia in October, 1914, but the disease did not make its appearance in epidemic form until January, 1915, and then in the northwestern part of the country, among the Austrian prisoners, who were greatly crowded and who necessarily were compelled to live under very unsanitary conditions. The disease quickly spread from them to others, and as the infected patients and the districts in which they were situated were not quarantined, and the Austrian prisoners and infected patients were sent or allowed to go to various parts of the country, Serbia was soon afflicted with a terrible and widespread epidemic.

The country, weakened by war, was not prepared for an epidemic, and for a time one might say that the typhus raged almost at will. The majority of the small number of Serbian doctors sooner or later became afflicted with the disease. Those who remained well were occupied in treating the sick and also the wounded from the battlefields, and methods for prevention were impracticable or were not undertaken.

Wounded soldiers or those afflicted with minor ailments or diseases with relapsing fever, wandered into the hospitals at will and entered the wards filled with cases of typhus, sometimes occupying the same bed, for it was not unusual for two or even three patients to be found lying in the same bed, and the available floor space was also filled with patients. The epidemic increased through January, rose more rapidly in February and March, and reached its height in April, when the number of cases was in the neighborhood of nine thousand a day. These figures were only approximate, for when the speaker reached Serbia in April, there were no available statistics of the number of cases or deaths in the various cities, and the number of cases in the military hospitals was only approximately known.

The American Red Cross, in addition to the hospital units it had already sent for Serbian relief work, decided to organize and send a sanitary commission for the purpose of combating the disease. The Rockefeller Foundation, from the first, was interested in this commission and generously supported it in conjunction with the Red Cross. Great Britain, France, and Russia also recognized, largely from a military standpoint, the extreme gravity of the epidemic and the frightful ravages caused by it, and quickly organized, equipped, and sent expeditions for checking it.

Largely through the combined efforts of all these workers, and with the cooperation of the Serbian physicians and officials, the epidemic rapidly declined and for the last three weeks before Doctor Strong's departure from Serbia they could not find a fresh case of typhus. The sanitary condition of the army and the people was then excellent. He trusted that the sanitary demonstrations in the prevention of typhus, which had been given the Serbian people,

and the construction of the various disinfecting plants throughout the country, would prevent the recurrence of another epidemic of typhus, such as they had just witnessed, and which destroyed in the neighborhood of 150,000 people. All of the Serbian hospitals had been thoroughly disinfected before he left that country, and were ready for the reception of the wounded.

Autogenous Vaccines in the Treatment of Bronchitis and Asthma.—Dr. ROBERT H. BABCOCK, of Chicago, drew the following conclusions:

1. Autogenous vaccines prepared from the sputa had yielded such results in three cases of acute bronchitis, one of chronic bronchitis, and four of chronic bronchitis associated with attacks of spasmodic asthma, as to warrant him in recommending this mode of therapy in preference to the old time use of expectorants by mouth.
2. In bronchitis independent of asthma, the organisms had been mainly of *Bacillus mucosus*, *Diplococcus mucosus*, *Micrococcus catarrhalis*, and an influenzalike bacillus, while in cases of bronchial asthma an anaerobic fusiform bacillus had been added.
3. The asthma had yielded to this vaccine treatment only when this anaerobic fusiform bacillus had been largely present in the vaccine.
4. Great care should be exercised in the use of vaccines that the dose be not so large or so often given as to cause reaction, since this reaction, whether general or local, indicated a negative phase and aggravated the patient's condition.
5. The main drawback to the use of autogenous vaccines was the necessity of perhaps several cultures and the preparation of new vaccines, should the cultures show that some of the originally found germs had disappeared or become subordinate in number to others.
6. New vaccines should be prepared whenever the condition of the patient seemed to have come to a standstill.

Dr. LEON SOLOMON, of Louisville, said expectorants, both the so called stimulating and sedative medicines, must take a back seat with the advent of vaccine therapy. His experience with vaccines included, not only autogenous vaccines, but even to a larger extent the so called stock vaccines. Their employment in properly selected cases was fraught with as many and as positive results as those obtained from the use of autogenous vaccines. The fusiform bacilli had been entirely absent in any case under his observation, as well as in the cases of a competent bacteriologist in a thoroughly equipped laboratory. Perhaps the fusiform bacillus was common to Chicago and to the colder districts, from which in all probability Doctor Babcock's cases had come, although he did not refer to a gentleman from the south who came to him suffering from asthma.

Doctor BABCOCK said with reference to Doctor Solomon's remarks concerning fusiform bacilli, that one reason they were not more frequently obtained in the culture was because that bacillus grew very slowly. His laboratory reports showed that frequently after all other bacilli had put in an appearance the anaerobic bacilli would fail to become manifest until after the third and sometimes the fourth day. He did not think the fusiform bacillus was peculiar to Chicago. In cases of bronchial asthma, when an alveolar abscess was present, the cultures

would show two organisms, *Streptococcus mucosus* and the anaerobic fusiform bacillus. He was not prepared to say that this was the organism responsible for the asthma; nevertheless, it had been a striking experience in every one of his cases of alveolar abscess, with one exception, that a fusiform bacillus had been cultivated from an abscess when the procedure had been allowed to extend over a sufficient length of time.

The Urogenital Tract in Routine Examination.

—Dr. STANLEY G. ZINKE, of Richmond, Kentucky, stated that one of the sources of trouble in the male which was most frequently overlooked was the prostate. He had read somewhere, he did not recall just where, that fully eighty per cent. of those who indulged in irregular intercourse received what the uninitiated youth of this country considered a certificate of maturity, gonorrheal infection. This would mean that a little more than seventy per cent. of the male population contracted a urethritis of gonorrheal origin some time during the activity of their sexual apparatus. Fully sixty per cent. of those who did so, suffered from an involvement of the posterior urethra. In other words, more than forty per cent. of men had, at some period during their lives, a condition which, to say the least, was accompanied by prostatic involvement to a greater or less degree; and this from gonorrhea alone. Let him say that twenty-five per cent. of these—which was a liberal allowance—received proper treatment. This left thirty per cent. who carried with them a gland which was pathological. Add to these ten per cent. for those whose prostate was abnormal from other causes—not hypertrophies or tumors—but from masturbation, withdrawal, sexual excesses, ungratified desire, etc., and they had forty per cent. of the whole with prostates needing attention. Modern methods of examination—cystoscopy, urethroscopy, ureteral catheterization, etc., had, in spite of their value, hindered, in many instances, in the making of a proper diagnosis.

Dr. BRANSFORD LEWIS, of St. Louis, said the general practitioner should familiarize himself with the cystoscope and the urethroscope, because the proper application of these instruments would enable him to make a correct diagnosis. He had known a number of patients to go on suffering for many years because they were told by general practitioners that their trouble was practically incurable, yet their condition could have been relieved promptly by simple operative measures.

Dr. F. M. BUCKMASTER, of Effingham, Illinois, recalled the case of a woman who was operated on three times before the cause of her trouble was ascertained. She was about thirty years of age, and complained of recurrent attacks of pain, continuous between times, along the lower end of the ureter in the appendicular region. She also complained of attacks of cystitis. There was more or less urinary disturbance, most severe at times. The abdomen was opened and the appendix removed without relieving her symptoms. A year later, the symptoms continuing, the same surgeon opened the abdomen again, and removed a tube and ovary on that side. The cystitis and attacks continued. Three years after the first operation, the symptoms not only continued but became worse, and at that time pus cells

and blood cells were found in the urine, and the cystitis was severe a large part of the time. On investigation a stone was found in the lower end of the left ureter. This stone was removed and the woman recovered.

Dr. LEON SOLOMON, of Louisville, said the fact that this subject was discussed at such a meeting as this was sufficient evidence that it had a bearing for the general practitioner, so called, as well as for the surgeon and specialist. It was getting to be a difficult problem for the so called internist to know where he stood in relation to the specialist and general surgeon. With reference to the x ray, it might or might not disclose the nature of the trouble, and he felt sometimes it had been the cause of surgery which was difficult and might have been avoided. He had in mind a piece of surgery which was proposed by a careful diagnostician, himself an internist and an interpreter of the x ray, where the positive finding of the operation was that of a stone in the ureter. It was demonstrated in advance of the operation by the catheter *in situ* that the shadows were phleboliths.

Doctor ZINKE said that in his paper he had stated that if the general practitioner had a good knowledge of uranalysis and of symptoms, in connection with a good personal history, it would at least lead him on the right track if it did not give him a clue to the actual condition. What was the use, for instance, of Doctor Lewis practising his specialty, if all the general practitioners could make as accurate a diagnosis as he?

Limitations of High Frequency Treatment of Papilloma of the Bladder.—Dr. H. G. HAMER, of Indianapolis, said that applications of the high frequency current in these cases of carcinoma showed some hemostatic effect and slight reduction in the size of tumor or, on the other hand, marked reduction in size, followed by rapid growth uncontrolled by burning. In one case it seemed to cause more rapid extension. His conclusions were, first, high frequency cauterization was an important addition to their means of attacking vesical papillomata of the noninfiltrating type; second, all benign papillomata should be treated primarily with the high frequency current in view of the great proportion of recurrences following open operation (fifty per cent.) and the high mortality (ten per cent.); third, in cases where suprapubic operations had been done, recurrences should be looked for and if present, treated by fulguration upon their first appearance; fourth, in dealing with papilloma involving the vesical orifice and prostatic urethra, perineal cystotomy with removal of as much of the tumor as possible, and application of the high frequency current to the remaining growth seemed a rational procedure.

Dr. JOHN R. CAULK, of St. Louis, stated that the general practitioner should consider any bleeding from the urinary tract as serious, particularly a symptomless hematuria, and not stamp these hemorrhages as due to a congested bladder neck or to various other things that were so commonly ascribed as causative factors in these cases. The general surgeon had yet to be convinced of the importance of the cystoscope in almost all cases of prostatic hypertrophy before operation. Patients should be

cystoscoped because tumors quite frequently were back of prostatic obstructions and many of the untoward results following perineal prostatectomy seemed to be due to leaving behind a tumor which was back of the obstruction. He had seen four such cases.

(To be concluded.)

Letters to the Editors.

A CORRECTION FROM DOCTOR MEYER.

NEW YORK, December 28, 1915.

To the Editors:

May I correct an error, no doubt unintentional, in your review of my article on spontaneous pyopneumothorax complicated by hydro- or pyo-pneumopericardium, page 1296? You quote me as saying that "only forty-eight cases have been reported." What you should have said was that there had been reported only forty-eight cases of *pneumopericardium* and its allied diseases of *hydropneumopericardium* and *pyopneumopericardium*; but my case combined with pyopneumothorax is, I think, the only one on record.

May I ask, in the interest of exactness, that you publish this correction?

ALFRED MEYER, M.D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Abdominal Injuries. By RUTHERFORD MORISON, Professor of Surgery, Durham University; Senior Surgeon, Northumberland War Hospital, and W. G. RICHARDSON, M.B., F.R.C.S., Lieutenant-Colonel R. A. M. C. (T.), First Northern General Hospital and Surgeon Royal Victoria Infirmary, Newcastle-Upon-Tyne, Oxford War Primers. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. 116. (Price, 1s.)

This is a small volume dealing with abdominal wounds, operations for the same, their aftertreatment, and the complications which may follow. The authors have given us nothing new, and although both are connected with military hospitals, the contents of their work may be found in any up to date handbook on surgery. We agree with the authors' preface, that "it is a short account of abdominal injuries to aid medical men who may be called upon in these strenuous times to act in emergency, and whose knowledge of abdominal surgery may have grown somewhat rusty."

Transactions of the Royal Academy of Medicine in Ireland. Volume XXXIII. Edited by J. ALFRED SCOTT, M.A., M.D., F.R.C.S.I., General Secretary, Professor of Physiology Royal College of Surgeons in Ireland. Dublin: John Falconer; London: Baillière, Tindall & Cox; Edinburgh: James Thin; Bristol: John Wright & Co., 1915. Pp. xlii-465.

It is well known that many a good paper is buried in a volume of transactions. The present volume contains several such papers, all of which are deserving of a wider audience than they are likely to receive. Among those of

3 more interest is Moore's paper on The Exploitation of the Medical Profession in Respect to Medical Certificates. The subject is of importance on this side of the Atlantic as well as in Ireland; and many physicians are paying involuntary tribute to governments and insurance companies, and rendering valuable services, without receiving any remuneration. Dr. T. P. C. Kirkpatrick contributes an interesting note on the "Dublin Method" of conducting the third stage of labor. He shows that while Dublin has a prior claim to Credé, Dr. John Harvie (of England) has a prior claim

Practical Organic and Bio-Chemistry. By R. H. A. PLIMMER, Reader in Physiological Chemistry, University of London, University College. With Colored Plate and Other Illustrations in the Text. New York, London, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1915. Pp. xii-635. (Price, \$3.60.)

This volume was originally compiled as a handbook for practical work in physiological chemistry. It is intended mainly for medical students, though it contains sections which appeal rather to students of biology in general. The essentials of the subject are printed in large type, while the botanical and more advanced portions are printed in small type. As a work which contains the essentials of organic chemistry, as understood at the present time, this book can be cordially recommended to any physician who wishes to keep up to date in one of the most important—but, by the practitioner, most neglected—branches of the medical curriculum. The publishers and printers have aided the author in producing a most attractive and readable volume.

Chemical Constitution and Physiological Action. By Professor Dr. LEOPOLD SPIEGEL, Berlin. Translated with Additions from the German by C. LUEDEKING, Ph.D., Leipzig, and A. C. BOYLSTON, A.M., Harvard. New York: D. Van Nostrand Company, 1915. Pp. iv-155. (Price, \$1.25.)

In this little volume will be found a brief discussion of the relation between the chemical constitution of certain compounds and their physiological action. Naturally, the greater part of the book is taken up with organic compounds; and the reader will see how certain groupings of elements are weakened or strengthened or otherwise modified in their action by various side chains. The most noticeable of these groups are the amino, hydroxyl, and carbonyl groups; but several others are considered as well. The authors give constant references to the literature of their subject, but these are of value only to the reader of German. The usefulness of the work is much handicapped by the absence of an index.

A Textbook of Histology. By RUDOLF KRAUSE, A. O. Professor of Anatomy at the University of Berlin. Translated from an Original Manuscript and Printed only in the English Language. With Thirty-six Illustrations in the Text, Three of which are Colored. The References to Illustrations Given in the Text Relate to the Colored Illustrations Contained and Published in Dr. Rudolf Krause's *A Course in Normal Histology*. New York: Reban Company, 1915. Pp. xii-274.

This is a new work on histology and, so far as the text goes, it is one of the best books on the subject. The author discusses in turn the cell, the tissues, and the various organs of the body. Both in the table of contents and in the body of the work there is a curious defect in classification; in the description of the tissues it would seem that there are two chief kinds of tissues, namely epithelial and muscular; and that nervous and connective tissues are a subdivision of the muscular tissue. The book is well written and well printed; and the illustrations, though very few, are excellent. We feel it necessary to protest against the constantly recurring references to illustrations which are not in the present book but are to be found in another volume. To whatever extent these references are necessary, to the same extent the present work is incomplete.

Die Cholera Asiatica und die Cholera Nostras. Erster Teil: I. Aetiologie und Immunität der Cholera Asiatica. Von Prof. Dr. R. KRAUS und Dr. B. BUSSON. II. Die Aetiologie der Cholera Nostras. Von Dr. B. BUSSON. Zweiter Teil: Die Klinik der Cholera. Unter Berücksichtigung der Bearbeitung von Weil. C. Liebermeister von Geh. Med.-Rat. Prof. Dr. TH. RUMPF. Wien und Leipzig: Alfred Hölder, 1914. Pp. 167.

It is more or less characteristic of European authors, and particularly of Germans, to do thorough work in their chosen fields, and this is the prime feature of the present monograph. The first part of the work is divided into an exhaustive discussion of the etiology of Asiatic cholera and the problems concerned with its immunity, and into a separate discussion of the etiology of cholera nostras which is no less exhaustive. The second portion of the monograph is devoted entirely to the clinical aspects of the two

diseases, including prophylactic measures, and a fairly complete outline of the means which have been employed in their treatment. It is only in the subject of treatment in which the discussion seems to be at all incomplete, and here we are struck with the insignificant reference which is made to the recent illuminating work of Leonard Rogers. It is possible that this apparent oversight is due to the time of preparation of the work, for it is dated 1914, and was possibly completed before the later papers by Rogers had been published. Extensive bibliographies complete each of the sections and render the work of additional value to the student of these diseases.

Manual of Embryology. By A. MELVILLE PETERSON, M.D., F.R.C.S., Professor of Anatomy in the University of Liverpool, Member of the Institute of American Anatomists, Past-President of the Anatomical Society of Great Britain and Ireland, etc. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. xvi-391. (Price, \$2.75.)

This volume is exactly what its title implies—a manual—but it is fairly complete and is well arranged for the use of the student who desires a short, condensed presentation of the subject for the purpose of review. It has the two excellent features of profuse illustration and the use of heavy faced type throughout the text to direct attention readily to the name of the structure under immediate discussion. The subject matter is not confined to simple embryology, but also touches on some of the more important phases of comparative embryology which serve both to fix the facts better and to make for clearer understanding on many points. Among compendiums for review purposes, this volume should win a high position, but as a textbook on the subject it is too greatly abbreviated and condensed for the courses of today.

Interclinical Notes.

The late Kenneth W. Millican, formerly associate editor of this JOURNAL, and at the time of his death, assistant editor of the *Lancet*, was accustomed from boyhood to a pint of claret and a cigar or cigarette with his luncheon and dinner. He found himself deprived of these luxuries during a vacation passed in a typical Ocean Grove boarding house. On the last day of his stay some good Samaritan took him to Shark River to dine. On his return he sat up until four o'clock on Sunday morning to address the subjoined verses to the present junior editor of this JOURNAL:

AD CLAUDIUM L. ROTATOR, M.D.

Thy sapient counsels, my Rotator, come
Hot foot to Baïe from Imperial Rome,
With mystic legends strangely intermixed
And "*cum permissu Maii*," too, affixed.
I read with awe, and shivered in my shoes
(The day is cold) such chidings to peruse,
Our messengers have crossed upon the way—
My screed to thee was sent but yesterday,
Wherein I told in words of gloom Cadmeian
Of my rank horror of the race plebeian.

Odi profanum vulgus; you recall
The words of that bright brother of us all
Who verse indite—Quintus Horatius Flaccus—
We're undismayed with such an one to back us.
I'll say no more upon this subject now—
'Twill serve on my return to raise a row.
Meanwhile, you urge me stay till you come down
Nor haste to quit the seaside for the town.
Worthy Rotator, this cannot be done
For reasons many. I will give but one.

Ere I left town I laid aside a sum
To cover all expenses out and home.
That sum already by one tenth at least
Have I outrun; it must not be increased.
Yet two days more another tenth would add;
Nor could the needful day of rest be had
Ere once, again I settle in my chair
And rack my brains new journals to prepare.

Before I close I fain would add a word
To tell you of the marvel that occurred
Last night. I've dined at last! and by Apollo!
Did I remain, more dinners sure should follow.
Lest you know not, this green oasis fair,
This heavenly mansion in a desert bare,
Is called the Neptune Heights Hotel; a car
To Belmar takes you there; it is not far.

For one 'tis dear; but two can so combine
Their varied orders, that a dinner fine
Shall be enjoyed at moderate cost. We paid
Three dollars, and the *menu* thus was made;
Half a fried chicken; with it *pommes de terre*
Au gratin, and a celery salad rare;
Half a plain lobster, corn, and Roquefort cheese
(Crackers and butter came, of course, with these).

Cocktails began the meal, some Zinfandel
Washed it well down, and at the close there fell
On our delighted nostrils, rich and rare,
The aroma sweet from a *cafétière*
Before us set. To this add a cigar
Such as I've rarely smoked, and there you are!
Now I'll shut up; you'll see me soon in town
And then to lunch together we'll sit down,
And while you're jibing at my growls and dickers
I'll eat your lunch and drink up all the liquors.

PUBLIUS MANLIUS VITUPERATOR.

LUCI OCEANI, N. J.
A. D., XIII Kal. Sept.
MDCCCIII.

* * *

A picture reproduced from *Leslie's* of fifty years ago in the issue of that periodical for December 30, 1915, shows that skating was as popular in 1865 as it is this winter. It is strange that this glorious exercise and sport had to await fashionable recognition before receiving the attention it deserves. Skating is almost effortless, but hard work may be put into it if special excellence is aimed at. Children should by all means be hurried out of the nursery and dancing salon to the skating pond; to the indoor rink if nothing better offers. Nothing contributes to a graceful, upright carriage more than skating, and only snowshoeing and skiing can equal it as an oxygenator of the blood.

Two medical contributors to the *Scientific Monthly* for January, 1916, are Dr. Henry Dwight Chapin and Dr. Robert S. Carroll, the first of whom discusses milk in the light of evolution, and the second invalidism. William J. Roe writes on Defending America. A most entertaining paper is that on Museum Fatigue, by Benjamin Ives Gilman, which is profusely and instructively illustrated. Professor Scott Nearing, now of Toledo University, analyzes the distinguished men of the country, taking the names from *Who's Who*. It might easily be objected that many of the persons are distinguished only in their own minds. Be that as it may, New England still furnishes the greater number of prominent people, and most of these are college graduates.

* * *

One of the health department's admonitory posters of prophylaxis shows a boy in the throes of sneezing and has beneath it: "Cover up each cough or sneeze; if you don't you'll spread disease, 'We,'" says F. P. A., writing like an editor in the *New York Tribune* for December 28, 1915, "wish the D. of H. would issue cards for use in crowded cars—cards which might be handed to offenders. Such as, frexamp: 'Please stop coughing in my face, from the Bridge to Astor Place.'"

* * *

Under the caption, Doctor Goldwater's Retirement, the *Chicago Medical Recorder* for December, 1915, observes that "when Dr. S. S. Goldwater retired from the office of commissioner of health of New York city, the country lost its foremost, its keenest, and most aggressive health official. Through the weekly *Bulletin* of the department of health of New York the work of Doctor Goldwater is known and appreciated wherever that well edited, enlightening, and altogether charming publication circulates." This is very nice, but the well edited, enlightening, and altogether charming *Bulletin* is the product of our own esteemed assistant editor, Dr. Charles F. Bolduan.

Meetings of Local Medical Societies.

MONDAY, January 10th.—New York Ophthalmological Society (annual); Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society; Yorkville Medical Society.

TUESDAY, January 11th.—New York Academy of Medicine (Section in Neurology); Federation of Medical Economic Leagues of New York (annual); Medical Society of the County of Wyoming; Ontario County Medical Society; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Newburgh Bay Medical Society (annual); New York Obstetrical Society; Medical Society of the County of Oneida.

WEDNESDAY, January 12th.—New York Pathological Society (anniversary); New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx (annual); Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine (annual); Medical Society of the County of Dutchess; Brooklyn Medical Association (annual).

THURSDAY, January 13th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua (annual); Medical Society of the County of Alleghany.

FRIDAY, January 14th.—New York Academy of Medicine (Section in Otolaryngology); Society of Ex-Interns of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York.

Official News.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending December 30, 1915:

Boyer, Perry L., Major, Medical Corps. Now on temporary duty in command of Field Hospital No. 5, at Harlingen, Texas, is relieved from further duty at Madison Barracks, New York, and is assigned to duty with that organization and will accompany it upon its return to its home station, Fort Snelling, Minnesota. **Bradley, A. E.**, Lieutenant Colonel, Medical Corps. Designated as attending surgeon, headquarters, Eastern Department, vice Major Albert E. Truby, relieved. **Carswell, Robert L.**, Captain, Medical Corps. Now on temporary duty in command of Ambulance Company No. 5, at Harlingen, Texas, is relieved from further duty at Fort Oglethorpe, Georgia, and is assigned to duty with that organization; will accompany it upon its return to its home station, Fort Snelling, Minnesota. **De Loffre, Samuel M.**, Captain, Medical Corps. Leave of absence for one month on surgeon's certificate of disability is granted. **Fletcher, Harry Q.**, First Lieutenant, Medical Reserve Corps. Is relieved from duty at Fort Oglethorpe, Georgia, and will proceed to his home, and upon arrival there will stand relieved from further active duty in the Medical Reserve Corps. **Murray, Alexander**, Captain, Medical Corps. Granted two months and fifteen days' leave of absence, effective about January 1, 1916. **Pisek, Godfrey R.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in that corps is accepted by the President, to take effect December 22, 1915. **Wilson,**

James S., Major, Medical Corps. Granted one month's leave of absence from Fort George Wright, Washington, to take effect upon the return to the post of First Lieutenant Ralph N. Newton, Medical Reserve Corps.

Births, Marriages, and Deaths.

Died.

Anderson.—In Princeton, Ind., on Wednesday, December 22d, Dr. Robert S. Anderson, aged fifty-four years. **Ball.**—In Schenectady, N. Y., on Wednesday, December 15th, Dr. Ogilvie D. Ball, aged seventy-five years. **Barrett.**—In Clyde, N. Y., on Thursday, December 23d, Dr. George D. Barrett, aged sixty-nine years. **Barrows.**—In New York, on Sunday, January 2d, Dr. Charles Clifford Barrows, aged fifty-nine years. **Belser.**—In Hickory, N. C., on Wednesday, December 15th, Dr. Martin L. Belser, of Ann Arbor, Mich., aged forty-eight years. **Blank.**—In Wernersville, Pa., on Monday, December 20th, Dr. Ephraim Koch Blank, aged sixty-four years. **Bourne.**—In Salisbury, Md., on Saturday, December 25th, Dr. Bentley S. Bourne, of Hamburg, N. Y., aged fort-nine years. **Brandt.**—In Tarrytown, N. Y., on Thursday, December 23d, Dr. Erdman N. Brandt, aged forty-eight years. **Bushnell.**—In Chicago, Ill., on Monday, December 20th, Dr. Charles H. Bushnell, aged sixty-five years. **Cheever.**—In Boston, Mass., on Monday, December 27th, Dr. David W. Cheever, aged eighty-four years. **Cole.**—In Rockton, Ill., on Wednesday, December 22d, Dr. Emmett J. Cole, aged sixty-five years. **Collins.**—In Highland Springs, Va., on Sunday, December 26th, Dr. Granville T. Collins, aged fifty-seven years. **Cox.**—In Howell, Ind., on Friday, December 17th, Dr. David A. Cox, aged fifty years. **Craddock.**—In Concord, N. H., on Monday, December 20th, Dr. Ebenezer B. Craddock, aged eighty-four years. **Dade.**—In New York, on Sunday, December 26th, Dr. Charles Townsend Dade, aged fifty-seven years. **Davis.**—In Farmer City, Ill., on Monday, December 20th, Dr. John A. Davis, aged sixty-seven years. **Deal.**—In Pacific Grove, Cal., on Wednesday, December 15th, Dr. David L. Deal, aged seventy-three years. **Dunning.**—In St. Paul, Minn., on Tuesday, December 21st, Dr. Arthur W. Dunning, aged fifty-six years. **Fairbrother.**—In East St. Louis, Ill., on Wednesday, December 15th, Dr. Henry C. Fairbrother, aged seventy years. **Greene.**—In Providence, R. I., on Sunday, December 19th, Dr. Willard H. Greene, aged eighty-three years. **Hefter.**—In New York, on Tuesday, December 21st, Dr. George O. Hefter, aged fifty-three years. **Knapp.**—In St. Paul, Minn., on Wednesday, December 15th, Dr. George Leonard Knapp, of New Richmond, Wis., aged sixty-five years. **Leahy.**—In Cambridge, Mass., on Saturday, December 25th, Dr. Thomas J. Leahy, aged forty-six years. **McComas.**—In Oakland, Md., on Monday, December 20th, Dr. J. Lee McComas, Sr., of Baltimore, Md., aged eighty-one years. **McIlravy.**—In Des Moines, Iowa, on Wednesday, December 22d, Dr. D. C. McIlravy, aged sixty-three years. **Neuman.**—In South Bend, Ind., on Wednesday, December 15th, Dr. Paul Neuman, of Wichita, Kansas, aged seventy years. **Peckham.**—In Providence, R. I., on Saturday, December 25th, Dr. Fenner H. Peckham, aged seventy-one years. **Rabe.**—In Akron, Ohio, on Thursday, December 16th, Dr. James W. Rabe, aged forty-eight years. **Ragan.**—In San Francisco, Cal., on Sunday, December 17th, Dr. Denis F. Ragan, aged fifty years. **Scheel.**—In Belleville, Ill., on Thursday, December 16th, Dr. Adolph M. Scheel, aged sixty-four years. **Sprinkel.**—In Kansas City, Kansas, on Sunday, December 19th, Dr. Charles G. Sprinkel, aged forty-nine years. **Stuckert.**—In St. Louis, Mo., on Monday, December 20th, Dr. Otto Stuckert, of Whiteside, Mo., aged fifty-three years. **Swimley.**—In Staunton, Va., on Saturday, December 18th, Dr. William A. Swimley, of Winchester, Va., aged sixty-nine years. **Tennyson.**—In Minneapolis, Minn., on Friday, December 17th, Dr. Falk Tennyson, aged forty-eight years. **Tompkins.**—In Croton-on-Hudson, N. Y., on Thursday, December 23d, Dr. George Nelson Tompkins, aged thirty-six years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 3.

NEW YORK, JANUARY 15, 1916.

WHOLE No. 1937.

Original Communications.

INCREASING MORTALITY IN THE UNITED STATES,*

From Diseases of the Heart, Bloodvessels, and Kidneys.

BY EUGENE LYMAN FISK, M. D.,
New York,

Director of Hygiene, Life Extension Institute, Inc.

When a man dies at forty-five years of age of apoplexy, of nephritis, or of heart disease, we wag our heads sagely and say: "The pity of it . . . taken off in his prime . . . what a cruel fate for his family," etc., but are we conscious either individually as family medical attendant, or collectively as a profession, of having fully utilized the resources of science to protect the public against such catastrophes? When a man past sixty years of age dies from such maladies, we, as a profession, "lie down," so to speak, and accept such an occurrence as an "act of God" or whatever equivalent our religion or philosophy offers to explain an event beyond the control of man.

Modern medicine has, of course, done much favorably to modify and control the course of these organic diseases after they are well established and have announced their presence, but the real catastrophe occurs when the disease has progressed far enough to warn the patient, by symptoms, that he needs medical attention. Sometimes he has no warning, but just drops.

When a death at any age occurs from typhoid, from smallpox, or even from tuberculosis, we cry out, "Whose fault is it?" Search the community and find why this thing was permitted to happen! No one questions the controllability of the death rate from communicable diseases, but only within the past few years has any protest been raised against premature death from chronic diseases of the vital organs.

When we once critically consider this subject, plain common sense, without the aid of elaborate statistics, tells us that there is an enormous premature loss of life and a proportionate physical impairment and social burden of disease, incompetence, and suffering which could in a large measure be prevented by thoroughgoing, conscientious study of the etiology of these maladies and a painstaking effort to gain the cooperation of our patients

and of the public generally in applying this knowledge for their protection.

Communicable disease stimulates us to effective activity because we can readily visualize the cause; we recognize it as a tangible, living organism, an enemy which can be directly attacked and exterminated. All we need is money and authority to achieve the conquest.

But chronic organic disease is due to manifold causes which require close study. Individual characteristics and inherited qualities must be analyzed. Broad, general principles of prevention are recognized, but to enforce the application of these principles is by no means so simple as draining pools, screening against mosquitoes, or destroying typhoid excreta.

Public fear and public activity are easily excited by the mental picture (more or less accurate) of the horrific microorganisms of epidemic disease, while the continuous ravage of chronic cardiovascular and renal diseases passes unnoticed. It is true that we now recognize microorganisms as the principal and immediate cause of chronic organic disease, but this is not now known to the public and it is ignored if it is actually known by many physicians.

To guide individuals so that they may be not only protected from the incidence of insidious, low grade infection, but also rendered resistant to microorganisms, which, in the nature of things, must inevitably gain entrance to their bodies, requires a close study of the new science of personal hygiene and a painstaking effort to apply its principles.

It is not enough to keep people out of sick beds—we must help them to attain the best there is in life. We cannot do this by slamming our office doors in their faces until they appear with some well developed pathological condition. We can do it only by casting a pathological horoscope, as it were, by studying the individual, and forecasting his probable future if he continues his present mode of life, and by determining to what probable degree his future may be modified by changing his living habits or having physical defects corrected that invite infection or impairment.

Now, as in the case of warfare against communicable disease, thorough organization for victory can only be had after the degree of the peril is known and its progress measured. The greatest gains in fighting preventable disease have been made where vital statistics are most accurately kept.

In studying the extent and movement of mortality, the following questions at once invite attention:

*Address delivered before the Philadelphia Pathological Society, October 14, 1915.

1. How much of the mortality from chronic disease is premature or postponable?

2. What degree of physical impairment or premature physical decay in the population does such mortality reflect?

3. Conceding that with a normal age distribution the annual death rate in a thousand from chronic organic disease is an index of national vitality, is this factor an increasing or a decreasing quantity in our vital statistics,

The sources of our information regarding the mortality and morbidity movement are threefold, namely:

1. General clinical observation in private practice, hospitals, dispensaries, life insurance examining, and in autopsy work, etc.

2. Vital statistics, United States census reports, State and municipal reports, and the vital records of life insurance companies.

3. Analysis of the results of the physical examinations of large groups of supposedly normal people.

Clinical observation alone is not a sound or sufficient basis for a broad generalization applied to the whole population. Nevertheless, opinions derived from such observation are of great value when grouped with comprehensive statistical evidence. This is an age when we demand proof rather than opinion, however high the source of the judgment may be. As this paper deals more particularly with evidence rather than with authority, I am not making extensive reference to clinical literature, but I am safe in saying that the recent general trend of medical judgment is in favor of the view that cardiovascular disease is on the increase in this country and is at least an unnecessarily large factor in the death rate at middle age and beyond. Osler, in his *Systém of Medicine*, and others of equal eminence have lately uttered warnings of this character applied to American tendencies.

During the past twenty-five years, much of my time has been devoted to the consideration of mortality influences among large masses of supposedly healthy lives applying for insurance and those accepted for insurance. No one engaged in such work can fail to be impressed by human imperfection.

The thoroughly sound human animal is a rarity. Most of the risks accepted for life insurance are in some way defective, but the defects are not serious enough to carry the mortality above the premium provisions; hence, from a business standpoint, they are satisfactory, but from a hygienic standpoint, they are far from satisfactory.

Among those rejected for life insurance, the number showing some defect of the cardiovascular system is very large, which is not surprising, since these are the vital structures, and impairments of a serious character must largely fall among such tissues.

Dwight (1) has given figures which fairly reflect the proportion of circulatory affections among rejected risks. In his company fifty per cent. of the rejections during 1912 were for circulatory conditions. From this he derived the ratio of five per cent. of circulatory conditions among supposedly healthy people applying for life insurance.

Rittenhouse (2) states that in one large company, during one year, the proportion of risks declined on account of circulatory and kidney affections was forty per cent. of the total rejected.

Such observations prepare the mind for the unwelcome but inescapable conclusion that the average human is defective, and that large masses of people who suppose themselves to be sound are in reality seriously impaired, while still greater numbers are defective and headed for serious impairment or premature decay.

My attention was first focused on these closely related problems of the extent of organic impairment and the apparent increase in mortality from such causes by a research which I made, in 1907, for the Association of Life Insurance Medical Directors (3).

The modern death rates among entrants at the extremes of life (under age twenty-five years and over age sixty), among leading American companies, were ascertained and contrasted with early American experience, and a comparison for similar periods was made with British experience. It was found that in several leading American companies there had been a fall in the death rate during the past thirty years of about thirty per cent. among entrants under thirty years and an increase in the mortality among elderly entrants (sixty and over) ranging from fifteen to thirty-four per cent. The experience of twenty British companies, published in 1869, was analyzed and compared with the experience of sixty-three British companies, extending from 1863 to 1893, and it was found that there had been a similar trend in Great Britain among young entrants, namely, an improvement of twenty-four per cent. among those entering under twenty-five years. Among elderly entrants (sixty and over) the trend was much more favorable than among American insured lives, an improvement of seven per cent. being shown. This is in accord with the trend of mortality of the general population in Great Britain.

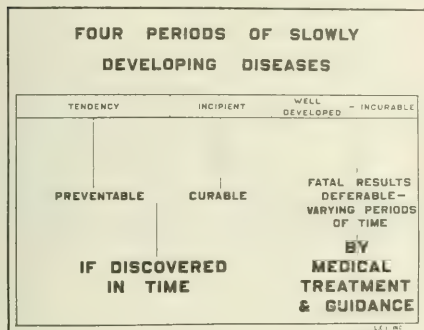
These results have lately been confirmed by the report of the medicoactuarial investigation of the mortality of forty American companies. An improvement of fifteen per cent. among entrants under thirty years is shown, compared with a deterioration of two per cent. among those over sixty (1885-1892-1900-1910, S.).

This peculiar trend of American insurance mortality, showing a loss at the higher ages instead of a gain as in the British companies' experience, suggested the advisability of seeking evidence as to the trend of mortality at the higher age groups in the general population in this country and in England and Wales.

Mr. J. K. Gore (4), president of the Actuarial Society of America, had already called attention to an increasing mortality at the higher age periods in the registration cities of the United States; also an increase of about fifty per cent. in the death rate from diseases of the circulation and kidneys.

The results of my research along these lines were exhibited in a public pamphlet, *American Life Waste*, issued, in 1910, by Mr. E. E. Rittenhouse (5), at that time president of the Provident Savings Life Assurance Society. It was found that the mortality from diseases of the heart, circulation,

and kidneys had apparently increased in the registration States more than 100 per cent. since 1880, and in Massachusetts, where the figures could be extracted more accurately, about sixty-seven per cent. Likewise the mortality after middle life in the registration States was found to have materially increased, thus confirming by a totally different form of investigation the evidence as to the increase



of mortality from these organic diseases most prevalent at middle life and later.

An opposite trend of mortality among the elderly was found in England and Wales. While the savings at the early ages had, as in all countries, been very emphatic, there had also been a moderate gain at the higher age periods and a consistent fall in the death rate from the degenerative or regressive class of disease.

These researches were continued by me and also by Mr. Rittenhouse, when conservation commissioner of a prominent company, and the ground worked over again by the experience of special groups of States, cities, etc., always with the result of strengthening the evidence of increasing mortality at middle life, and of a concomitant and consistent rise in the death rate from cardiovascular-renal diseases.

I am not going to burden my readers with the full line of accumulated statistics on the subject, but I present the most important items, brought up to date so far as possible and exhibited in simple chart form, that will plainly show the mortality trend. Recent evidence from official sources and high authorities confirming this trend is also exhibited (6). From the statistical evidence we are justified in drawing the positive conclusion that cardiovascular-renal disease is widely and needlessly prevalent at the most valuable ages of life. This conclusion alone justifies a vigorous campaign against such maladies.

But, are we equally justified in maintaining that there has been a steady increase in the mortality from these diseases and a consistent rise in the mortality rate at middle life and later? Surely the figures are emphatic enough, and they have been checked in so many ways that they must be accepted as arithmetically correct. Only our distrust of American registration methods, but recently developed in civilized form, can cause us to hesitate in accepting such a conclusion.

It is well, therefore, to examine the possible fallacies in the record. Rest assured that these fallacies have been well considered. No one, with even a modicum of scientific poise and caution, would hand such figures to the world without a careful consideration of certain possible fallacies which readily occur to any thinking mind when such figures are presented. In addition, certain possible technical fallacies which would not occur to the average student, have also been thoroughly considered and tested.

Now, as to the alleged improvement in diagnosis and change in methods of reporting: Fallacies from this source have been escaped by grouping all these chronic diseases together under new and old classifications and following them back as a group. No change in method of reporting would remove enough cases from the general group materially to affect the figures. For example, while in modern practice a death might be reported as arteriosclerosis which formerly might have been reported as heart disease, paralysis, or apoplexy, it would in any case remain in the same general group. A flagrant example is the item "dropsy" in old Massachusetts reports. This has diminished from fourteen per 100,000 in 1880 to 3.5 per 100,000 in 1908, while Bright's disease and nephritis have inordinately risen from thirty-nine per 100,000 in 1880 to eighty-three in 1908 (7). By including all such obscure and varying causes in one group the errors are smoothed out.

Secondly, as to the effect of the survival of large numbers from the earlier age groups: This should not affect the mortality rate at the higher ages, although it might increase the death rate per 100,000 in population from diseases of middle life after

THE DISEASES OF ADULT LIFE ARE OFTEN UNSUSPECTED UNTIL TOO LATE



These men look and feel well but each has a
serious organic disease. Such diseases
may often produce no symptoms or discomfort.

Portrait used by the American Heart Association in its campaign against chronic diseases of adult life.

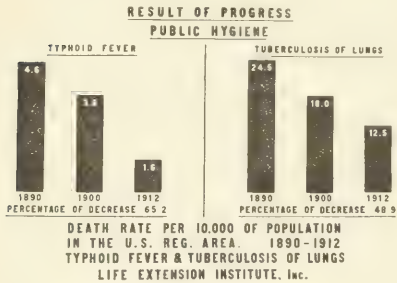
those saved from deaths in infancy and childhood have had a chance to reach the later periods; but such an influence has not yet had time materially to affect the higher groups.

There has been no significant change in the age distribution in this country, and when we test this theory by the experience of other countries, we find that in the countries where there has been the most

emphatic saving of life in infancy and childhood, there has also been an improvement at the older ages. There are more, proportionately, living at the older ages in England, Wales, and Sweden, than in the United States.

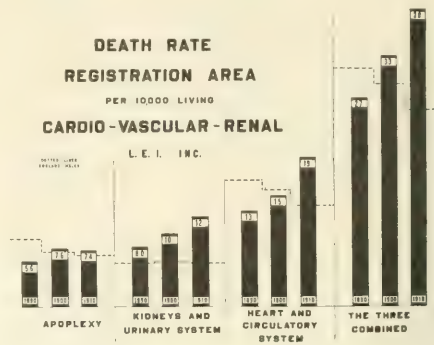
In time, the survival of the unfit may have a de-

been cited as showing a wide prevalence of cardiovascular disease among those rejected for life insurance, but these are self selected groups and do not necessarily reflect conditions in the general population.



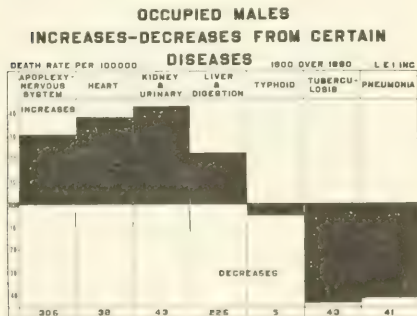
cided influence. But, bear in mind that the so called fit, who are for the most part decidedly unfit, will, under continued health progress and the development of personal hygiene, become fitter. Likewise, as communicable disease decreases, the vast number of people who survive these diseases with damaged cardiovascular apparatus will decrease.

Assuredly the figures derived from United States registration sources cannot be accepted as statistically perfect, but when every test is applied and it is found that all give the same reaction, varying only in degree, I think we may safely give the public the benefit of any doubt that may exist and assume that, as a profession, we have to deal with an encroaching death rate from diseases of middle life and old age, and from slowly progressive, insidious organic changes, which often arise in youth and pass neglected until some pathological explosion occurs. While the general death rate at the earlier ages is decreasing, the death rate



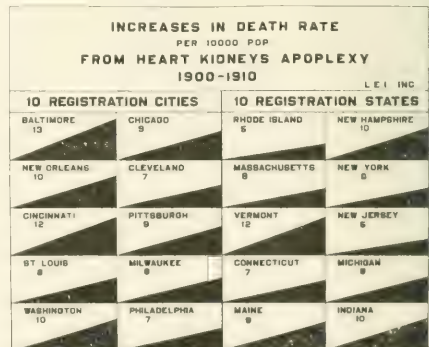
The work of the Life Extension Institute, in systematically and thoroughly examining large groups of employees for the purpose of prolonging their lives by detecting disease, disease tendencies, or disease producing living habits, in time to give the individual an opportunity to seek effective medical aid or change his methods of living and his general physical trend, affords concrete evidence of a rather startling character, even to those who were more or less prepared for such findings.

The institute has examined many thousands of individuals throughout the country, but I have selected two special groups of 1,000 each, one sedentary or commercial, the other active or industrial, examined under conditions homogeneous as to technic, standards, and methods, with the findings continually checked under my personal supervision. Whatever interpretation may be put on



at these ages from degenerative disease is increasing—the increase being masked by the great reduction in the death rate from communicable disease.

What support to such conclusion do we find on actual examination of younger groups in the population? Life insurance experience has already



these figures as to their significance, I can vouch for the accuracy of the findings according to standards of technic approved by the world's best authorities. Either our tests of these conditions must be revised or we must accept the testimony of the

figures that the majority of supposedly healthy active workers in various walks of life are more or less impaired and physically below their attainable condition of physical well being.

ANALYSIS OF PHYSICAL EXAMINATION OF 1,000 INDUSTRIAL WORKERS (FOREMEN AND SKILLED WORKERS) IN A LARGE DETROIT MOTOR COMPANY, AND COMPARISON WITH THE RESULTS OF 1,000 EXAMINATIONS OF EMPLOYEES OF BANKS, TRUST COMPANIES, AND COMMERCIAL HOUSES IN NEW YORK CITY.

	Detroit Motor Co. industrial.	New York commercial.
Employees	1,000	1,000
Average age	32.7	27
Perfect on examination. No physical impairment found, and no advice for correction of living habits needed, per cent.	00	1
Imperfect on examination. Advice needed regarding physical condition or living habits	100	99
Advised to seek medical treatment, per cent.	69	81

(Of those referred to physician, there were aware of impairment in each group only about 10 per cent.)

Those found imperfect, either in physical condition or manner of living, were classified as follows: (These percentages refer to individuals, and are of the total number examined.)

	Per cent.	Per cent.
<i>Minor.</i> —		
Advice needed regarding living habits or physical condition, but immediate treatment not required	31.1	17.7
<i>Moderately impaired.</i> —		
Referred to physician for treatment and report sent to physician	22.9	18.5
No physician, or none mentioned. Urged to seek medical treatment or guidance	39.9	58
<i>Seriously impaired.</i> —		
Referred to physician for treatment and report sent to physician	3.6	2
No physician or none given. Urged to seek medical treatment	2.5	2.8

ANALYSIS OF IMPAIRMENTS.

These percentages are of the total number examined. As many had several impairments, the total of the percentages exceeds 100. In other words, these percentages are not mutually exclusive, but overlap.

	Per cent.	Per cent.
<i>Moderate to serious.</i> —		
Organic heart	3.5 ¹	16.2
Moderately to seriously thickened arteries (radials, brachials, and others)	24.65	42.4 ¹
Slightly thickened arteries (chiefly radials)	29	
High or low blood pressure	23.1	26
Urinary—albumin, sugar, casts	45.6 ²	39.8
Combined urinary and other serious impairments	26.6	24
Total urinary and circulatory impairments	72.3	
Nervous	3	1.1
Lungs	5.7	2.9
Veneral—syphilis	1.4	3
—gonorrhea	5	
<i>Minor to moderate.</i> —		
Functional circulatory—rapid, slow, irregular pulse	21.6	14.8
Minor urinary—indican, bile, crystals, etc.	26.6	20.8
Digestive disturbances	9	7.3

¹These men had previously been examined before employment for gross heart defects.

²This figure represents all grades of thickening. No subdivision was then attempted in classification.

These men were taken right from their work and examined during the heated term in July, which may possibly account for this high percentage.

Very few Wassermann tests were made, but careful search for specific history, lesions, or nervous impairment was made. No bacteriological examinations were made for gonorrhea. While these figures are obviously too low, it must be admitted that there was no physical evidence of widespread venereal infection in these groups. The urine was examined microscopically in every case, and should have revealed evidence of urethral discharge or active infection, even without bacteriological examinations.

	Per cent.	Per cent.
Constipation	14.7	17.2
Nose, throat, respiratory	42	28.5
Ears	30.3	20.3
Teeth and gums	69.5	47.8
Anemia	4	2.7
Skin	6.8	9.1
Errors in diet	54.1	59.8
Errors in personal hygiene	50.5	54

Physical defects.—

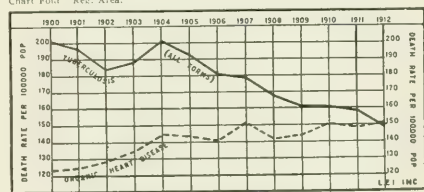
Faulty vision, not fully corrected	41	31.1
Flat foot	2.3	4.3
Rupture posture	18.1	17.7
Rupture, no truss	2.4	1.8
Overweight (25 per cent.)	12.8	3.2
Underweight (25 per cent.)	7.7	15.1
Unclassified	16.5	10.1

The figures for organic heart disease are low in the Detroit industrial group because these men were all examined for gross cardiac lesions by the company's physicians on application and those most seriously affected given some different form of employment; the entrance examination at the plant being not for the purpose of excluding men from employment, but to give them employment adapted to their conditions.

Attention is at once rivetted on the high percentage of urinary abnormalities and the even greater proportion of men showing arterial changes.

To clinicians accustomed to deal with the frankly

CHART FOUR. REC. AREA.



sick, these figures may seem absurdly high. They are much higher than we found at the outset of our work before the technic of our staff had become highly developed and standardized. They are far higher than we anticipated, although I was prepared, by statistical evidence and long experience in the examination and valuation of supposedly healthy lives, for a high percentage of impairment.

OUR DIAGNOSTIC TECHNIC.

The question may naturally be asked as to the technic and standards observed for detecting arterial thickening, also for detecting albumin. The technic we follow for ascertaining thickening might easily have been taken from Osler's latest instructions in *Modern Medicine*, although this was not the source of our inspiration.

There is nothing new or original about it, but, like the albumin test, it must be strictly and rigorously applied in all cases regardless of age or condition. These tests are very much like the game of golf—you must play it every minute, at every stroke, at every hole; a lapse of attention, a slurring of technic, and the score is spoiled. The following is that employed to detect arterial thickening.

Teeth	14.27	per cent.
Gums	11.07	per cent.
Both	41.01	per cent.

ing: The circulation in the radial or other artery that is being palpated is cut off by pressure of the index and ring fingers. The middle finger then carefully explores the artery, pressing it firmly down on the bone and noting whether the artery can still be felt either as a ribbonlike band, a thick tape, or a hard tube, depending on the degree of thickening. Merely to roll the artery under the finger is not sufficient and may mislead one into diagnosing high tension as thickening, or even an

If so many deaths are to occur in middle life, the foundation of these chronic maladies must necessarily be laid in early life by heredity or by faulty living habits; by acute infection on the one hand or chronic, low grade infection on the other. Many

COMPARISON OF EXPECTATIONS OF LIFE, NEW YORK CITY,
ENGLAND AND WALES, AND LONDON

Ages	New York City* 1909-1911.		England and Wales		London* 1901-1912.	
	Males	Females	Males	Females	Males	Females
At birth	51.55	48.8	51.50	55.45	42.35	46.71
10	46.05	40.7	44.21	47.10	37.94	40.67
20	41.7	36.2	40.30	42.87	34.87	37.94
30	38.0	33.6	36.51	39.41	31.99	35.07
40	34.4	30.2	32.71	35.80	28.99	31.67
50	31.1	27.1	29.20	32.51	25.99	28.17
60	28.1	24.0	25.78	29.08	22.99	25.09
70	25.6	21.2	23.31	26.58	20.47	22.57
80	23.4	19.0	21.00	24.28	18.17	20.27
90	21.2	16.8	18.67	21.97	15.87	17.97

The above tables show, both among males and females, that the expectation of life is greater at every age in New York City than in England and Wales, and in London than in New York.

* Supplement to the Seventy-Fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales. Part I. Life Tables, pp. 56-85.

Annual Report. Department of Health City of New York. 1912, pp. 176-177.

LIFE EXTENSION INSTITUTE, INC.

years of these chronic changes are necessary before they prove fatal in themselves, much of the early mortality being due to some unusual strain on weakened vital organs. Some men with well marked arteriosclerosis, through good fortune or good management, live out a normal life expectation.

In the Detroit industrial group we have separately classified the cases showing slight radial thickening only, and it will be noted that this constitutes about half the number of arterial cases, leaving twenty-five per cent. of the 1,000 employees examined showing decided thickening or well marked thickening of brachials or other accessible arteries. The full technic was applied in all cases regardless of age or blood pressure findings.

There is a curiously widespread notion, even among physicians, that arteriosclerosis and high blood pressure are almost synonymous. Many

DEATH RATE PER 1000 IN PRUSSIA BY AGE GROUPS

Ages	1875-1880 *		1881-1890 *		1891-1900 *		1901-1910 *	
	Males	Females	Males	Females	Males	Females	Males	Females
1-2	71.8	60.1	70.2	68.0	58.0	55.5	45.3	43.1
3-4	37.1	21.7	36.3	34.6	21.7	23.8	16.5	16.0
5-9	22.2	20.0	20.0	18.8	14.0	13.0	10.0	9.0
10-14	9.3	9.2	8.8	9.0	5.0	5.0	4.2	4.4
15-19	5.1	4.8	4.8	4.8	3.0	3.0	2.4	2.4
20-24	3.0	2.8	2.8	2.8	2.0	2.0	1.6	1.6
25-29	2.0	1.8	1.8	1.8	1.0	1.0	0.8	0.8
30-34	1.0	0.8	0.8	0.8	0.5	0.5	0.4	0.4
35-39	0.8	0.6	0.6	0.6	0.3	0.3	0.2	0.2
40-44	0.6	0.4	0.4	0.4	0.2	0.2	0.1	0.1
45-49	0.4	0.3	0.3	0.3	0.1	0.1	0.0	0.0
50-54	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0
55-59	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
60-64	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
65-69	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
70-74	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
75-79	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
80-84	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
85-89	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
90 & over	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0

* The above tables show, both among males and females, that the expectation of life is greater at every age in New York City than in England and Wales, and in London than in New York.

* Supplement to the Seventy-Fifth Annual Report of the Registrar-General of Births, Deaths and Marriages in England and Wales. Part I. Life Tables, pp. 56-85.

Annual Report. Department of Health City of New York. 1912, pp. 176-177.

LIFE EXTENSION INSTITUTE, INC.

people, who have been referred to their physicians by the institute for hygienic guidance and supervision because of arterial thickening, have been referred back with the message that the blood pressure was normal, hence no thickening could exist.

A considerable degree of thickening can, of course, exist without enlargement in blood pressure.

DEATH RATES CLASSIFIED BY SEX, AGE, AND GENERAL
NATIVITY, NEW YORK STATE 1900 AND 1910*

Age Period	MALE					
	Native White.		Foreign Born White.		Colored.	
	1900 Death Rate.	1910 Death Rate.	1900 Death Rate.	1910 Death Rate.	1900 Death Rate.	1910 Death Rate.
All ages	18.4	17.3	20.6	17.0	27.9	26.5
Under 1	180.3	151.9	166.6	104.6	410.5	313.2
1-4	23.0	17.5	31.6	21.7	57.0	46.6
5-9	11.0	8.0	16.0	10.0	24.0	14.0
10-14	3.0	2.3	2.5	2.5	8.1	7.1
15-19	2.6	2.0	2.0	2.0	10.0	11.3
20-24	2.8	2.0	2.0	2.0	13.8	11.2
25-29	3.0	2.3	2.5	2.5	14.0	11.8
30-34	3.0	2.3	2.5	2.5	15.0	11.6
35-39	3.0	2.3	2.5	2.5	15.1	11.8
40-44	3.0	2.3	2.5	2.5	15.1	11.8
45-49	3.0	2.3	2.5	2.5	15.1	11.8
50-54	3.0	2.3	2.5	2.5	15.1	11.8
55-59	22.8	16.6	34.3	35.4	13.8	15.1
60-64	31.0	37.4	43.4	46.9	40.7	27.1
65-69	67.0	83.5	65.8	85.0	50.0	24.4
70-74	67.0	83.5	82.2	85.0	93.7	75.0
75-79	106.0	124.9	106.0	107.6	106.0	106.0
80-84	156.1	163.9	182.0	190.7	163.1	163.5
85-89	243.8	246.0	249.0	244.3	222.8	184.7
90 & over	366.8	324.9	351.0	307.6	240.0	303.2

* Willcox, Walter F. Special Report on Vital Statistics, 33d annual report. State Department of Health, State of New York, 1912.

FEMALE

Age Period	Native White.		Foreign Born White.		Colored.	
	1900	1910	1900	1910	1900	1910
Death Rate	Death Rate	Death Rate	Death Rate	Death Rate	Death Rate	Death Rate
All ages	18.4	17.3	20.6	17.0	27.9	26.5
Under 1	180.3	151.9	166.0	101.0	410.5	313.2
1-4	23.0	17.5	31.6	21.7	57.0	46.6
5-9	11.0	8.0	16.0	10.0	24.0	14.0
10-14	3.0	2.3	2.5	2.5	8.1	7.1
15-19	2.6	2.0	2.0	2.0	10.0	11.3
20-24	2.8	2.0	2.0	2.0	13.8	11.2
25-29	3.0	2.3	2.5	2.5	14.0	11.8
30-34	3.0	2.3	2.5	2.5	15.0	11.6
35-39	3.0	2.3	2.5	2.5	15.1	11.8
40-44	3.0	2.3	2.5	2.5	15.1	11.8
45-49	3.0	2.3	2.5	2.5	15.1	11.8
50-54	3.0	2.3	2.5	2.5	15.1	11.8
55-59	3.0	2.3	2.5	2.5	15.1	11.8
60-64	3.0	2.3	2.5	2.5	15.1	11.8
65-69	3.0	2.3	2.5	2.5	15.1	11.8
70-74	3.0	2.3	2.5	2.5	15.1	11.8
75-79	3.0	2.3	2.5	2.5	15.1	11.8
80-84	3.0	2.3	2.5	2.5	15.1	11.8
85-89	3.0	2.3	2.5	2.5	15.1	11.8
90 & over	3.0	2.3	2.5	2.5	15.1	11.8

The above tables show the same general trend of mortality in New York State that is observed in the English statistics (generally) and whereas reliable statistics are obtainable. It will be noted, however, that there is a marked difference in the death rate among women until age 10, when a definite rise in the death rate among the colored is shown when 10 is compared with 1910. It will also be noted that the unfavorable trend in mortality in 1910 is manifested among native whites, foreign born and colored citizens alike.

artery of moderate tension, lying loose in the tissues and easily accessible, as thickened.

Tension is of course a condition entirely distinct from thickening.

When we reflect upon the large number of deaths from cardiovascular disease that occurs before senility has a right to be charged with them (130,000 deaths annually in the United States between the ages of thirty and sixty years), and also that these deaths occur after long years of degenerative changes, it is not surprising, after all, that an examination of large representative groups in the population should show two great classes—those with sound, well functioning, resistant cardiovascular systems, and those with inferior, nonresistant systems showing various degrees of impairment, or premature "decrecence," as Allbutt terms it.

Only 12.5 per cent. of those showing marked thickening had blood pressures fifteen mm. Hg. above the average for the age, and three per cent. showed blood pressure fifteen mm. below the average. Among those showing thickening of any de-

worked. It is true that thickened arteries, especially of the extremities, are common among laborers, and this condition is often dismissed as of no pathological significance, but the death rate among laborers is very high and there are many causes at work among them, infective and otherwise, that tend to produce regressive or degenerative changes. See Leonard Hill and Thayer on this subject.

DEATH RATE PER 1,000 OF POPULATION BY AGE PERIODS IN THE UNITED STATES, AND IN VARIOUS FOREIGN COUNTRIES

AGES	U. S. Rate Per 1,000 Population	FRANCE 1900-01		GERMANY 1900-01		ENGLAND 1900-01		SWEDEN 1901-02	
		Males	Females	Males	Females	Males	Females	Males	Females
Under 1	165.4	221.8	189.4			174.8	158.4		191.6
1	46.6								
2	40.8								
3	38.2								
4	35.6								
5	32.4								
6	29.8								
7	27.2								
8	24.6								
9	22.0								
10-14	17.4	24.3	23.4	50.0	48.1	88.1	89.9		36.6
15-19	14.8	21.1	20.2	44.6	42.6	81.1	82.7		29.9
20-24	12.2	17.4	16.5	39.2	37.2	74.1	75.7		25.0
25-29	9.6	13.7	12.8	33.8	31.8	67.1	68.7	4.6	20.2
30-34	7.0	10.0	9.1	28.4	26.4	60.1	61.7	6.0	15.4
35-39	4.4	6.3	5.4	23.0	21.0	53.1	54.7	7.4	10.6
40-44	1.8	2.6	2.7	17.6	15.6	46.1	47.7	8.8	6.8
45-49	0.2	0.9	1.0	12.2	10.2	39.1	40.7	10.2	3.0
50-54	0.2	0.1	0.1	6.8	6.8	32.1	33.7	11.6	0.2
55-59	0.2	0.1	0.1	1.4	1.4	25.1	26.7	13.0	0.2
60-64	0.2	0.1	0.1	0.9	0.9	18.1	19.7	14.4	0.2
65-69	0.2	0.1	0.1	0.4	0.4	11.1	12.7	15.8	0.2
70-74	0.2	0.1	0.1	0.2	0.2	6.1	7.7	17.2	0.2
75-79	0.2	0.1	0.1	0.1	0.1	3.1	4.7	18.6	0.2
80-84	0.2	0.1	0.1	0.1	0.1	1.6	3.2	19.0	0.2
85-89	0.2	0.1	0.1	0.1	0.1	0.8	1.4	19.4	0.2
90-94	0.2	0.1	0.1	0.1	0.1	0.4	0.8	19.8	0.2
95-99	0.2	0.1	0.1	0.1	0.1	0.2	0.4	19.8	0.2
100-104	0.2	0.1	0.1	0.1	0.1	0.1	0.2	19.8	0.2
105-109	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
110-114	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
115-119	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
120-124	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
125-129	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
130-134	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
135-139	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
140-144	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
145-149	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
150-154	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
155-159	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
160-164	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
165-169	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
170-174	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
175-179	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
180-184	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
185-189	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
190-194	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
195-199	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
200-204	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
205-209	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
210-214	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
215-219	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
220-224	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
225-229	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
230-234	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
235-239	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
240-244	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
245-249	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
250-254	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
255-259	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
260-264	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
265-269	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
270-274	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
275-279	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
280-284	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
285-289	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
290-294	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
295-299	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
300-304	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
305-309	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
310-314	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
315-319	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
320-324	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
325-329	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
330-334	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
335-339	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
340-344	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
345-349	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
350-354	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
355-359	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
360-364	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
365-369	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
370-374	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
375-379	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
380-384	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
385-389	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
390-394	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
395-399	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
400-404	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
405-409	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
410-414	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
415-419	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
420-424	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
425-429	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
430-434	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
435-439	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
440-444	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
445-449	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
450-454	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
455-459	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
460-464	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
465-469	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
470-474	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
475-479	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
480-484	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
485-489	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
490-494	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
495-499	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
500-504	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
505-509	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
510-514	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
515-519	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
520-524	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
525-529	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
530-534	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
535-539	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
540-544	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
545-549	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
550-554	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
555-559	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
560-564	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
565-569	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
570-574	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
575-579	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
580-584	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
585-589	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
590-594	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
595-599	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
600-604	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
605-609	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
610-614	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
615-619	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
620-624	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
625-629	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
630-634	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
635-639	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
640-644	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
645-649	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
650-654	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
655-659	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
660-664	0.2	0.1	0.1	0.1	0.1	0.1	0.1	19.8	0.2
66									

mouth infection and other head infections which were present in these groups in such a high ratio.

CONCLUSIONS.

I feel justified in asserting that the evidence of widespread premature physical decay, which is suggested by our vital statistics, is to a considerable degree confirmed by actual examination of large groups of supposedly healthy young people. Thousands of people are slowly and inevitably preparing for physical breakdown or premature death, and there can be no more important work for modern medicine than to bring such cases, as early as possible, under proper hygienic or medical guidance. It may be asked: "Why interfere with the course of natural evolution? Since man must die, why struggle to prolong his life? Let the superman evolve naturally by survival of the fittest. We must die to make room for others; the earth will become crowded if somebody does not move on, etc." Well, we can cross such distant bridges when we come to them.

If the trend of racial evolution in this country were indeed upward, we might rest on our oars and let Nature take her course, but with grave doubts as to the trend, the responsibilities resting on the medical profession become heavier and its duty is clear.

The immediate work in hand is to prevent or relieve human suffering and improve the quality of human life. If this end is ultimately attained, no doubt there will be an adjustment to this happy state of affairs, so far as population and economic conditions are concerned. Properly to visualize the possibilities of this work, we must primarily acquire the point of view that the present rate of decay in the human organism is unduly rapid, and that such rate is largely governed by conditions of heredity, environment, and human living habits, which are controllable to a considerable degree.

Carrel (10) has shown that animal cells can be kept alive outside the body and, when properly nourished and periodically washed of poison, apparently are protected from the usual processes of decay, degeneration, and old age. As we know, these cells have been growing and multiplying under the conditions of the experiment for several years, and there has been at least an enormous prolongation of life among them. We must assume that the cells of the human organism are susceptible to such control. We simply lack the knowledge or the facilities to bring about the control that has been possible in this experiment. That a very positive measure of control can be obtained by the practice of personal hygiene, as it is now known, cannot be denied.

One of the weakest features of modern medicine is the unwillingness or inability of the average physician to take this point of view and to cooperate, even with those who are eager to better their condition, in the matter of detecting incipient or potential impairments and guiding the individual to higher planes of existence. This is a high compliment to the noncommercialism of the profession and its willingness to turn away patients, and a poor compliment to the industry, energy, and insight of the average practitioner.

It is easier to write a prescription than to study a human life. If it is not possible to write a prescription, the impulse is to *slap the patient on the back and tell him to forget it*. Such action does not tend to inspire confidence among patients. Many people are demanding that the medical profession consider their needs in the matter of life guidance. This demand is rapidly spreading and the wise physician will rise to this opportunity and will not permit this constructive health work to pass by his door, perhaps to be unskillfully undertaken by some quack or pretender.

Probably no individual in the community is leading a perfectly hygienic life. There is practically no individual in the community who cannot benefit by a little guidance from his physician in the matter of living habits and personal hygiene.

When a man seeks advice, whether he is referred by the institute or comes voluntarily to ask guidance, the wise physician will not cast ridicule upon his efforts to lead a better life, but cooperate with him. Instead of giving him *carte blanche* to drink, smoke, riot, and rage through life at his pleasure, simply because he has not pipe stem arteries or advanced nephritis, he has the opportunity to assist this man to a temperate, sane, and well poised existence.

Now, I realize the opprobrium that rests upon any one who discloses unfavorable conditions, such as these statistics reveal, without offering some constructive remedy. While this is departing somewhat from the strict limits of my paper, I shall be very brief; I will simply summarize the general lines of prevention, as I view them. These may be classified as follows:

1. Eugenics.
2. Periodical examination for the purpose of detecting physical impairment, especially foci of infection, and also errors in living habits or faults in heredity, which suggest important modifications of occupation or living habits.
3. The application of the principles of personal hygiene.

That there is some particular influence at work causing the upward trend in mortality from organic diseases seems probable. The causes of such diseases are manifold, yet there seems to be some general condition fundamental to these particular conditions. This may be found in our rapid industrial and social evolution, bringing about a condition of widespread prosperity and lavish expenditure, which relatively extends even to the comparatively small wage earner.

A natural adjustment to these conditions may ultimately come about which will check this mortality trend, but we cannot rely on such a vague prospect and should bend our energies toward the utilization of all the resources of science to check this rising death rate among those in middle life, and concomitantly to add what we can to the sum total of human happiness and well being.

But what about optimism and patriotism and our abiding faith in the high destinies of our country? Optimism has its place in applying the rules of hygiene, but neither optimism nor patriotism has any place in scientific investigation. There is plenty of room for the exercise of these excellent qualities in the application of the remedies after cold blooded

and unbiased scientific research has developed the facts. Optimism never checked a typhoid epidemic nor prevented a subway disaster. The optimism that makes for good cheer and clear eyed confidence in our ability to do and to accomplish for ourselves or for our race, has a high value in scientific work, but the kind of optimism that requires a man to pat himself on the back while sticking his head in the sand, is a positive menace to society.

REFERENCES.

1. EDWIN WELLES DWIGHT: *Boston Medical and Surgical Journal*, October 26, 1911, clxv, pp. 669-671.
2. E. E. RITTENHOUSE: Address before the American Public Health Association, Rochester, N. Y., September 9, 1915.
3. E. L. FISK: *Proceedings, Association Life Insurance Medical Directors*, 1907, ~4.
4. J. K. GORE: *Proceedings, Fourth International Congress of Actuaries*, iv, p. 57.
5. E. E. RITTENHOUSE and E. L. FISK: *American Life Waste*.
6. FISHER and FISK: *How to Live*.
7. Sixty-seventh Mass. Registration Report, 1908, p. 235.
8. SIR CLIFFORD ALLBUTT: *Diseases of the Arteries*.
9. SIMNITZKY: *Zeitschrift f. Heilkunde*, April, 1913, 10.
- ALEXIS CARREL: *Journal of Experimental Medicine*, July 1, 1914, xx, 1, p. 1-2.

25 WEST FORTY-FIFTH STREET.

THE FACIAL AND TRIFACIAL NERVES.

Remote Effects of Synchronous Palsy of Their Peripheral Branches,

By SAMUEL HORTON BROWN, M. D.,
Philadelphia.

The patient in this case was a man forty-one years of age, a bookkeeper by occupation, and in the course of routine examination of the refraction for the relief of asthenopia, mentioned a very annoying condition, of which he was the subject, consisting of profuse lacrymation and blinking every time he attempted to chew food. Swallowing was not attended with this condition; but chewing food always was, so much so that dining away from home was the source of considerable embarrassment. Examination and a repetition of the chewing experiment showed the condition to be such as described by the patient, and the thought occurred that, perhaps, this case belonged in the class of "associated movements of the jaw and upper lid."

Inquiry into the past history of the patient elicited the information that about one year previously, after a ride near an open car window, he noticed numbness on the left side of the face and a change in his facial expression. He immediately consulted his family physician, Dr. Edward J. Donnelly, of Philadelphia, who readily detected the extent of the motor and sensory palsy, associating the same with the facial, and with the infraorbital and superior maxillary branches of the fifth nerve.

Epiphora was marked at this time, and he was advised to consult an oculist. He came under the observation of the late Dr. John L. Bromley, of Philadelphia. The trouble was confined entirely to the left side of the face, and while he had great difficulty in closing the left eye owing to the motor defect of the lower lid, he had no disorders of special sense, hearing, smelling, tasting, or seeing. There were no evidences of trophic disturbances of the left eye or of the teeth, although sensation of the eye was markedly impaired.

After consultation with his physician, it was thought advisable to place the patient on potassium iodide, and within a week, marked improvement

was noted. At the end of three months, there was little to show of the previous condition.

Approximately one year later he came under my observation and his detailed ocular condition at that time was as follows: Right eye, vision 5-5; accommodation equals 0.50 M. type from 18 to 72 cm., media clear, fundus normal in every respect; left eye, vision 5-6?; accommodation equals 0.50 M. type from 18 to 44 cm., media clear, fundus apparently normal, but the optic disc seems not unlike the appearance presented by a subsiding optic neuritis.

The muscle balance at this time, without a mydriatic, or the correcting lenses being worn, was 7° intern; 6° extern; 1° inferior recti; 1° superior recti; 1° esophoria; vertical orthophoria.

Under a mydriatic, retinoscopy and subjective testing suggested the following correction, which, after mydriasis, gave the vision and accommodation noted:

R. 5/4+S. 0.25=5/4?+0.50 M. from 14 to 48 cm.

L. 5/6?+S. 1.25-C 1.75 axis 60°=5/5+0.50 M. from 14 to 40 cm.

This correction was ordered for constant use, without addition for close work. It was not deemed advisable to crowd on a presbyopic correction in the presence of such good accommodation, especially when this near point was reached without effort or untoward symptoms. It was considered worth while, however, to take no chances with the appearance presented by the optic disc, and accordingly the well known Wills Hospital prescription of mercury bichloride, one twentieth of a grain, and extract of belladonna, one tenth of a grain, was given three times a day. The unusual error of refraction did not seem sufficient to account for the appearance of the nerve, but it was not the part of prudence to ignore it entirely.

After a few weeks of this treatment, together with the wearing of the correcting lenses, the usual routine work of a bookkeeper not being interrupted, the appearance of the nerve approached the normal, and the muscle balance showed an improvement in the strength of the muscles, although this is still the subject of considerable fluctuation. The vision and accommodation in the left eye have shown a slight improvement.

This feature of the patient's condition was entirely secondary to the phenomenon which has justified this report, in what it may be regarded as of no relation to it whatsoever.

Upon the patient's complaint that chewing evoked so much lacrymation, a careful examination was made to determine the immediate cause of the condition. There was no inflammation of the left eye, except the slight chronic catarrhal condition so frequently seen in patients when they present themselves for a change of lenses. The entire lacrymal apparatus appeared to be normal. The facial expression seemed to be symmetrical, or at least not markedly unusual. The patient could whistle and smile without noticeable deformity, but careful inspection on several occasions noted that the left lower lid was not so tonic as the right.

The case history is offered as a possible explanation of some of the cases of the associated jaw and lid reflex. The epiphora is taken to be the result

of the physical condition caused by the drawing down of the facial tissues when the lower jaw is moved—there is nothing to maintain the lower conjunctival cul-de-sac, and the tears come down. It is questionable if there is any reflex in this case, except that which follows after the eye is exposed by drawing the lid away from the globe.

1001 MT. VERNON STREET.

DIET IN CHRONIC HEART DISEASE.*

By ROBERT ABRAHAMS, M.D.,

New York,

Adjunct Professor of Medicine, Post-Graduate Medical School and Hospital; Consulting Physician, Manhattan State Hospital and Home of the Daughters of Jacob.

In the following few and brief remarks on diet in chronic heart disease, I shall arrogate to myself the privilege of indulging in personal convictions instead of calculated calories, borrowed from others. I am a great believer in the gospel of eating; and, as a missionary, I spread that gospel in health and disease. I also believe in the increased efficiency of food properly prepared, to the extent that I should rather feed a patient on poor food well prepared than on pure food poorly prepared. I also cherish a wholesome respect for a patient's palate and preferences in matters of diet, unless there is some extraordinary reason for ignoring them. From these observations my readers may gather, that I am no friend of or slave to a cut and dried list to suit alike all sick, even if circumstances and conditions are the same. A stereotyped diet tries a patient's soul as well as his stomach.

In matters of diet in all kinds of diseases, it is well to remember the reply of a famous English painter. He was asked why his colors were so fascinating; his answer was, that he mixed the paint with brains. It is not so much the calory as common sense; not so much the size and weight of the patient as his susceptibility and the working capacity of his stomach. After all, the science of dietetics is still swaying in unstable equilibrium, and we see the pendulum swinging to and fro to the extent that what one generation of physicians supposes, the next generation disposes. Fever was fed and fever was starved; fever was nursed on liquids and fever was regaled on solids. Typhoid is a shining example of this unique dietetic uncertainty. Diabetes, a disease in which diet is the alpha and omega of treatment, has seen many revolutions. Not so long ago as to tax our memories, diabetic patients were fed and overfed on fats and other fat producing agents; now fasting is the fashion—fasting on a large scale; fasting and starving for days and days. If one should tell us that the diabetic unfortunate does not mind the fasting, we may tell him to try it himself for a few days. The watchman of these kaleidoscopic changes must exclaim with Doctor Watson of Sherlock Holmes fame: "Marvelous, marvelous!" for in spite of all these changes and revolutions, the results were influenced little or none.

Now, this talk is not intended to decry or discourage or belittle the scientific study of diet in disease, but only to indicate how far we are from per-

fection; how foolish it is to dogmatize and how enslaving to stick to formulae and printed diet lists.

In managing the diet in chronic heart disease, it is essential, first and foremost, to ascertain to what extent the heart is in difficulty, and to what degree its action is embarrassed. A patient with mitral or aortic disease, enjoying good compensation, need fear nothing, except overindulgence in any diet. A patient with valvular disease and partial broken compensation may with impunity partake of any diet, but, instead of taking three big meals a day, it is better that he takes six small meals. The diet of a patient afflicted with valvular lesions and complete loss of compensation, must be in the main liquid, and his feeding hours frequent. The same applies to victims of myocardial degeneration.

These precautionary measures in feeding those who are literally sick at heart, are prompted by the consideration, that solid food and food known to be hard to digest, require a gastric secretion normal in both quantity and quality. When compensation is good, the mucous membrane of the stomach is normal and the secretion is normal. In failure of compensation, all mucous membranes are congested, venous engorgement rules everywhere. The lining membrane of the gastric cavity shares in the universal blood stasis. This condition not only diminishes the amount of the secretion, but vitiates its digestive property. Moreover, the mucosa of the stomach is naturally thrown into rugæ; when it becomes congested, these rugæ increase in size. When solid food or poorly digesting food is taken, masses of it get under the folds; there they stay, putrefy, generate gas, and distend the stomach greatly and profoundly, to the distress of the patient and embarrassment of his heart.

Valvular lesions minus myocarditis, differ from myocarditis in relation to diet. Valvular disease alone has periods of perfect compensation and no venous stasis, while chronic myocarditis always has imperfect compensation, hence the ever present congestion, and the necessary caution in the selection of food.

In some cases, it is safe to say in the great majority of cases, the etiological factors of the cardiac lesion influence the selection of food. Though rheumatism is an infectious, microbic disease, yet it is a common observation that rheumatic patients bear red meat badly, while patients whose heart disease is caused by syphilis, typhoid fever, or influenza, may eat meat of any color.

A gouty heart emphatically forbids the use of meat. Cardiac disease associated with chronic kidney trouble requires a diet more adapted to the renal condition than to the defective heart. A lesion of the heart which is preceded or followed by arteriosclerosis, puts a veto on a proteid or nitrogenous diet. Anyone who suffers from chronic heart disease should scrupulously avoid overfeeding. The gastric juice, limited in amount and impaired in quality, cannot master an excessive amount of food. As a consequence, a good sized portion lingers along in the stomach undigested, causing, as mentioned above, distress and embarrassment to the patient and his imperilled heart. But there is another, and equally important consideration, why overfeeding is to be shunned. An increase of the intake of food

*Read before the New York Physicians' Association, November 21, 1915.

means an increase of fat deposit in and around the heart; an obese heart is an affection and an affliction by itself. Again, an overloaded stomach is the cause of sudden death in many a heart case. The patients die of "acute indigestion." Strictly speaking, death is due to the pneumogastric—it is a vagus death. The terminal endings of the gastric vagus are irritated and stimulated by the undigested food, which acts as an offending foreign body; the irritating stimulation is transmitted to the cardiac vagus, ending in a fatal inhibition of the heart action.

Heart patients should be cautioned against the use of copious drafts of water, particularly at meals. There are at least three reasons for this precaution; first, water dilutes the gastric juice which has already suffered deterioration; second, water increases the volume of fluid which the overtaxed heart and bloodvessels may find it hard to cope with; third, water taken with meals tempts to the ingestion of more food, thus increasing fat and overloading.

Adopting these reasonable rules, aided and abetted, from time to time, by hydrochloric acid, digitalis, and a daily cathartic, the good doctor can and will pilot his endangered patient through the rocks and shoals of diet and land him in the haven of safe and enjoyable life.

457 WEST EIGHTY-EIGHTH STREET.

THE DIAGNOSTIC VALUE OF RECORDS OF BREATHING AND OF SPEECH.*

By OTTO GLOGAU, M. D.,
New York.

From the Speech Research Laboratory, Neurological Department, Columbia University.

What the senses of vision, hearing, and touch perceive of the functions of breathing and speech are but external manifestations of centrally localized functions. The discussion of the centre of breathing within the medulla oblongata and of the various speech centres within the brain does not belong to the realm of this essay. The science of experimental phonetics occupies itself with the investigation of the visible, audible, and tangible muscular activities of breathing and speech. This recently emancipated special branch of medicine developed methods of examination which have proved to be not only of great value in diagnosing disturbances of speech and breathing, but also of help in their treatment.

During the last decades, masters and students of phonetics evolved numerous very interesting pieces of apparatus for recording the external manifestations of breathing and speech.

I will, however, restrict myself to the description of the devices used at the Speech Research Laboratory of the Neurological Department of Vanderbilt Clinic, College of Physicians and Surgeons, Columbia University. The rich clinical material of Professor Tilney's neurological department and of the speech class in charge of Mrs. E. Scripture (1) afforded me the opportunity for taking and studying numerous records of breathing and speech in

defects of speech and in neurological diseases, where speech and breathing are affected.

For recording the inspiratory and expiratory movements of the chest and the abdomen both during mere breathing and during speech, I constructed a device similar to Gutzmann's (2) belt pneumograph. It consists of an oblong rubber bag fastened to an inelastic strap. Through a small outlet air may be blown into the bag. Between the bag and the strap there is interposed an excavated pelote covered with a thin rubber membrane. The neck of the pelote pierces the strap and is covered by a tube that leads to the recording tambour. Belt pneumographs are fastened to the chest and abdomen. The expansion and contraction of the thorax and abdomen cause within the rubber bag differences of air pressure that are imparted to the adjoining membrane of the pelote and are thence conducted through the tube to the recording tambour. The latter is a metal cap covered by a thin rubber membrane to which a sensitive lever is fastened. With the afflux or efflux of air from the pneumograph, the point of the lever moves up and down on a rotating recording drum. Thereby a white line is registered on the soot of the paper stretched around the metal cylinder. The rotation of the latter is regulated by clockwork. The paper that had been previously smoked over a candle or a gas flame is after the obtaining of the record removed from the metal cylinder and dipped into a shellac-alcohol solution. By drying in the air the record becomes fixed. The vibrations of the air current passing through the mouth are recorded by the same arrangement, except that the belt pneumograph is replaced by a funnel held over the mouth.

To examine the quality of the air current passing through the nose, and to test simultaneously the activity of the soft palate, the rubber funnel of the former experiment is replaced by a nasal tip of glass that fits tightly into the nostril.

The movements of the tongue are studied by placing small "exploratory" bulbs of rubber in front of the tip of the tongue or at any desired part of its curvature. The articulatory movements of the lower jaw are registered by means of a tambour placed beneath it. The movements of the lips are traced by fastening a sausage shaped rubber tube above the upper lip or by having a small rubber bulb held between the lips. The upward and downward movements of the larynx are recorded by means of a Brondgeest's capsule fastened around the neck.

Zwaardemaker's apparatus, combining in a general way the apparatus described above, records all articulatory movements simultaneously. The vibrations of the vocal cords are directly traced with the aid of the Krueger-Wirth laryngeal tone registering apparatus, whereby an adequately constructed pelotte is placed over the larynx and a specially sensitive tambour registers the vibrations imparted to it.

A different type of speech registering apparatus is that of Koenig. In a system of rotating mirrors there are reflected the jerks of a gas flame, representing the reproductions of the sound waves spoken into the trumpet of the manometric capsule. By using the proper gas, these waves may be photographed.

*This communication is an abstract of a paper read at the American Association of Otolaryngologists, Chicago, 1914.

Röntgen pictures of the back of the tongue and of the soft palate may be easily taken by the method of Froeschel (3) and Haudek, the merits of which became evident to me during my recent stay at Froeschel's speech laboratory, in Vienna. On the back of the tongue and on the soft palate a small stripe of bismuth nitrate is painted. The different positions of these important speech muscles may then be distinctly röntgenographed.

The taking of grammaphonic and phonographic records proves to be a great aid in experimental phonetics. By means of a complicated apparatus the speech records thus obtained may be retraced on smoked paper. Cinematographic pictures of the muscular speech movements and of the accessory movements of other muscles, as especially noticeable in stuttering, should be taken for didactic purposes.

To record the contact of the tongue with the hard palate and the teeth a cast of the mouth and from it an artificial plate are made and then varnished. The inner surface is oiled and dusted with chalk. Wherever the tongue touches the plate, the chalk is wiped off. The resulting picture may be photographed or drawn on a cast or on paper. By pressing a folded piece of smoked paper between the lips, the soot is wiped off by their touch. The shape of the resulting black oval is characteristic for different speech disturbances, especially in stuttering on b, p, and m.

From our collection of records of speech and breathing we will select for discussion those that prove the diagnostic value of this method. In the normal individual the striking peculiarities of the breathing and speech curves are their regularity. The length of the wave for inspiration and expiration in both thorax and abdomen is almost the same, the expiration being only slightly longer. The breathing curve of the nose is somewhat irregular, but shows also the same length of the rising and of the falling part of the curve. During respiration without speech the air is inhaled through the nose. The moment we start to speak, the nasal breathing curve becomes a straight line. Elevations are then only noticeable when the letters, m, n, or ng are pronounced, whereby the air escapes through the nose. During speech, changes of similar importance are also noticeable on the thoracic and abdominal breathing curves. While during mere breathing inspiration and expiration are of the same length, during speech the former is very short, while the latter is rather long. The quick inhalation goes through the mouth with the exclusion of the nose, and we speak on a prolonged exhalation.

Normal breathing curves are indicative of a correct economy of breath. There exists beyond doubt an intimate correlation between breath and speech. In the suckling and in the very young child, breathing is quite irregular; this corresponds to the fact that the baby has not yet mastered the difficult art of controlling the muscles of speech. Once this ataxic stage is overcome through training, and the faculty of speech becomes fully developed, the process of breathing begins to show the remarkable regularity described above. While mere breathing is an involuntary act, breathing during speech is undoubtedly under cortical influence. This explains

the unbalanced control of breath in speech disturbances of nervous origin. In another communication the writer will go more deeply into this question and will prove the necessity of assuming within the circle of speech the existence of a special articulorespiratory centre. The affection of this centre or of its connections with the speech centres within the brain explains the pathological changes of breathing in certain speech defects.

We will now proceed to the discussion of the diagnostic value of the curves of breathing and of speech. The study of the breathing curve of the stutterer reveals the following interesting facts. In lighter cases of stuttering the curves in mere breathing may appear normal; but in quite a number of the more pronounced cases of stuttering, even the curves of mere breathing show irregular elevations, interruptions, sudden jerks, and other deviations from the normal curve that point to a lack of control of the economy of breath. Basing on these findings, the experienced observer may in many instances diagnose the case as one of stuttering, without the stutterer having spoken even one word. During speech, the thoracic and abdominal breathing curves of the stutterer become directly pathological or so to say—pathognomonic. We find the short inspiration and long expiration replaced by an irregular conglomerate of inspiratory and expiratory jerks, by straight lines indicating the stoppage of breath, and by asymmetrical undulations. The underlying causes for these uncontrolled interruptions and expulsions of breath are irregular contractions, spasms, sudden rigidities, and cramps of the respiratory muscles, both of the thorax and the abdomen. The nasal breathing curve in the stutterer shows during speech characteristic fluctuations, not only on the pronunciations of the letters m, n, and ng, where the air normally escapes through the nose, but with every sound uttered. The cause is the extension of the irregular concussions of breath to the soft palate and thereby to the air space within the nasal cavity.

A comparison of the breathing records taken upon the admission of the patient to the clinic and at regular intervals during the process of the treatment, is of interest. The curves show the tendency to become more and more regular till after a number of months they can hardly be differentiated from those of a normally speaking and breathing person. This demonstrates objectively the value of the method of treatment, consisting principally in recovering the lost control of the power of breathing and of will. The mouth record of the stutterer's voice shows vowel vibrations entirely different from the normal. By measuring them under the microscope the pitch of the laryngeal tone may be calculated. The "melody plot" (E. W. Scripture) thus obtained shows a marked monotony of the stutterer's voice. This symptom, too, may be easily explained by the lack of control of breath. Breathing and speech records in stuttering are of great aid in detecting a simulation of this speech disturbance. This is of great importance in European countries, where the stutterer is exempted from military service. Stuttering is characterized by the interruption of the current of otherwise well developed speech. In stammering we find a mispronunciation

of the different letters as the distinguishing feature. We may stammer on any letter of the alphabet. Stammering on s is called lipping; substitution of other sounds for k and g, for l and r is called paragrammatism, paralambdacism, pararrhotacism, etc. In all these instances the mouth records of the letters to be pronounced are quite characteristic. In pronouncing, for instance, the letter s, the air escapes from the mouth through a very narrow space between the tip of the tongue and the upper incisor teeth. In lateral sigmatism the air rushes out between the lateral part of the tongue and the molar teeth. If a rubber tube connected with the recording apparatus is moved in front of the teeth from the centre to the sides, we can exactly register the quality of the lisped s and the place where it is pronounced. By holding the tube first in front of the observer's and then of the patient's incisor teeth, the latter, by imitating the s waves seen on the former's record, gradually learns the correct way of pronouncing s. This method of visual training is also of value in reeducation when the faulty s was due to malformation of the jaw and teeth, after this organic defect has been relieved by the orthodontist.

It is a remarkable fact that in severe cases of stammering, especially in the congenital and neurotic form, irregular curves of breathing are met with in many instances. This again proves our assumption that the vast majority of speech defects are secondary to a primary nervous lack or loss of control of the economy of breath. For the otolaryngologist the records of breathing and speech are of special diagnostic value, as they reveal abnormal functions of organs that belong to the realm of his specialty. There is no norm as to the size of a turbinate or as to the straightness of the septum. The main reason for removing a hypertrophied turbinate or for submucously resecting a deviated septum is its interference with nasal breathing. A breathing record of the obstructed nose, when showing marked abnormalities, will be for both doctor and patient a reliable objective indication for surgical interference. The success of the operation will be proved when a later breathing record of the nose turns out to coincide with the normal curve. The following record of breathing and speech is of diagnostic value from both a rhinological and phonetic point of view:

CASE. The young man had stuttered for many years. His stuttering was restricted to the letters m and n. Instead of m and n he said constantly b and d. Thus if he intended to say my, he would stutter b-b-b-b-by, and instead of saying not, he would stutter d-d-d-d-d-d. I diagnosed the case as one of stammering on the letters m and n, that developed later, as it occurs in some instances, into stuttering on these letters. The nasal breathing curve showed a wave of infinitesimal elevations and during the pronunciation of m, n, and ng it rose only to a very slight degree. From the nasal breathing curve and the normal function of the soft palate I made the diagnosis of rhinopharyngeal stenosis. Subsequent rhinological examination revealed both nasal cavities to be totally obstructed by numerous polypi. For organic reasons, therefore, the patient was stammering on m and n, replacing these letters by b and d respectively. For in m and b as well as in n and d, the positions of the tongue and the lips are identical. On account of the nasal obstruction the air could not escape through the nose as is normally the case in the pronunciation of m and n, and the intended m and n assumed the sound of b and d respectively. The intention of overcoming this embarrassing speech defect led on to

nervous exaggeration of the muscular activity of the lips and of the tongue that finally developed into the stuttering. The treatment in this case consisted in removing the nasal polypi followed by general training in the speech class, whereby the normal pronunciation of m and n was soon achieved.

In affections of the soft palate the nasal breathing curve proves to be of great diagnostic value. The nasal breathing curve of an elderly woman referred from the neurological department for slight indistinctness of speech, just becoming noticeable, showed the escape of air through the nose at the pronunciation of every letter of the alphabet. I made a tentative diagnosis of beginning bulbar paralysis, the first symptom of which was the leakage of air through the soft palate. Upon inspection there was no abnormality as yet noticeable. The soon developing clinical symptoms confirmed the diagnosis that was primarily made on the evidence of the nasal breathing record.

In cleft palate the air rushes continuously through the nose, and accordingly we find a bizarre nasal breathing curve. The question whether or not a cleft palate has been successfully operated upon can be solved only by the nasal curve. In a number of instances where, from the operator's point of view, the cleft had been ideally closed, the nasal record shows that the soft palate, as far as its function as a speech muscle is concerned, did not improve. Owing to its inactivity the muscle had become atrophied. Electric stimulation and speech training will help to restore muscular contractibility and thereby improve speech.

The correctness of an obturator designed to fill out the defect of the palate may also be demonstrated by the nasal curve. As long as it still shows a considerable escape of air between the mechanical device and the pharyngeal wall, the obturator is far from answering its purpose. In a young stutterm the nasal curve led to the diagnosis of insufficiency of the soft palate. In children with large tonsils and adenoids the nasal curve gives the explanation for the peculiar nasal twang. It is a mistake to assume that this "adenoid speech" will always disappear after the operation. The nasal curve in many of these cases showed the persistence of the speech disturbance. Careful training in order to readjust the muscular activity of the soft palate to the new volume of the buccal and nasal cavities is essential.

Before performing an operation on the respiratory organs of a singer, a mouth and laryngeal record of the voice should be taken. It should then be compared with the record taken after the operation in order to find out whether the voice has undergone any changes. Perfect control of breath is essential with singers. "The constant rate of air expenditure is maintained by muscular resistance of the diaphragm and of the muscles around the thorax. Pneumographic tracings should show steady movement of chest or abdomen and not one of varying rapidity or irregular character. Some of the troubles of singers arise from letting out the air too rapidly at first. The cure consists in instruction in breathing, profitably aided by registering the results with the pneumograph" (E. W. Scripture).

In the study and training of deafness (we reject the term deafism, as these children may be taught to talk), both in its acquired and congenital

form, the breathing curve is of importance. Gutzmann, the master of phonetics, first called attention to the peculiarity of the breathing curves of the deaf. I examined quite a number of the deaf and found Gutzmann's statement confirmed. In acquired deafness, the pneumographic curve in mere breathing shows no peculiarities; it differs, however, during speech considerably from the normal. The inspirations are extremely frequent. The relation between the length of inspiration also deviates considerably from the rule. If the child repeats the same sentence a few times, the described abnormalities of the breathing curve apparently correct themselves, as if the inhibition at the start had been overcome and the child had regained the easier mode of speaking of the time when it could hear and speak. The deaf child in comparison with the normal, speaks remarkably few syllables on one breath. Evidently much more power is expended in the articulatory movements, as evidenced by the expiratory jerks of the thoracic record. This fact causes the characteristic heavy speech of the deaf. In a congenitally deaf child the foregoing peculiarities appear much more pronounced. The number of inspirations during speech exceed those during mere breathing in an astonishing way. The thoracic breathing curves show an extremely ataxic character.

Gutzmann arrives at the following conclusions: The later deafness is acquired, the more will the breathing curve during speech approach the normal. We may diagnose immediately from the breathing curves of a deaf child, whether its affection is acquired or congenital.

Systematic breathing exercises gradually change the type of abnormal breathing, even in the congenitally deaf, whereby the entire process of speech improves.

In the early diagnosis of a number of nervous disorders the breathing curves may be of aid. We have already mentioned the case of beginning bulbar paralysis, where the abnormal nasal curve was the first objective symptom. As an initial symptom of multiple sclerosis, frequently a certain tiredness of voice is complained of, that manifests itself in a distinct tremolo. This respiratory trembling may be clearly seen in the pneumographic curve of the thorax. In a case of chorea minor, in a young girl, the thoracic breathing curve during speech showed distinctly choreic jerks, while it was very difficult to demonstrate them on other muscles.

The rapid tiring and exhaustion of the articulatory muscles in myasthenic paralysis is easily demonstrable by the mouth record of a repeatedly spoken syllable. The excursions of the lever become after a very short time smaller in number and size and soon disappear. A mouth record in paralysis agitans shows from the impulse to speak to the first explosive word a straight line corresponding to the reaction time between the two.

In a case of hysterical aphonia the mouth and breathing record gave valuable information about the underlying cause and was suggestive of the treatment. The young girl lost her voice at intervals. The last attack was already of six months' duration and no treatment was of avail. The mouth record showed that the patient had no power of

breath at all. Whenever she tried to blow, the record showed only a straight line. The breathing curves of the thorax and abdomen showed remarkable irregularities. The loss of control of the economy of breath was apparently the causative factor for the loss of voice; for the vocal cords could be closed normally, they were also brought into the right tension, and only the correct power of breath was missing to make them vibrate. By training her to blow out a candle at gradually increasing distances from the mouth and by making her move a feather held over the nostril, she slowly regained some power of breath. A short training in correct breathing soon helped to restore her voice.

In one of her lectures at Columbia University, Mrs. Scripture emphasized the diagnostic value of the records of speech and breathing. She laid special stress upon the cooperation between the speech clinic and the speech research laboratory. The taking of records of breathing and of speech upon the admission of the patient and at regular intervals thereafter furthers, in her opinion, the work in speech correction both from a diagnostic and therapeutic point of view. By having the speech laboratory work in the hands of a laryngologist, a simultaneous supervision of the organs of speech and breathing, so frequently affected in speech disturbances, is assured.

I wish to thank Mrs. Scripture for the rich clinical material of speech defects, and Professor Tilney for the opportunity of doing phonetic research work in the Speech Laboratory of the Neurological Department of Columbia University.

REFERENCES:

F. E. W. SCRIPTURE, *Stuttgart and Leipzig*: HERMANN GUTZMANN: *Sprachheilkunde*; EMIL FROESCHEL: *Lehrbuch der Sprachheilkunde*, in which is a complete review of the literature of the subject.

1320 MADISON AVENUE.

PERCUSSION TECHNIC AND THEORY.*

By B. A. FEDDE, M. D.,
New York.

Probably every man who is past his novitiate in medicine secretly prides himself on some trick of diagnosis or treatment which he fondly believes he has evolved independently. But if his interest leads him to look up the subject, he is likely to verify the words of the preacher, "there is nothing new under the sun." It has all been done and reported before his time, if indeed he has not himself read and forgotten and later resurrected it. This befell a couple of old ideas in percussion of which I thought I had made an original application. A study of the literature overwhelmed me with a sense of the painstaking care with which the subject had been studied and reexamined.

However, the point of my communication was not entirely lost; and therefore my pet methods will be briefly stated, after which a résumé of German work in the last decade will be given. I do not know of any adequate presentation of this in English, and conversation with well informed friends has revealed a like ignorance. This, then, will be offered as a valid excuse for the paper.

*Read before the Medical Association of the Greater City of New York, Brooklyn Section, December 6, 1915.

1. We have all had cases of central pneumonia, particularly in children, giving all the clinical symptoms, but with surface consolidation delayed from one to five days. The question of the relatives, "Where is it, doctor?" is very awkward in these circumstances. I have frequently obtained advance information by immediate, deep touch percussion with all four fingers at once. I percuss once over the middle of each lobe, comparing the two sides and noting the pitch, intensity, and duration of the sound, as well as the sense of resistance. The distinction is best brought out without using a finger of the other hand as pleximeter. The method is not new, but I have not seen it advocated in central pneumonia.

2. It is common knowledge that extremely few persons possess the sense of absolute pitch. The longer the interval of time between two sounds, the more difficult it is to judge between them. Conversely, the more rapidly sounds succeed one another, the easier is the detection of slight differences in pitch, tone, intensity. Four to five percussion strokes a second, about the rate of a watch tick, are entirely feasible by finger finger percussion, particularly if the plexor hand is steadied upon the pleximeter hand by thumb or thenar eminence. This rate has two further advantages; it compels a light stroke, and it automatically makes the strokes more even. The time is past when he was the best diagnostician whose percussion strokes could be heard and judged in the next room, although I have seen in a hospital ward, within the year, a stroke employed in frank pleuropneumonia which shook both the child and the bed. In the last ten to fifteen years, light percussion has come to the fore, ranging in strength down to that degree which produces a barely heard sound over clear lung tissue—the so called threshold percussion, first taught by Ewald (1) and Turban and later popularized by Goldscheider (2). Of this more later.

My second pet trick, then, is finger finger percussion, five strokes to the second, on the nail of the middle finger, which glides slowly over the skin. I have since found that Tornai (3) recommended practically the same stroke in 1912. He uses it in connection with a stethoscope and minimizes the stroke, asserting that by his refinement the great vessels can be accurately mapped out. To facilitate even gliding of the pleximeter finger, he uses talcum or rice powder. This gliding percussion is especially useful in examining the abdomen. It gives practically the same effect as is obtained (4) by percussing in rapid succession all four fingers upon the body wall, but has the advantage of closer delimitation.

The old theory of percussion was that a stroke of a certain strength set in vibration a cone or wedge of tissue having its base under the pleximeter and its apex in the interior of the body at a depth roughly proportional to the stroke. Therefore, with a stroke of medium strength we get clear resonance over lung tissue, shading off into dullness where the surface of solid organs gradually comes to the surface. Theoretically, then, lightening the percussion stroke when relative dullness was reached should reestablish clear resonance, since the lighter stroke would affect only pulmonary tissue.

But it has been experimentally shown by Goldscheider (5) and by Moritz and Roehl (6) that percussion at any point of the thoracic wall sets the whole of both lungs into vibration, even when the stroke is too light to be heard in air. Moritz and Roehl imbedded a calf's lungs in plaster of Paris, having previously placed rubber balloons in the groove for the superior vena cava and between the lower lobes of the lungs. These were connected with burning gas jets. They then cut windows in various places and percussed the lungs directly. The greatest distance from percussion site to balloon was seventeen cm., and vibration was invariably noted, no matter how gentle the strokes. Goldscheider cut fenestræ in the thoracic wall of cadavers dead from other than pulmonary diseases and inflated the lungs through the trachea. He then auscultated variously over fenestra and thoracic wall in the back, while a colleague percussed very gently over thoracic wall and anterior fenestra successively. He could always hear a sound through the stethoscope—louder, it is true, when the wall was percussed. This proved that vibrations filled the chest, spreading in all directions.

Now, when the site of percussion was moved until the axis of the percussion stroke touched the cardiac border, there was a sudden muffling of the sound heard by posterior auscultation, and this muffling persisted whether the phonendoscope was placed behind the heart or on either side wall of the thorax. Many others have verified this phenomenon and it has been demonstrated by x ray orthodiagraphy that the line of muffling corresponds to the heart silhouette. How is this to be explained?

Goldscheider, on the basis of this and other purely physical experiments to be referred to later, concludes that, though the sound waves originated by the percussion strokes are transmitted in every direction, by far the greatest part of the energy travels in the direction of the stroke. If, then, we are careful so to limit the strength of his percussion stroke that the resulting sound is just barely audible—in psychological terms, just surmounts the threshold of perception—the divergent waves will be far beneath the threshold and can therefore be ignored, and the sound perception will express accurately the acoustic conditions in the line of stroke. He contends that the procedure furnishes a veritable probe of sound, limited in its delicacy mainly by the area of pleximeter surface touching the chest wall. For this reason he has adopted a bent glass rod, rubber covered, as offering the smallest practicable area of impact, and percusses only in interspaces to avoid undesirable pleximeter function on the part of the ribs.

This, at first glance, seems almost incredible to those who were brought up in the older doctrine, and, if true, our theories must be reshaped. But is the observation unique? I think not.

Ebstein (7) long ago found a sense of increased resistance to palpatory percussion as soon as the projection of the heart border was encroached upon, and verified his findings on the cadaver. His method is to this day in honored use by many clinicians in Germany.

Sansom invented a special pleximeter, the use of

which purported to give with the sharpness of an edge the true cardiac border. In using it, we percuss from the lung inward, stopping as soon as a change in vibrations (or sound) is noted, and then canting it so as to make only the proximal edge bear upon the surface.

Now all three observations seem to me to be the same phenomenon observed from different angles. The entire lung, and the chest wall with it, vibrate under percussion; but its sound varies with the acoustic conditions beneath the pleximeter and in line with the percussion stroke. This section receives the primary impulse, and the depth of its freely vibrating tissue determines the pitch, just as the length of a violin string does. The longer the string, or the greater the depth of uniform elastic tissue, the lower the note. Selling (8) has shown by experiments with resonators that clear pulmonary resonance is due to the presence of deep tones, which are lacking in the dull sound. Note

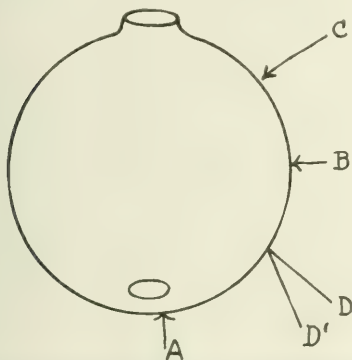


FIG.—Goldscheider's experiment with a spherical flask of heavy glass with a diameter of fourteen cm. and a mouth 3.8 cm. wide. Percussion at A gave a clear note when the mouth was left open. B gave a dull sound, C and D sounds intermediate in clearness. Employing very light percussion at D, first perpendicularly to the tangent and then in the direction D' whose axis entered the mouth of the flask, the note of D' became clear, as at A, being muffled again as soon as the axis of percussion deviated from the opening. The opening was then closed with various substances—one, two, or three thicknesses of linen, a cork, etc. The note of D' at once became duller than that of D. The difference was most marked when a plug of plastic soft rubber was used. These inelastic substances had absorbed and rendered mute the energy of the percussion wave.

also that deep tones are carried further in air than those which are high in pitch. The latter are sooner lost to sense perception.

So, in determining by ordinary percussion or with Sansom's pleximeter the relative cardiac dullness, the criterion is a change in note—that is, a disappearance of the deep fundamental tone of lung vibrating in its whole anteroposterior diameter, and the substitution of a high pitched fundamental corresponding to the suddenly lessened depth of lung tissue presenting, which is now only one third to one quarter of the diameter.

When threshold percussion is performed, the stroke is delivered with so little energy that resonance over clear lung tissue can barely be heard by a closely held ear. Therefore the fundamental tone of the whole depth of lung from anterior to posterior thoracic wall will be practically all that is heard. The overtones in this case will not be per-

ceptible in air. When the heart area is encroached upon, a fundamental of higher pitch will be substituted which, given the same energy of production, will be beneath the threshold of sense perception in air, and there will apparently be silence. Besides, there is an actual absorption of energy by the heart or other solid organ, still further reducing the sound. That this occurs is shown in the experiment described under the figure.

The preeminent advantage asserted for threshold percussion is that, instead of demanding of the examiner a discrimination in pitch and relative intensity, it requires only that he shall determine where silence instead of sound follows his percussion.

Great care must, of course, be taken to keep the strokes uniform in strength. The temptation is very strong to "peter off" and unconsciously hasten the disappearance of sound. It is well to verify the findings by percussing in the opposite direction. The patient should breathe gently and not deeply. For reasons easily deduced from his flask experiment, Goldscheider insists upon percussion in strictly sagittal direction instead of one perpendicular to the thoracic wall. To this end the Plesch modification of finger position (9) or Goldscheider's own bent glass rod is advantageous to determine most exactly the aim.

Turning to Ebstein's touch percussion, the same physical laws apply. Strike a string of low pitch with the finger, and then one of high pitch. There is more feeling of resistance in the latter, even though the tension is the same. It returns the stroke sooner and vibrates more rapidly, giving more sense of continuous pressure than the low pitched string. The vibrations of this are more appreciable to touch—that is, the alternate yielding and rebound are felt better. Strike the clear lung, and then that part encroached upon by the heart, and the different resistance will be felt by the trained finger, because the vibrations are shorter and more rapid.

The theory of Sansom's technic has already been considered.

We will next turn to a brief consideration of some of the other modifications in technic which merit notice and attention by the clinician who seeks all the information which may be yielded by percussion.

Auscultatory percussion has largely been abandoned in the examination of the chest, because of the confusion occasioned by inconstant parietal conduction by ribs and sternum. There are two variations in procedure. That commonly used is to place the stethoscope over the middle of the organ to be examined and percuss in radial lines toward or from it, marking the point where a change in note is heard. The other method is to place the stethoscope eccentrically and percuss in circles around it. In this way we avoid the increase in intensity as the finger approaches. As noted above, Tarnai has applied threshold percussion in somewhat similar manner.

Sewall (10) describes a bimanual palpatory percussion as follows: First map out by ordinary percussion the site, for instance, of absolute cardiac dullness. Place the finger ends of the left hand,

palm down, gently on the middle of this area. Using the pulp of the right hand middle finger, the chest wall is gently tapped along radial lines toward the left hand. He says that he has in this way mapped out an emphysema surrounded by solid lung.

The most pretensions of the later modifications are Lerch's "drop percussion" (11). Noting that the various results obtained by different observers were due in part to the acuteness of the musical and auditory sense, but more to the varying strength of percussion stroke, he eliminates the latter source of error by dropping the pleximeter hammer instead of striking with it. He advocates the use of a pleximeter of thin ivory, and a hammer with hard rubber handle carrying a heavy steel head with soft black rubber tip. "The hammer is very lightly grasped at the end of the handle between the thumb and index finger, the end of the handle resting on the third finger and the palm of the hand. The pleximeter is placed upon the portion of the body to be examined; with a quick turn of the wrist the hammer is tossed up and the hammer head is allowed to drop with its own weight." His criteria are three, appealing to three senses at one time, namely, the rebound of the hammer seen, the sound heard, and the vibrations felt in the hand. With this method he has mapped out kidneys, great vessels, differentiated stomach from colon, and in a later communication avers that he has delimited the thymus from the underlying great vessels beneath the sternum (12).

There are a few minor points of importance applying to all percussion. The muscles should be relaxed. The body should be firmly supported in a symmetrical position. The patient should not sit with one side too near a wall, as this will, by reflection, enhance the true degree of resonance. As emphasized recently by N. K. Wood, the lungs should be percussed from below upward. It is certain that impaired resonance can, in this way, be much better recognized.

Finally, we should label the resonance consciously in every point percussed, much as a rifleman "calls" his shot. Wood has suggested a set of definite standards for percussion sounds (13). He has located the position of the varying degrees of resonance in the musical scale. The average man, however, would require for its employment a set of tuning forks or a piano at his elbow. Yet it is only by some such conscious bending of purpose and attention to each stroke that progress will be made in this neglected, difficult, and individual art, so subjective in interpretation. Only in this way will it take its proper place of equal dignity and positive worth with inspection, palpation, and auscultation, instead of being suspected of misleading, and requiring corroboration.

REFERENCES.

- EWALD, *Chirurg. Jahrbuch*, 1895, p. 382. GOLDSCHEIDER: *Deutsch. med. Wochenschr.*, xxxi, 1905, pp. 333, 382. 3. TORNAL: *Ann. Med.*, 1906, p. 5. 4. BILLET: *Ann. Med.*, 1906, p. 5. 5. BILLET: *Ann. Med.*, 1906, p. 5. 6. MORTIZ and ROELL: *Intern. med.*, xiv, 1908, p. 489. 7. EISENSTEIN: *Berl. kl. Wochenschr.*, xlii, 1896, p. 501. 8. SELLING: *Deutsch. Archiv. für kl. Med.*, xc, 1907, p. 1. 9. PLEIST: *Intern. med.*, 1907, p. 1. 10. SEWALL: *Ann. Med.*, 1907, p. 1. 11. LERCH: *Med. J.*, 1907, p. 1. 12. WOOD: *Journal A. M. A.*, Oct. 17, 1914.

SPINAL ANESTHESIA WITH STOVAINE.

Results in Fifty Cases of Genitourinary Surgery.

By J. STURDIVANT READ, M. D., F. A. C. S.,
New York.

Assistant Genitourinary Surgeon, Long Island College Hospital and
Kings County Hospital.

Since Corning first suggested the possibility of spinal anesthesia with intradural injections of cocaine, there have been periods of enthusiastic trial and complete disuse of this valuable method. The main objections have been fear of injury to the spinal cord; symptoms other than those of analgesia; uncertainty of anesthesia and difficulties of technic. We will discuss these seriatim.

Fear of permanent damage to the cord by either the needle or the medicament: This is a fear only; in actual work it does not occur. I have made many dozens of spinal punctures for the introduction of salvarsanized serum or for stovaine solution and have never seen any evidence of permanent damage to the cord. Some of these cases have been under care for more than two years.

Fear of symptoms other than those of analgesia: These do occur, but with the carefully prepared stovaine solution after Babcock's method, they are of mild degree, are of infrequent occurrence, and in this series of cases have never been alarming. Headache and dizziness on standing sometimes persist for two or three days, but this is generally due to some error which is preventable. The most common cause is that the fluid employed is cold or too old. In some cases headache cannot be avoided, being due to the disturbance of the intraspinal pressure, for I have seen patients in whom spinal puncture was done for diagnosis only, complain of headache and vertigo parts of each day for a week.

Fear of incomplete anesthesia: In one case out of fifty anesthesia was imperfect and the operation (for hydrocele) was completed amid the grumblings of the patient. On two attempts in old men, we were unable to get fluid through the needle, though it was felt that the canal was entered. Here we deemed it useless to expect anesthesia and ether was used. The last serious objection is that of the difficulty of spinal puncture. This can be learned by any careful operator in a short time.

Our technic is as follows: Any carefully made spinal puncture needle that fits accurately to a Luer syringe may be used. This is boiled for ten minutes in distilled water and used while the syringe is still warm. The solution used is that devised by Doctor Babcock as follows:

Stovaine,	0.08
Lactic acid,	0.002
Alcohol,	0.2
Distilled water,	1.8

This should be carefully and properly prepared and put up in sealed ampoules. The patient sits on the side of the operating table with the legs hanging, the head is flexed, and he is asked to bend his back without leaning forward. The anesthetist assists and steadies him. Feeble or nervous patients lie on the side. The sterile dressing over the spine is removed, and the area for puncture painted with five per cent. iodine solution. A sterile towel stretched across the iliac crests will cut the fourth

lumbar spine. For these urological operations the third or second lumbar interspace is selected, as complete anesthesia is secured and the danger of depressing the cardiac and respiratory centres is considerably increased when injections are made in the higher spaces.

The needle is introduced slightly to the median line and pushed straight forward. There is a certain "give" when the dura has been punctured; the stylet is withdrawn and when the fluid flows freely the syringe containing the stovaine solution is fitted to the needle and the piston of the syringe is pushed slowly forward; withdrawing part of the spinal fluid into the syringe and thus mixing with the solution, obtains a better diffusion and may secure a more certain anesthesia.

This particular preparation has a lighter specific gravity than the spinal fluid, consequently the needle, having been quickly withdrawn and a sterile towel placed over the site of the puncture, the patient is laid flat on the table and the head and shoulders are lowered. If this is not done, blocking of the upper nerve roots may take place with imperfect anesthesia of the lower area and sometimes interference with the respiratory or cardiac centres. By the time the patient is placed in position and draped for the operation—three to five minutes—analgesia has developed and work may be begun. With eyes bandaged and his attention diverted by questions from the anesthetist, often the patient will inquire when we are going to begin as the finishing sutures are being introduced.

In nervous patients, we have found preliminary narcosis, with morphine grain one sixth with hyoscine grain 1/100, given one hour before operating, to be of value. The analgesic effect of the stovaine is as great without it and in many cases we have omitted it. During operation the patient may experience faintness, nausea, and vomiting. Aromatic spirits of ammonia and assurance that there is no danger are the only remedies we have needed. For the nausea, cracked ice and brandy are useful. If cardiac depression is in evidence, caffeine and strychnine hypodermically are indicated.

In our series of fifty cases no symptoms of severe cardiac or respiratory depression have occurred, but when for purposes of anesthesia the interspaces higher than the second lumbar are injected, liability to great depression of the cardiac and respiratory centres is increased. About twenty per cent. of our patients complained of headaches, more or less severe and lasting into and through the second day after operation. Ice caps, keeping the head lower than the body, phenacetin, and sometimes morphine are needed. The majority of my patients were comfortable and took food four hours after the operation.

The rapidity with which anesthesia can be obtained by this method and the small degree of postoperative shock and postoperative discomfort make this the method of choice in many cases. In patients with phthisis or other pneumonic involvement, it is of great advantage; in the presence of kidneys which are damaged or not functioning freely, the avoidance of the work of extra elimination which follows the use of ether or chloroform is a great gain. Where marked sepsis is present, small doses

act efficiently. In two cases of extravasation of urine operated in by me this summer, both of which were profoundly septic, I believe the absence of a general anesthetic, and my being able in consequence to continue the administration of food and fluids continuously, contributed largely to both recoveries.

In four old and feeble men in whom suprapubic prostatectomies were followed by recoveries, muscular relaxation and anesthesia were of good degree, postoperative shock was less, and their being conscious enabled them to protect themselves to some extent, by complaints, against the exposure to cold, the failure to give plenty of fluids, and the other carelessnesses which so often occur, in large wards, on the fatal first night after operation. These fifty cases were selected from those seen in the service of Doctor Fraser and myself at the King's County Hospital. None showed alarming depression and eighty per cent. were free from distressing symptoms. In one case there was imperfect anesthesia, in two there was failure to find fluid and general anesthesia was used. In two cases headache and some dizziness persisted for nearly a week. To show the nature of this work done, the following table is given:

Calculus in prostatic urethra	1
Calculus of bladder	1
External urethrotomy for stricture of urethra.....	6
External urethrotomy for extravasation of urine.....	2
Amputation of penis for cancer	2
Prostatectomy	4
For undescended testicle	1
Orchidectomy	4
Epididymectomy	6
For hydrocele	8
For varicocele	15

174 CLINTON STREET, BROOKLYN

URINARY DISTURBANCES IN THE MALE.*

By CLARENCE MARTIN, M. D.,
St. Louis,

Visiting Gynecological Surgeon, City Hospital; Late Clinical Assistant, St. Peter's Hospital for Stone, London; Etc.

I feel that it would be most profitable to discuss practically some of the frequently met with urinary difficulties of the male rather than to take up the more technical side of the question, and, inasmuch as diagnosis is with us, as in every other department of medicine, the most important part of our work, I shall devote the greater part of my space to it.

The principal reason why so many bladder cases prove annoying to the medical attendant, is to be found in insufficient diagnosis. With a clear diagnosis, direct measures may be instituted and prompt results obtained. Otherwise, we move blindly about our work and our measures are applied in haphazard fashion, to our own discredit and to the patient's disadvantage. The first secret in the differentiation of urinary disorders lies in our ability to make an accurate interpretation of bladder symptoms—or, in other words, not until we become expert cystoscopists do we become proficient in the diagnosis of urinary lesions.

The majority of pronounced urinary disturbances have their origin in an obstruction to the urinary

*Read before the Southern Illinois Medical Association, November 5, 1905.

stream—this obstruction being either a stricture in the urethra or an enlarged prostate gland, other forms of obstruction being almost negligible. The subject of urethral stricture is not shown enough attention, and as a result it is often overlooked when, in fact, it is the sole cause of trouble.

It must be understood that a narrowing in the urethra need not become filiform in calibre before it gives rise to bladder symptoms, in fact, a very ordinary narrowing may produce a most annoying group of symptoms. I have seen innumerable cases of plain urethral stricture treated as "kidney trouble," stone, prostatitis, enlarged prostate, and what not. Roughly speaking, we may say that any urethral canal with a calibre under 26 French is not normal and should be dilated.

Thus, a young man in his early thirties will complain of erratic frequency. Sometimes he has to get up as often as three or four times at night to make water. He is probably married and lives such a correct life that he resents the insinuation that his bladder troubles might be due to an early gonorrhea. I have found so many cases answering to this type with narrowed urethras and responding promptly to a few dilatations, that I make it a routine practice to examine carefully for strictures even of wide calibre. In some cases the resultant symptoms of a stricture have formed a clinical picture of such outstanding boldness as to divert all suspicion from the actually causative lesion, with the result that the effect rather than the cause has been treated for months and even years. I have in mind a man forty years of age, who gave such a clear history of renal stone as to fool completely three excellent men who relied upon subjective symptoms for their diagnosis. This man was suddenly seized with an attack of renal pain of such severity as to require morphine. There ensued a period of three weeks with complete freedom from pain. Then he was attacked as before. There was neither hematuria nor bladder distress. There was marked testicular involvement during these attacks of colic. The patient was seen in these paroxysms and each time the diagnosis was renal stone, but the x ray was repeatedly negative. The patient continued to have these alternating periods of pain and relief until one day, several months after the beginning of the trouble, he had a slight hematuria and noticed diminution in the size of the stream. There was a stricture in the bulb just admitting a 5 Fr. bougie. The canal was quickly dilated up to Fr. 26, and since then there has been a complete absence of all renal and testicular pain.

And this leads us up to that haven of diagnostic refuge—inflammation of the bladder. If we always bore in mind, when considering bladder symptoms in the male, that in the vast majority of instances cystitis has an extravesical cause and until that cause is corrected the bladder condition cannot be cured, we should achieve a larger measure of success in our treatment. Thus, how wasteful of effort it is to continue week after week washing out an inflamed bladder when the bladder distress is entirely due to a stricture in the urethra which could be easily and promptly remedied simply by dilating. We can adopt as a working rule the axiom that no cystitis in the male develops without an extravesical

cause, and usually this is of a mechanical nature. But whatever the cause may be, the integrity of the vesical mucosa becomes impaired, microbe invasion is thereby facilitated, and the patient gets inflammation of the bladder.

It must not be forgotten that lesions in the posterior urethra of varying character and gravity, can also give rise to frequency, urgency, and tenesmus, and until the cause of the vesical trouble is accurately determined, the possibility that it may be found in the prostatic urethra should be kept in mind. It is a very curious fact to me that insignificant symptoms may accompany marked lesions in the prostatic urethra. The other day a boy of seventeen years came under my care for the correction of seminal emissions. These occurred not over twice or three times a week, and with a little treatment the interval lengthened to a week. The introduction of an instrument into this boy's urethra was difficult, owing to the canal's exquisite tenderness, but under novocaine a Buerger cystourethroscope was easily passed. The verumontanum was huge, almost filling the prostatic urethra and making it impossible to bring the entire organ into the field at one time. It was filled with blood. Its anterior slope was covered with ragged granulations and these ran off into the urethra anterior to the verumontanum, being of such thickness as almost to resemble a long flat berrylike growth. There was no hemorrhage in this case, no frequency nor pain, the single symptom on which the boy laid stress being the nocturnal emissions. In this case frequently repeated and long continued sexual irritation was responsible for the entire urethral lesion. And yet, on the other hand, a very mild inflammation of the verumontanum and contiguous strictures will often give rise to bladder symptoms of a distressingly urgent character. With the exception of the few cases dependent upon trauma (stone or external injury) or tuberculosis, inflammatory disorders of the prostatic urethra are caused by gonorrhea or sexual transgressions. The bladder distress which an acute posterior gonorrhea can cause, is familiar to us all and I shall not devote space to it. And here I am reminded how little influence a negative history of gonorrhea should have in passing on the question of prostatitis. To cite a case in point:

CASE. Young man, aged twenty-four years, came, complaining of certain vague symptoms, such as muscular pains in various regions and itching around the scrotum and perineum. The following history was obtained, but only after much urging: Every evening was given over to the fondling of complaisant young women, a highly erotic state lasting for an hour or two being enjoyed by the young fellow. This had been his custom for a year and a half. A peculiar kink in the young man's character was disclosed by his naive remark that he had to drop one of the young ladies from his calling list because she turned on him one night and insisted upon consummating the caresses. Per rectum this man's prostate was very large and painful. In this case the etiology was plain; the prostate was chronically engorged with blood.

Another not infrequent cause of urinary distress of a varying grade is due to that commonly practised sexual crime—coitus interruptus. I find that many patients are never questioned concerning these matters, their family physicians being overmodest when handling such cases. By failing to inquire

into our patients' sexual customs, when such inquiries are pertinent, we are derelict in our duty, and often miss the salient etiological feature of a case. It should be recalled that the prostatic urethra is virtually a part of the bladder, and when the bladder is distended, it actually forms a large part of the urinary reservoir. Thus it is easy to understand how an inflammatory disorder of the prostatic urethra can jeopardize the integrity of the bladder itself.

In urinary disturbances originating in prostatic disease, it is essential to ascertain the exact lesion. In acute prostatitis, concerning which there should never be any diagnostic confusion, beside the frequency, tenesmus, and blood which are its constant symptoms, there is at times an acute retention due to abscess formation which encroaches upon the urethral canal and finally shuts it off entirely. Put your finger into the rectum and you will feel a large, painful, hot fluctuating mass. The history of a recent gonorrhea will make the diagnosis clear. The patient will tell you that he contracted gonorrhea about four weeks previously, and that the discharge had about ceased, when suddenly he was seized with frequency, urgency, pain, and bleeding at the end of micturition. There later develops a terrible pain in the prostate and abscess formation has taken place.

In addition to changes brought about in the glandular substance itself by a continued prostatitis, there is another change which must be taken into consideration in discussing the urinary symptoms dependent upon prostatic inflammation, and that is a thickening of the urethral walls. It will be found that the walls of the prostatic urethra are infiltrated and the canal has lost a great part of its elasticity. Owing to the deposit of inflammatory products in the parenchyma of the prostate, the canal becomes fixed and, as a result, much of its contractile and propulsive power is lost. Further than this the patient has bladder symptoms, but they are of a mild grade; he will have to get up at night once or twice. He will also complain of decline in sexual vigor. This type of prostate is very easily recognized per rectum. The finger meets with a hard, flat surface of varying extent, but in most instances the inflamed gland is of good size, in fact, it may just be possible for the finger to outline its top and lateral boundaries.

It not infrequently happens that gonorrhea and tuberculosis of the prostate become confounded, an unfortunate mistake, especially when the condition happens to be tuberculosis, for valuable time is lost and, what is still worse, a line of treatment is instituted and perhaps persisted in, which is without advantage to the patient.

The bladder symptoms in a well advanced case of tuberculosis of the prostate will resemble in their intensity those attending a severe acute prostatitis, and as the tuberculous condition may flare up suddenly, having pursued previously an insidious course, care must be taken in making the diagnosis. In both conditions the patient suffers from frequent and painful urination, the greatest intensity being felt as the last few drops are expelled. A few drops of blood following the stream of urine are common to both disorders. Of course these urgent symp-

toms of prostatic tuberculosis denote an advanced stage, for, as I have already said, the disease will probably have been present for some time without giving rise to particularly distressing symptoms. In the vast majority of cases of tuberculosis of the prostate an antecedent focus was in the epididymis.

In differentiating the two conditions bear in mind that in acute gonorrheal prostatitis the urine passed into two glasses will be murky and contain pus, shreds, etc., whereas the urine in tuberculous prostatitis may be quite clear until an advanced stage with mixed infection has set in. Another point is the comparative topography of the gland as ascertained by the finger in the rectum. The gland in acute prostatitis will be found to be very much enlarged and uniform in consistence, while in tuberculosis there are marked inequalities in density. Thus you can feel one or more well defined nodular areas. The entire gland is painful, but pain will be particularly complained of as the finger palpates these nodular eminences. Just because the urine is free from tubercle bacilli is not sufficient warrant for ruling out the infection.

In touching upon this matter of prostatic inflammation, I am reminded of a highly instructive case sent me several weeks ago by Dr. F. A. Martin, of Tower Hill, Ill. For more than twenty years the patient had suffered with urgency and frequency, finally reaching the extremity where he had to make water hourly during the day and even more frequently at night. There was a cutting pain in the perineum. This would occur before and during urination, after which relief took place. Urination was not completed until the patient made upward pressure with his fingers in the perineum. The patient denied absolutely any venereal taint. Per rectum the finger felt, where the prostate once had been, a hollowed out site as if the entire gland had been destroyed through a suppurative process. Then suddenly the finger came in contact with a bluff-like edge, hard and sharply defined. This was the wall of the old prostatic abscess. Through the cystoscope I could see an ulcerated area in the trigone, of the size of a quarter dollar. This had a black centre. While viewing this lesion a discharge of pus took place from the black spot, and upon closer inspection it was seen to be the mouth of a sinus undoubtedly running down into the abscess cavity. A similar opening existed out in the prostatic urethra. Upon discovering this second opening I made pressure on the cavity, and immediately a discharge of purulent material took place. The abscess in the prostate had tracked along the base of the bladder, finally bursting into it. Of course the opening of prostatic abscesses into the urethra is the ordinary method of relief, but for them to open into the bladder is very rare indeed. This man was septic and fast losing his strength. He is making a prompt response to massage and vaccines.

Continuing with the chronically inflamed prostate, let me again say that there are marked symptoms beside urinary due to this condition. I have had patients who complained of pain in various parts of the body—even as remote from the prostate as the neck. The urinary symptoms ordinarily found in these cases vary considerably in intensity. Usually the patient complains of a mild urgency and

frequency together with lengthening of micturition time. The urgency and frequency, of course, are due to a low grade of inflammation in the neck and trigone, and in some instances to inflammatory changes in the mucosa of the prostatic urethra. The increase in the time necessary to empty the bladder, aside from the possible influence of stricture, is due to loss of tone in the prostatic urethral walls, a condition which follows infiltration of the gland. The prostatic urethra thus becomes rigid and fixed, and a large part of the propulsive force it normally exerts upon the urinary stream is lost, hence, in particular, the dribbling toward the end of the act.

Since this is but a general survey of the subject in hand and must confine itself particularly to the urinary disorders of the male, which, owing to certain anatomical and physiological facts, form a distinctive group, I shall make but a brief mention of urinary tuberculosis. In the vast majority of instances it is secondary to renal infection, and if the disease has existed long enough both kidneys will be involved, hence the value, in fact, the necessity of diagnosis in the very earliest stage. The symptoms of renal tuberculosis may be so insidious and of such slight consequence—for instance, an inappreciable polyuria, or a mild frequency both during the day and at night, with gradually growing vesical irritation—that it is quite possible for a bilateral involvement to exist before a diagnosis is made. Therefore be suspicious of urinary tuberculosis in cases of bladder distress showing clear acid urine without pus, also in which a cystitis grows worse under silver irrigations. In such cases do not fail to make the most exact investigation.

As we all know, most urinary disorders in the male are a direct sequence of obstruction. After the age of forty-five years the prostate is the offender in the majority of instances. When we take into consideration the dangerous train of complications found in conjunction with an obstructing adenomatous prostate, all of which show a marked tendency steadily to increase in gravity, we are well justified in recommending early operation. Yet the latent vitality of some of these old fellows is remarkable. Several months ago a seventy-five year old man was sent to me for relief of retention. His urinary history went back many years. The urethra was so badly torn and so filled with false passages that it was impossible to introduce an instrument. The bladder was distended up to the umbilicus. Upon opening the bladder for drainage a huge amount of bloody urine poured out. The prostate had a marked intravesical projection, and as it seemed about ready to burst through its mucous membrane covering, I did a hasty enucleation and hurried the old man back to bed. Although his condition was very poor, he made a quick response and finally recovered with highly satisfactory control of urination.

However, it is just such cases as this that swell our mortality records, and, unless they are urgent, we should never operate without preliminary preparation.

Regarding the proper time to do a prostatectomy, I have an arbitrary rule in these cases, and it is to insist upon operation when the amount of residual urine is three ounces or more, or when the patient

admits that the nocturnal frequency is wearing him down. The point, of course, is to operate before the kidneys are ruined. It is an unvarying rule of mine to do a preoperative cystoscopy in every case of enlarged prostate. When this is carefully done, the risk is small, and, in view of the valuable information to be gained, it may be entirely disregarded. Stones are thus detected, diverticula found, and even a carcinomatous lesion hitherto unsuspected may be discovered. I can recall a case which gave every token of simple hypertrophy, yet upon cystoscopy a large cancer in the trigone was found. To go after a prostate in such a case and find a cancer would be very embarrassing, to say the least. Hence the value of a routine cystoscopic in these cases. Of course, the diagnosis is plain—the nocturnal frequency, the enlargement as determined per rectum, and the incompleteness of urination evidenced by urinary residuum, together with the patient's age, tell the story in graphic terms. There may be terminal hematuria, but it is not constant; in fact, it should be remembered that hematuria is not a constant symptom in any new growth of the bladder or prostate. Per rectum an adenomatous prostate will be felt as a more or less bulging mass. The density of this varies, but as a rule it is fairly firm without being hard. The gland is elastic, and movable, and if the belly walls are not too thick it may be palpated bimanually. A prostate—excluding chronic prostatitis—that is hard, dense, and fixed is malignant. If the induration extends out into the periprostatic tissues, the growth is inoperable.

It has been my experience that vesical stones are comparatively easy to diagnose, the searcher or cystoscope making the diagnosis very clear, and the subjective symptoms are of much help, also. Pain, frequency, bleeding with sudden interruption of the stream are highly suggestive.

Prostatic stones occur so infrequently that we need but make passing reference to them. However, when present, they will give rise to the most distressing symptoms, and rectal palpation causes exquisite pain. They may project from a pocket in the prostate into the urethra and are thus easily detected by the grating sound of a metal instrument passing over them. In one instance I was able to elicit a clicking, grating sound upon palpating the prostate with my finger.

The possibility of tabs as a factor in bladder disturbance is not to be forgotten, and since these cases are unusually susceptible to infection, and hence should be subjected to a minimum of instrumentation, it is well to go deeply into the subject when no other lesion can be found to account for retention.

Although one of the most important subjects in genitourinary surgery, lack of space forbids a discussion of bladder growths, and I shall make but a passing reference to the most essential feature—and that is early recognition and treatment. Inasmuch as hematuria is always the first token of a bladder growth, I urge the necessity of investigating the source of every hemorrhage from the urinary organs. Unfortunately, in all too many instances, bladder growths are permitted to progress uninterruptedly until benign ones become malignant.

nant, and malignant ones become inoperable, and all because urinary hemorrhages were not inquired into properly at their inception. Therefore, let it be borne in mind that every hemorrhage from the bladder should be investigated promptly and thoroughly.

THE CRYPT, 3700 MORGAN STREET.

MOTHER'S MILK FOR MOTHER'S BABY.*

BY WILLIAM W. RIHA, M. D.,
Bayonne, N. J.

Aspirant Physician, Hudson County Tuberculosis Clinics.

From prehistoric man, who lived in caves and hunted in forests, to this age of luxuries, the obtaining of food has been one of man's greatest efforts. The ten-ton stegosaurus that shook the earth as it walked, and the giant lizard that was the terror of antediluvian seas, died, were buried in a sepulcher of Jurassic mud, and became extinct when they could no longer find food suitable for their growth.

There is no greater mystery in Nature than the mystery concealed in the growth of a six-foot, two hundred pound adult from a microscopic ovum. We know that the blade of grass grows because of the moisture and nourishment it extracts from the soil and because of the biochemical changes taking place through the action of chlorophyll in the presence of sunlight. We know *why* the grass grows, but we know no more about *how* it grows than did the ancient philosophers who were among the first to try to solve the riddles of biology.

After nine months of intrauterine life the human offspring is born; feeding through the placenta ceases; and throughout the first year of its mundane existence the child will derive its food from the mammary secretion of its mother. But *will* it? It is this *will* that furnishes the theme for my paper.

You have doubtless read and enjoyed the pleasing bit of humor, *Pigs Is Pigs*. To the express agent of the story "pigs is pigs" whether guinea-pigs or porkers. And there are folks alive today to whom milk is milk, whether obtained from the breast of the mother, or from the udder of the cow, or the condensed variety obtained from a can. But "pigs is *not* pigs" and milk is *not* milk. The milk of all mammals has the same composition, consisting of protein, fat, carbohydrate, mineral matter, and water. But although alike in composition, there are several essential differences. The fat that encircles the ham of your sandwich and the diamond chip in your ring are both pure carbon; and yet who would not take issue with you and say they are dissimilar? And so there is milk and milk, the same in chemical composition, but in many essential respects unlike. And it is because the milks of mammals differ that we have a science and art of infant feeding.

In their book on *Diseases of Children*, Chapin and Pisker bring prominently before the reader an axiom in child conservation—*food must be adapted to the species*. If this adaptation failed to obtain, man would have known no other part of the earth save

the Garden in which it is said he was born. Food must be adapted to the species; cow's milk for the calf; goat's milk for the kid; sheep's milk for the lamb; mare's milk for the colt; and *mother's milk for mother's baby*.

The baby kangaroo—the same authors tell us—attaches itself to its mother's nipple, grows fast thereto, and remains there until such time as it is fully matured. Now, I like to look upon the human offspring as a baby kangaroo, whose fetal life extends over twenty-one months—nine months in the uterus and twelve months at the mammary glands. Were we to consider the mammary secretion as indispensable for infant development as the placental blood during the child's intrauterine life, we should be slow indeed to countenance the discontinuation of maternal feeding and should raise our voices in righteous indignation whenever such a step was contemplated.

Baby must creep before he can walk. Figuratively speaking, this is just as true of baby's stomach. Mother's milk is the great educator of the baby's stomach: the changes taking place in the composition of her milk keeping pace with the changes in the digestive powers of the infant's stomach. Mother's milk is for mother's baby; educating the stomach and preparing it for the varied diet of the adult.

I hold a dietetic creed that no amount of proselytizing can take away from me, namely, that the majority of the gastritides among adults have their origin in the gastroenteric insults of infancy and early childhood. When a baby seven or eight months of age is getting tea, coffee, frankfurters, cucumbers, pickles, and beer—and this in a country other than Normandy, where baby gets a little liquor in its bottle—a lifelong pathological condition of the stomach must be the inevitable sequel. Mothers tell us that the baby cries for the food of the table, and that they cannot endure its distress. A simple and efficient method is to feed the baby first, whereupon the parents can sit down to an uninterrupted meal.

Let us now consider some of the reasons why mothers do not nurse their babies.

1. *Because prenatal hygiene was ignored.* The prenatal care of the nipples, preventing flattening and fissuring; the proper care of the bowels, kidneys, and skin; and regular daily exercises in the open air are some of the measures that tend toward a normal motherhood. When these precautionary measures are ignored, we may expect trouble in breast nursing.

2. *When the newborn baby has persistent green stools.* How often have mothers thought their milk faulty and hastily weaned the newborn infant and made it dependent on artificial feeding because the stools were green. And how often we administered calomel or castor oil because the stools were green, forgetting all the while that the newborn child's stools are normally green during the first two weeks of life. And furthermore, calomel is not a harmless drug, for Abt, of Chicago, has demonstrated blood in the infant's stool after its administration.

3. *When stools contain curds.* The formation of curds and its concomitant intestinal indigestion are produced by frequent breast feeding. This is

*Read at the meeting of the Hudson County (N. J.) Medical Society, December 7, 1915.

brought about by a diminished quantity of milk and an increased fat percentage. The former does not satisfy and the latter produces curds. The mechanical stimulation of the breast caused by sucking at regular intervals assures an abundant milk supply. There is no one practice that tends to irregularity as does the pernicious habit of frequent night feedings. To obviate this, keep baby in his own crib; never let it sleep with his mother. Did you ever hear of a pickpocket who deliberately walked away from a wallet that was staring him in the face? Did you ever hear of a baby that did not yield to temptation when during all hours of the night his lips were within reaching distance of his mother's nipple? Normal, healthy, thriving, breast fed babies may have at times many fine, soft curds and a little mucus in the stools; but such abnormalities may be disregarded, under the circumstances.

4. *When motherhood and social duties become incompatible.* You have heard of her who will not sacrifice her social duties for the sacred duties of motherhood. To her, motherhood is a misfortune and its responsibilities are a bore. My sympathies go out to the mother in the lowest stratum of society. Her life, to be sure, is governed largely by superstition, folk lore, and myth, and her mind knows nothing of higher learning, yet nature has filled her heart so brimful of love that among her kind deliberate weaning is a rarity. One day, while making a qualitative examination of a poor mother's milk, I was amused to see her pour that portion that I did not use, over her baby's cradle. In answer to my question as to her reason for doing this, she said that her breasts would cease to function, her milk would be lost, and her baby would not thrive if she wilfully destroyed her milk. The superstition that prompted this act seems ludicrous; and yet how pathetic is the other extreme—the case of her who moves in the circle of the élite, who sacrifices motherhood for society. Personally, I think there is no greater gift to human society than the healthy baby, growing up with all the assets of babyhood and with none of its liabilities.

Do you know the maternal habits of the brown headed oriole? To her motherhood is a joke. She seeks out the nest of a smaller and weaker bird, throws out an egg or two to make room for her own, lays her egg, and forsakes it. The foster mother hatches it and then cares for the foundling. We find the brown headed oriole's counterpart in human society, where mothers are seen wantonly and deliberately, without medical advice, to forsake their young to be nurtured by such foster mothers as the cow and the can of condensed milk.

5. *When the milk flow is scanty and the mother apparently well.* To find a reason for the scarcity of mother's milk, we may have to go back to her own child life—the period of her own adolescence, when character was in the making and environment was doing more for character than heredity. A defective adolescence is the precursor of an unsuccessful motherhood. We may not recognize this power of environment, but its forces are at work and its effects are certain. Witness this prayer of the child who is about to pass a baking powder sign when on her way to school. She kneels down alongside of her bed at night and thus she prays: "O

Lord, make me pure, make me absolutely pure, make me like ——— baking powder!" What shall we do for the mother whose milk supply is scanty. Two things are needed, enough of nutritious food properly balanced; and exercise in the open air. Cornmeal gruel, maltine, milk, eggs, fruits, vegetables, and water should be the mainstay of her dietary. The dietetic advice is an excellent one for her who can pay the cost, but when the mother's dietary assumes the dignity of a free lunch counter, we are confronted with a problem in sociology. Morse and Talbot, quoting Czerny and Keller, say that the milk of nursing mothers cannot be permanently influenced by the food, except in instances where an increase of food is given after partial starvation; in a word, that the quantity of milk cannot be increased at will by increasing the amount of food or drink. Apropos of this galactagogue question, Morse and Talbot report the findings of Shafer and MacKenzie, of England, who assert that the posterior lobe of the pituitary body of the ox and the corpus luteum of the sheep act as galactagogues when injected into cats and dogs. The authors reason by analogy, and advise their use in nursing mothers. Their experiments have been stimulated by the fact that there is at present no real galactagogue worthy of the name. Furthermore, our flag is symbolic of a liberty loving people; yet how many mothers are slaves—slaves to the dust rag and the broom, living in poorly lighted and badly ventilated rooms from week to week, depriving themselves of earth's best elixir, good, wholesome air. During the baby's first month, perseverance on the part of the mother will accomplish the seemingly impossible. If her milk flow is scanty, give baby as much of the breast milk as baby can get, and finish the feeding with a bottle, using that modification of cow's milk that you have found to be the best. The bottle feeding, however, should be prepared *without sugar*, since mother's milk seldom has an insufficient amount of this ingredient. This breast and bottle plan, called complementary feeding, is better than the plan of giving breast only at one feeding and bottle only at the next.

6. *When domestic economics demands it.* We all know the poor mother, who for economic reasons must feed her offspring artificially. Her lot is hard, for she must go out into the world to take a man's place.

7. *When the mother's health is poor.* Under this caption we may include cases with deficient milk due to the previous destruction of much mammary gland tissue. A sick mother must conserve her own energy; especially so when the caloric value of her food is low. If her disease is an acute one, breast feeding must be stopped for a while and resumed after the mother has recuperated. Tuberculosis in the mother contraindicates maternal feeding. Recent research has brought to light the fact that a tuberculous mother infects her nursing, the germs lying dormant for years and years, and manifesting their presence usually during the second or third decade. Weaning the infant and removing it to a preventorium, if possible, constitutes the best prophylaxis. Tuberculosis in infancy is invariably fatal. Isaac A. Abt, citing Viennese statistics, says that eighty-six per cent. of all cases of tuberculous

meningitis occur in breast fed infants. Indeed, it is the healthy mother that has a healthy baby; a constipated mother has a constipated baby and a dyspeptic mother has a baby that can outyell any Coney Island barker.

8. *When the baby has colic.* Cartoonists have sketched thousands of pictures depicting the irate father taking baby and its colic for a walk up and down the bedroom floor, and of course stepping on the carpet tack that is always sharp point upward. Those most unwelcomed midnight parades would be reduced to an insignificant minimum if mothers fed their babies by the *clock* rather than by the amount of noise issuing forth from the juvenile thorax.

G. R. Pisek has demonstrated the fact that the infantile stomach is not vertical, as had been previously taught, but that, on the contrary, it differs very little from the adult type. Smith and Le Wald have shown that infantile colic is very often due to air swallowing and faulty posture. With the child on its back, the cardiac end of the stomach lies well back against the vertebral column, and being covered by the liquid the swallowed air cannot escape into the esophagus. The abominable habit of rubber nipple sucking causes more colic than high protein, high fat, or high sugar ever do. How often have we seen grandmothers pat baby on the back after nursing, and how often have we raised our hands in holy horror at the sight; yet empiricism has taught her—and the x ray has recently substantiated—that the upright posture after feeding causes an eructation of swallowed air. And all this time our text books were teaching us that the infant must not be disturbed after it is fed. How often has iconoclastic teaching proved commonplace on closer scrutiny. Another idol that Smith and Le Wald handle ruthlessly is that representing the length of time that the infant must take before concluding its nursing. "Twenty to thirty minutes" was the pedagogical ukase. In answer to this, Smith and Le Wald have this to say: "Slow feeding, that is twenty to thirty minutes, only multiplies the number of swallowing acts, diminishes the amount of milk, and increases the amount of air taken in each swallow. The old argument against rapid feeding is probably based on cases in which an enormous amount of milk was obtained from very full breasts and regurgitated from overfeeding and not from rapid feeding. If an infant is weighed every minute while nursing a full breast, it is often found that fifty per cent. of the milk is taken in the first two or three minutes, seventy-five per cent. in the first five minutes, and after that the amount per minute decreases rapidly."

9. *When mother's milk is too rich in fat.* Mother's milk is found, at times, to be too rich in fat. This is readily determined by a simple instrument called a pioscope. Such a mother should have her diet restricted; she should exercise to the point of fatigue; and an occasional laxative should be taken.

10. *Because of "organic inferiority."* There are certain breast fed youngsters who fail to thrive, despite the fact that the mother is healthy, the breast milk normal, feeding habits regular, and the infant apparently well. This paradox is due to constitutional differences and is called "Adler's theory of organic inferiority."

11. *When the mother is menstruating.* Many women entertain the belief that menstruating mothers secrete poisonous milk. To offset this fallacy, Rotch, several years ago, showed that menstruation has no deleterious effect on milk or the nursing. The babe may have loose stools for a couple of days, but the gastroenteric balance is soon readjusted and the baby continues to thrive as before.

12. *When the mother is highly emotional.* Veterinarians tell us that the frightened cow can poison her calf. Abuse by the herdsman, chasing by dogs, annoyance by flies, and stoning by mischievous boys, cause changes in her milk with subsequent damage to her offspring. So, too, fright, anxiety, worry, sorrow, grief, anger, loss of sleep, and fatigue will alter human milk and interfere with the normal digestion of the nursing.

And lastly, just a word about normal weaning. When this period, so often pregnant with evil, arrives, the physician should be consulted in order not to render nugatory all previous efforts for good. The transition from breast to bottle should be a gradual, painstaking process, for it is at this crucial period that a venturesome spirit may bring one to grief.

"Mother's milk for mother's baby"—the ideal food for the mammary fetus—should be our shibboleth in infant feeding.

25 WEST TWENTY-SIXTH STREET.

DISCHARGING MASTOID SINUSES.*

A Cure by Closure of the Eustachian Tube.

BY A. NOAH SCHILLER, M. D.,
New York.

In doing the radical mastoid operation, we always attempt to close the Eustachian tube. In a certain proportion of cases, either because of faulty technique, or the pathological changes that have taken place in the mucous membrane of the tube, closure does not take place. In these cases we are in danger, at some future time, of having a recurrence of the discharge from the ear. This discharge is usually caused by an infection from the nasopharynx, which ascends the tube to the middle ear.

In these two patients, there was a marked defect in the mastoid bone, so that I was able to look directly into the middle ear, and see the various landmarks. In both cases I was able to pass a fine probe through the Eustachian tube into the nasopharynx.

Doctor Yankauer, a few years ago, attempted to cure cases of chronic purulent otitis media, by curreting the tube at the isthmus, thereby hoping to cause occlusion. This would prevent the ascending infection from the posterior pharynx. Some cases were cured permanently, others were cured for a short time, while other cases were not improved. The reason for these results are easy to be accounted for. Those that were cured had the Eustachian tube closed by the operation; the cases temporarily cured had the tube occluded only temporarily, possibly on account of the severity of the infection of the nasopharynx. The patients who had no im-

*Presented at the Harlem Medical Society, December, 1914.

provement from the operation had probably bone necrosis, for which this operation was never intended.

In treating these cases I remove any pathological condition that exists in the nose and throat and treat the Eustachian tube and nasopharynx for a period extending from four to six weeks. My method is as follows.

I inject into the tube one ounce of a ten per cent. solution of argyrol, the fluid passing into the nasopharynx. In these cases it was easy, because the middle ear was exposed. Since then I have used this method in patients with chronic discharging ears, who had not had a radical mastoid operation performed upon them, with equal success. The solution is injected with a one ounce syringe with a soft rubber tip one inch long. It is made in three sizes so as to fit tightly in the external auditory canal. This injection is repeated every second day, for a period of two to three weeks. The discharge now is watery in consistence and markedly diminished in amount. Alcoholic injections are now used, beginning with a twenty-five per cent. solution and gradually increasing until ninety-five per cent. strength is used. This injection is repeated every second day. It is remarkable the effect that this treatment has on the catarrhal condition of the nasopharynx. The patient is now properly prepared to have the Eustachian tube curetted.

I use a small size ring ear curette. The curette is at an angle of forty-five degrees to the handle.

CASE I. Mr. J. L., aged eighteen years, at three and one half years of age had scarlet fever. Ten days later acute otitis media purulenta set in, followed by acute mastoiditis. Operation for acute mastoid was performed. Six months later, a radical mastoid was done. For the following thirteen years, the patient was from time to time under the care of physicians, but without any improvement.

I was consulted in April, 1914. I diagnosed the condition as due to a nasopharyngeal infection, the discharge of which ascended the Eustachian tube to the middle ear. Adenoids were removed, and ten days later the injection of the argyrol solution was begun. At the end of three weeks the discharge had become less in quantity and thinner in consistence. This was followed by the alcohol injections. On May 18th, the Eustachian tube was curetted; this was followed by a little reaction, the discharge increasing somewhat. A week later, the discharge began to diminish, and by June 10th the ear was dry. This patient was examined, October 15, 1915, and was free from discharge, and the Eustachian tube was closed.

CASE II. Miss M. L., aged twenty years, at five years of age had scarlet fever, complicated with acute otitis media, which developed into acute mastoiditis, that required an operation. Nine months later, a radical mastoid operation was performed. The posterior wound did not heal, and as a result in this case also the middle ear was easily reached. The discharge persisted for thirteen years in spite of all forms of treatment. The patient was first seen, August 12, 1914. The injections were begun at once, and on October 3d, the tube was curetted. On October 17th the ear was dry, the Eustachian tube was closed. The patient was last seen on September 25, 1915, and examination showed a dry ear and an occluded Eustachian tube.

1855 SEVENTH AVENUE.

Abstracts and Reviews.

TUBERCULOUS INFECTION.

By PROFESSOR S. ADOLPHUS KNOPF,
New York,
Post-Graduate Medical School.

In the *Medical Record* for January 8, 1916, there appeared an article on the relation of age to tuberculous infection, representing an address delivered last September before the joint meeting of the American Public Health Association and the Annual Conference of Health Officers of the State of New York at Albany, by S. Adolphus Knopf, M.D., Professor of Medicine, Department of Phthisiotherapy, of the New York Post-Graduate Medical School. It is entitled, *The Period of Life at Which Infection from Tuberculosis Occurs Most Frequently. How May We Diminish the Frequency of Those Infections and Prevent Them from Becoming Tuberculous Disease?*

Doctor Knopf had written sixty letters of inquiry to well known internists, specialists in tuberculosis and pediatrics. From statistics and impressions gathered from the replies to these letters and from the perusal of the latest literature on the subject, as well as from the results of his own experience, the doctor arrived at the following conclusions:

Tuberculous disease in childhood, compared with tuberculous infection, is relatively rare (36 per cent.). On the other hand, tuberculous infection is exceedingly frequent, generally speaking. According to exact statistics as well as general impressions given by men of vast experience, the majority of cases of tuberculosis in the adult had their origin in an infection during infancy or childhood.

The frequency of infection increases with the age of the child, and of course is also affected by the environment the child comes from.

	Lowest proportion.	Highest proportion.
Under 1 year.....	1 per cent.	9 per cent.
From 1 year to 4 years.....	1 per cent.	24 per cent.
From 4 years to 10 years.....	2 per cent.	28 per cent.
From 10 to 14 years.....	3 per cent.	28 per cent.
From 14 to 18 years.....	4 per cent.	32 per cent.

As to what organs are primarily most frequently involved, statistics and impressions both give lungs and lymph nodules. Prenatal infection, while considered rare, is perhaps much more frequent than statistics show. The age at which a tuberculous infection, contracted in infancy or childhood, becomes active, is most frequently at or shortly after fifteen years; next between eighteen and thirty years. The ages at which tuberculosis was diagnosed and apparently contracted most frequently in later life were given as between twenty and thirty-five years.

Nearly all the authorities consulted unite in the opinion that in order to combat tuberculosis successfully in the young and old alike, we must diminish the sources of infection in childhood.

To accomplish this end we must seek to amend the Federal and State laws which make it a criminal offense for a duly licensed physician in good standing to give advice concerning the means of preventing conception. We must be allowed fearlessly and

¹Private.
²Hereditary cases.

Visceral Cancer.—Great care is needed in the management of patients with cancer of the stomach and bowel, remarks the *American Journal of Surgery* for October, 1915. The patient, even when apparently in fairly good condition, often collapse unexpectedly during or after operation.

openly to instruct tuberculous parents how not to procreate a tuberculous race.

2. All cases of open tuberculosis, particularly the pulmonary and laryngeal types, should be required by law to be reported to the health authorities, who in turn should be authorized to send the patient, directly or through the attending physician, carefully worked out instructions to prevent infecting others.

3. Cases which cannot be properly taken care of in the home, or when it is evident that they constitute centres of infection, should be transferred to sanatoriums, special hospitals, or at least to special wards in general hospitals. Every community should have sufficient facilities to take care of such cases. The board of health of every community should have police power in order to be able to isolate such patients as wilfully disseminate bacilli by indiscriminate expectoration or by other unclean habits, thereby exposing other members of the family, particularly children, to contracting the disease.

4. For the pregnant tuberculous woman there should be a maternity sanatorium, or a special ward in existing maternities, where prolonged antituberculous treatment can be effectually carried out, and where mothers can receive such instructions as will guard their offspring from postnatal infection.

5. Where there is the slightest suspicion of tuberculous infection of the infant by the mother, the child should have a healthy wetnurse or should be bottle fed. The preparation of the milk and bottles, tasting the milk to judge of its sweetness, temperature, etc., should be attended to, not by a tuberculous mother, but by an intelligent and conscientious healthy person, unless the mother is scrupulously clean and knows how to take every proper precaution against infection. For infants whose mothers for one reason or another are unable or not intelligent enough to care properly for their tuberculous offspring, special preventorium should be established.

6. Medically supervised country homes, enterprises similar to the one inaugurated in Paris, for poor tuberculous mothers and their children, where they may remain until they can safely return to a city environment, should be provided by private philanthropy, or better yet, by the aid of the municipality.

7. All children under five years of age, be they of poor or rich parentage, should be subjected annually, or even semiannually, to the von Pirquet test, and those who react positively and have in addition symptoms and physical signs, should be placed under proper treatment at home, in preventoriums, or sanatoriums.

8. All children between five and fifteen years of age, particularly those attending public schools, should be subjected to a careful physical examination on entering as a pupil and to an annual re-examination thereafter, always accompanied by a von Pirquet test. Those reacting positively and showing physical signs, those evidently strongly predisposed to tuberculosis, anemic, highly nervous, or afflicted with cardiac disease, should, according to their condition, be placed in open air classes, open air schools, preventoriums, seaside or inland sana-

toriums. This will probably mean that open air schools must become the rule and the indoor class the exception, which indeed would be a great blessing. All physical defects, such as adenoids, enlarged tonsils, deviated septa, must be removed so that the child's upper respiratory tract may be as nearly perfect as possible. Defective hearing and sight, as well as bad teeth, must, of course, also receive proper attention.

9. Open air instruction should be practised whenever it is feasible. Singing, recitation, geology, botany, etc., should be taught out of doors. Calisthenics, breathing exercises, and swimming lessons should constitute a part of the curriculum of every public and private school. No public school should be without its swimming pool. A drill in swimming, so as to know how to save one's own or perhaps other lives, should be as essential as fire drills in public schools. Wherever shower baths and swimming tanks (the former to be used prior to entering the latter) form a part of the public school equipment, pedagogues have observed a better morale and better work done by the pupils. The curriculum of our schools should be arranged so that the mental and intellectual training is not carried to the extent of becoming detrimental to the physical development and well being of the children.

10. The school authorities should have the right to investigate the home of any child attending public school when the teacher or school physician thinks that underfeeding, bad sanitary home environment, or child labor at home is responsible for a poor physical condition of the pupil which might develop into tuberculosis.

11. Child labor in factories, mines, canneries, stores, workshops, in the street, or at home, must be done away with if we wish to raise a nontuberculous race. Up to the age of fourteen years, every boy and girl should have the right and privilege to play and not be forced to work. When arriving at the age of puberty, the boy or girl should be in the best possible physical condition; else there is a great likelihood that a latent tuberculosis or inherited predisposition will develop into tuberculous disease. Playgrounds and parks should be numerous in every civilized community. The roofs of schools and tenements should be converted into roof gardens when the ground is scarce and expensive, as for example in New York.

12. There should be an obligatory examination for tuberculosis and other serious diseases of every boy or girl prior to entering college, the store, the workshop, the office, mine, factory, or any occupation for his or her career in life. The physical and mental test at such a time should be used as a guide in the choice of trade or profession.

13. There should be periodical examinations for tuberculosis of all employees in whatever sphere of activity—in office, factory, workshop, hotels, households, schools, municipal or Federal departments, etc.

14. For those weeded out as tuberculous or afflicted with other diseases which incapacitate them for their usual work under ordinary conditions, there should be agricultural and industrial colonies where these semiinvalids have an opportunity to earn a livelihood. There also the graduates from

sanatoriums should be sent for an opportunity to regain strength and vigor to make their cure more lasting, and above all learn again to earn their living.

15. There should be State insurance and obligatory private insurance against accident, old age, and disease, including tuberculosis, for all earning less than \$1,000 per annum, so that those fearing temporary or total loss of earning capacity will not be afraid to seek proper treatment in tuberculosis institutions.

16. Although the investigations, the replies from eminent authorities, and the literature consulted seemed to show that the bovine type of the bacillus of tuberculosis at a maximum estimation is not responsible for more than ten per cent. of tuberculosis in childhood, we must not allow ourselves to lessen our efforts to combat the disease in animals. We should not have individual and widely differing State laws, but instead uniform bovine laws enforced by Federal authorities in all States of the Union alike. Only thus will we be able to combat the source of infection for human beings which comes from the bovine race.

17. With all this there must be a continued propaganda for the education of the masses concerning the prevention of tuberculosis, alcoholism, and other social diseases; for the improvement of housing conditions, boarding houses, factories, workshops, stores, offices, asylums, prisons, and reformatories; for the prevention of injurious overwork; for healthful recreation of the masses in city and country; for the return to the soil from our overcrowded cities; and above all, for a living wage for all who labor honestly and efficiently and a rational and speedy solution of the problem of unemployment.

Doctor Knopf says that in spite of all our efforts we are still losing 200,000 people annually in the United States from tuberculosis. As a result of this loss of life and earning capacity of adults and the maintenance and support of the children and the consumptive poor, \$900,000,000 are annually spent on this preventable and curable disease. To carry out even the elaborate program just outlined will not cost \$900,000,000 a year. If at first it should even approach this vast sum, within a very few years the expenditure as well as the morbidity and mortality from tuberculosis would be reduced to a minimum.

Doctor Knopf concludes that, while he is willing to grant that an early and benign infection may be an immunizing factor, it is well known that this immunization is not universal, permanent, nor complete; hence we must spare no efforts to diminish all sources of infection. He recommends the establishment of a Federal Tuberculosis Commission to help carry out such a program as he suggests.

Contemporary Notes.

The Physician's New Year's Prayer.—The *Texas Medical News* for December, 1915, offers physicians the following prayer for professional use:

O Lord, I humbly beseech Thee to sharpen my vision, to make my conscience more sensitive and point out to me more clearly during the coming year,

my full duty as a physician and surgeon. Give me each day, Thy divine light, and instruct me how I may honestly and conscientiously perform my daily tasks for the good of humanity. Impress upon me mine imperfections, both in conduct and in education and impel me to seek from Thee—its source—true knowledge, which, joined to mine own individual effort in those cases entrusted to my supervision, will lead them on to healing. Urge me to seek divine counsel whenever occasion demands and compel me to act towards every patient as though he were a cherished member of mine own family. Eliminate in me all unworthy and ambitious desires and enable me to perform my daily duties in strict accordance with the Golden Rule. May I undertake to perform all my moral obligations with that honesty and sincerity of purpose, in keeping with the honored profession of which I am a member. Extend to me Thy support and help in every laudable undertaking. Make me the embodiment of all that which is holy, righteous, and just, and lend me Thine assistance continually, in mine efforts to relieve suffering. Steady mine hand and sharpen my wits and be with me, to the successful completion of all my surgical labors, thereby aiding me to restore to health and happiness, such as are entrusted to my care, unless it be Thy will otherwise—when, let it be mine to solace and comfort those bowed in bereavement. Do Thou grant all these requests, in the name of the Great Physician. Amen.

Origin of Distinguished Men in America.

Professor Scott Nearing, of Toledo University, analyzes from *Who's Who* the best known men in the United States, according to their places of birth. His conclusions are as follows:

"The facts regarding the place and time of birth, education, occupation, and sex of the younger generation of distinguished Americans lead to some rather significant conclusions. New England, though no longer supreme, is still distinctly in the ascendant as a producer of American leadership. The leadership comes out of the cities to a far greater degree than it does from rural districts. Among the persons listed in *Who's Who* who were born after 1869, the great majority were born in the decade 1870-79. The younger generation of distinguished Americans consist almost wholly of college graduates. In the list of colleges which have educated these distinguished persons, certain institutions, notably Harvard and Yale, stand out preeminently as trainers of leadership. The old learned professions—law, medicine, and the ministry—are losing very rapidly in favor of science and education. There has been a revolution in the source from which community leadership is secured. The younger generation of distinguished Americans is overwhelmingly male; only a few women have pushed into the ranks, and they are found in only three professions. The tendencies which were noted in the earlier study of distinguished Americans appear in this later study—some less, and some more marked. Leadership arises even in this last generation from one half of the population, the men; from one small group of the population, the college bred; from one small geographic area, the northeastern section of the United States; from one small group, the professions."

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 15, 1916.

THE PSEUDOPARALYTIC TYPE OF IN-
FANTILE SCORBUTUS.

The paralysis met with in infantile scorbutus is not real, as it has no organic cause, and being the result of pain, it disappears at the same time. Like the pain, it involves particularly the lower limbs and if the child has taken his first steps, he no longer continues to walk. The legs will be found to be inert, incapable of making any active movement, while passive movements are painful. Occasionally more or less distinct tumefactions may be found on the femur or tibia, which should be carefully noted in order to enlighten the diagnosis, but it may very well happen that the painful paraplegia is the only symptom, thus explaining the many diagnostic errors committed.

The possibility of Pott's disease with pressure on the cord may be suspected, but in scorbutus there is no prominence of the spine and the special sensitiveness over the vertebræ is wanting, while examination of the viscera eliminates the diagnosis of vertebral tuberculosis. An acute infection of the cord, which explained the paraplegia, would have preceded the paralysis, and have been sufficiently severe not to pass by unnoticed. The pain would have been less acute with muscular atrophy supervening rapidly.

When the paralysis involves only one lower limb,

the question of infantile paralysis is naturally considered. Scorbutus sometimes evolves rapidly, but no cases are recorded where the affection develops overnight or within forty-eight hours, as frequently occurs in infantile paralysis. Infantile scorbutus usually evolves without fever, and pain is always present in the paralyzed limb.

Another possible mistake, especially if the infant is rachitic, is to attribute the paraplegia to the latter affection when, in reality, it is due to scorbutus. The rachitic pseudoparalysis appears later than that met with in Barlow's disease, develops with the progress of the rachitis, and is obstinate to treatment, while the scorbutic variety is readily improved by proper therapeutic means.

Syphilitic pseudoparalysis presents some similarity to the scorbutic form, as there are pain and functional impotency of the lower limbs, sometimes with the production of a juxtaepiphyseal syphiloma which may be mistaken for a subperiosteal hemorrhage, but if the symptoms are carefully analyzed this error will be eliminated. Parrot's disease, which is an early hereditary syphilitic manifestation, does not appear after the third month, while scorbutus hardly ever develops before the fifth month. Usually a hereditary syphilitic will present other stigmata of the disease which lead to a correct diagnosis.

In cases where the paralysis is incomplete, when there is merely a functional embarrassment manifested by disturbances in gait, a coxalgia or dislocation of the hip may be simulated, and cases are recorded where the limb has been put up in plaster with continuation of severe pain, and this alone should reveal the diagnostic error.

In these affections, the pain, less marked than in scorbutus, appears when flexion or adduction of the limb is made, and these movements are limited. Radiography will give exact data as to the position of the head of the femur in cases of dislocation.

LAUNDRIES AND DISEASE PREVENTION.

From the point of view of disease prevention the public laundry presents a double problem. There is the danger, though presumably a slight one, of the transmission of disease by imperfectly washed and infected clothing to the patrons. Of greater importance are the health hazards occurring in the industry itself, prejudicing the physical welfare of the workers. Obviously the successful supervision of the workers themselves must depend upon their realization of the necessity for the observance of hygienic rules, and the problem is, therefore, not only one of legislation and inspection, but also of education.

A recent effort to employ the educative method as a supplement to sanitary inspection has been undertaken by the New York department of health, in collaboration with the Department of Social Welfare of the Association for Improving the Condition of the Poor. The latter department has recently published, for use by the department of health inspectors, a bulletin addressed to laundrymen, containing a practical interpretation of the health department's regulations regarding laundries. The explanatory remarks which follow each rule are admirable, transforming a lifeless legal regulation into a natural and desirable requirement.

The regulations which deal with the prevention of infection through the handling of soiled clothes are especially interesting. While little is known regarding the exact amount of tuberculosis acquired by sorters from handling soiled clothes, and while it is not perhaps an important method of transmission, at the same time there seems to be an appreciable risk, particularly on the part of those handling handkerchiefs from tuberculous patients. The department of health requires that such articles, or clothing of any kind, when obviously soiled by blood or pus discharges, be soaked in a disinfectant before sorting, washing, or marking. It requires that handkerchiefs be not handled separately, but marked and washed in containers. The places for marking and sorting should be kept clean and well ventilated, and eating in the room where laundry work is done is forbidden. The explanatory note to the last mentioned regulation points out the never to be overemphasized danger of eating without first washing the hands.

On the side of protecting the public, Regulation 6 of this bulletin requires that all soiled clothes shall be so treated in the process of washing, drying, or ironing as to destroy pathogenic bacteria. The interpretative statement explains that this is to protect the public and that it is good business. It explains further that the clothes should be kept for at least twenty minutes in water at not less than 160° F., practically a rule for pasteurization. That the clothes be subjected to pasteurization either in washing, drying, or ironing, seems to be imperative, judging from the series of bacteriological investigations recently completed by the Bureau of Public Health and Hygiene of the Association for Improving the Condition of the Poor, cooperating with the department of health laboratories. Experiments at the wet wash laundry of the A. I. C. P. on East Thirty-eighth Street indicated that a washing machine, properly equipped and operated, would destroy 100 per cent. of the bacterial organisms or body parasites placed in the clothes for experimental purposes. Further investigation showed

that most of the larger, adequately equipped steam laundries were meeting the requirement. On the other hand, similar studies in which bacterial cultures and numbers of body lice were concealed in the clothes to be washed by the ordinary wet wash laundries, showed that satisfactory results were by no means uniformly obtained. Consequently it is to this phase of the laundry industry that the pasteurization rule is of greatest significance.

As a still further manifestation, not only of co-operation between a private and public agency for industrial and sanitary improvement, but also of the educative method of accomplishing results, might be mentioned the first aid kit for laundries, a list of the contents of which was included in the bulletin. At the present time efforts are being made, through lectures and demonstrations to laundrymen, to encourage the installation of an adequate first aid equipment especially designed to meet the requirements of the laundry. The keynote of the new spirit of education typical of the present New York city health administration is perhaps well indicated by the following quotation from the laundry publication: "Laundrymen—protect yourselves, protect your employees, protect your customers. Read and heed the regulations of the department of health, as interpreted in this booklet. Remember, the department of health is ready and eager to assist the laundry industry, employers and employees, steam laundrymen and hand laundrymen, to give the public sanitary, cleaned clothes, and the laundry workers sanitary conditions of employment."

THE CURRENT EPIDEMIC OF RESPIRATORY INFECTIONS.

For several weeks past there has been an increasing number of reports from the central and eastern portions of the country regarding the prevalence of what has been called *la grippe* or influenza. It is true that many of the cases present a close clinical similarity to true influenza of the respiratory type, but there has been a decided lack of reports on occurrence of the intestinal form of the disease. So striking has been this feature of the epidemic as to raise the question, whether it is truly one of influenza.

Most of the cases hereabouts have begun with coryza and rhinitis, and have been marked by early respiratory involvement extending to the bronchi and lungs. In many there have been more or less marked prostration and complaint of pains in the legs and back. The course in most of these cases has been marked by some febrile reaction, at times severe. But, contrary to the case in true influenza,

the convalescence from the present infection has usually been short and the patients have commonly been able to resume their accustomed duties within a few days after the subsidence of acute symptoms. This does not suggest an infection with the influenza bacillus, even though the mortality of the present epidemic has been considerable.

With the present development of bacteriology, it is remarkable that the nature of the infecting organism or organisms in this epidemic has not been determined. Certainly the discovery of Pfeiffer's bacillus offers no insuperable difficulties. If this organism is the cause of the present outbreak, measures should certainly be instituted at once to guide the public in the prevention of the spread of so serious a disease. A preliminary study conducted in Chicago showed the constant presence in the sputum and nasal discharges of green-producing streptococci and pneumococci and the constant absence of the influenza bacillus. Whether these findings will be confirmed and whether they apply to similar cases in other parts of the country, remains to be seen. They tend, however, to lend support to the suggestions made above that the present epidemic is not one of true influenza. It is to be hoped that further studies will soon be reported, for the epidemic seems to have shown few evidences of waning, and for the sake of prevention and treatment, so long as it threatens us we should know its precise nature.

SOME PHASES OF MEDICAL ETHICS NOT OFTEN DISCUSSED.

No apology or valid excuse can be made for the fee splitter whether he happens to be an eminent consultant or a humble practitioner. It is the latter, however, who is usually made the scapegoat and bears the brunt of the ignominy which should be shared by his more distinguished colleague who is not above profiting by the transaction. This odious commercial practice, which we believe is not a common one, is at least as reprehensible in the consultant who divides his fee with the man who brings him business, as for the doctor who peddles his patients about and sells them to the highest bidder. The sins of the small number of the rank and file in the profession, who have been driven by their necessities to do a thing their consciences cannot approve, have been vigorously and justly chastised in the medical societies and journals. The spasm of virtue and indignation would be more edifying, however, if it were not so often voiced by hypocrites who have themselves been willing gainers by the shady methods they affect to condemn. There are specialists in this city who regularly appropriate

patients seen by them in consultation, relying upon their position and reputation to shield them from the criticism and punishment they do not deserve to escape.

Who does not know the ophthalmologist to whom we may send a patient to be fitted with glasses and later discover to our sorrow that he is treating the nose or throat? Perhaps this phenomenon may explain in a measure the success of the "optometrist" and "refracting optician" who limit their activities to the fitting of glasses. Then there is the gynecologist who takes a too affectionate interest in our patient after the operation, requesting her to report at his office at regular intervals "for observation," instead of obtaining any legitimate information he may require through the attending physician.

Well known institutions are not without blame in this matter. There is the hospital which eliminates with scant courtesy the attending physician who sends in his patient. Fortunately in recent years there have been established many well conducted small private institutions along the lines of the English nursing home, where the patient is well cared for at no greater expense than in the large, richly endowed hospital, and where the physician retains full control of his own patient. In these institutions, provided with skilled graduate nurses, the family physician can usually give his patient better care even after a major surgical operation than is assured by the inexperienced house staff and pupil nurses of the more pretentious hospital in which he must completely surrender his patient. If this fact were more generally recognized it would inure to the improvement of the economic position of the general practitioner, and would be a wholesome influence in restoring the endowed hospital to its proper function of caring for the poor, instead of encroaching upon the field of medical and surgical practice among a class who can well afford to pay for treatment.

There is also the tuberculosis sanatorium which makes no effort to return the patient after discharge to the conscientious family physician, who at the sacrifice of his own pecuniary interests has advised sanatorium treatment. It is indeed whispered that sometimes the medical director does not scruple to build up a private clientele by abducting the patients temporarily intrusted to his care.

APPENDICITIS AND MEDICAL TREATMENT.

T. A. R. Aiyar, L. R. C. P. and S., Edin., writes to the *British Medical Journal* for December 25, 1915, that he has full notes of nine typical cases of appendicitis which occurred among the average daily population of 3,000 Indian laborers, consisting

chiefly of Tamils and Telugas, during a space of eight years. These cases were of all grades of severity, and in at least five of them immediate surgical operation was deemed advisable. But as is well known, the illiterate coolie classes always dread the knife, and owing to the strong opposition raised in every one of these cases, operation had to be abandoned. Blood examination revealed leucocytosis, and there were other unmistakable symptoms of the malady, subjective and objective. In the last two cases of the series, one in a male and the other in a female, life was considered to be in imminent danger, as it was thought that infection of the general peritoneum through perforation of the appendix, could occur at any hour. Of these nine cases, eight ended in complete recovery under conservative treatment; the one death was in an infant fifteen months old. Post mortem examination showed that the appendix was gangrenous and that there was generalized peritonitis; the causative organism of the infection was the pneumococcus; the appendix was widely ruptured, and an orange pip was found adherent to its interior. The adhesions round the affected cul-de-sac were poorly formed and were therefore unable to protect the general peritoneum.

Recovery in the last two cases was instructive. Consideration seems to justify the writer's opinion that even seemingly hopeless cases might at times do well under proper medical care and treatment.

Obituary.

ROBERT NEWTON WILLSON, A. B., M. D.,
of Philadelphia.

Doctor Willson died at the German Hospital, Philadelphia, on January 1st. He was born in Philadelphia, January 3, 1873, and was therefore in his forty-third year; he obtained his A. B. at the University of Pennsylvania in 1893 and graduated in medicine at the same institution in 1897, subsequently taking postgraduate courses in Vienna. He was physician to the Philadelphia General Hospital and pathologist to the Presbyterian Hospital. In 1900, he represented the United States at the Tuberculosis Congress in Naples. Doctor Willson was well known as a writer on medical subjects, particularly on sex hygiene, and was a frequent contributor to the *NEW YORK MEDICAL JOURNAL*, his latest communication, one on Microorganismal Cardiovascular Toxins, appearing on September 25, 1915. Two weeks previously, his communication on the Effects of Tobacco and Alcohol on the Heart was published. Mrs. Dorothea Wurts Willson, of Philadelphia, and one child survive him.

News Items.

The Rush Lecture.—The thirteenth Rush Society lecture will be delivered at the College of Physicians of Philadelphia, Friday evening, January 21st, by Dr. F. M. Allen, of the Rockefeller Institute for Medical Research, his subject being Investigative and Scientific Phases of the Question of Diabetes with Their Probable Relation to Practical Problems of Clinical Medicine.

Food and Drugs Act Declared Constitutional.—The Supreme Court of the United States unanimously upheld the constitutionality of the food and drugs act, as improved by the Sherley Amendment, in an opinion handed down by Justice Hughes on January 10th.

New York Neurological Society.—At the annual meeting, held January 4th, the following officers were elected; President, Dr. W. M. Leszynsky; first vice-president, Dr. F. Tilney; second vice-president, Dr. F. Kennedy; corresponding secretary, Dr. J. Ramsay Hunt; recording secretary and treasurer, Dr. C. E. Atwood.

Erratum.—In our issue for January 8th, in Dr. Max Lubman's communication, Syringing the Ear, page 72, second column, line 26, *Eustachian tube* should have read *facial canal*. The whole passage is clearer if read as follows: The superior portion, containing the body of the incus and head of the malleus, is bounded inferiorly by the tendon of the tensor tympani muscle, and the facial canal in its horizontal portion.

Women's Medical College to Be Enlarged.—Dr. William H. Diefenbach, chairman of the finance committee of the New York Medical College and Hospital for Women, announced a few days ago that the college had purchased the apartment house adjoining the college property. Gratifying progress of the campaign to raise a \$200,000 building and endowment fund was also announced, subscriptions now amounting to \$29,500.

The Reorganization of Cumberland Street Hospital.—The attempt to carry out the plans of the Commissioner of Charities for the reorganization of the Cumberland Street Hospital, Brooklyn, caused the resignation of twenty-six of the forty-two physicians appointed as members of the staff. It is reported that the doctors who are opposed to Commissioner Kingsbury's plan will ask Mayor Mitchell to investigate the situation.

Influenza Epidemic in the United States.—According to reports received by the United States Public Health Service, during the last few weeks influenza has become epidemic in practically all parts of the United States. It is present from the Atlantic seaboard to the Pacific coast and has spread even to central New Mexico. It is also pointed out by officers of the service that the disease is undoubtedly epidemic in many places from which no reports have been received.

Public Lectures on Health Problems of Everyday Life.—The Woman's Medical College of Philadelphia announces two popular courses of lectures open to women. There will be twelve lectures dealing with such subjects as personal health, food, and the care of children, which will be held on Wednesdays, at 4 p. m., beginning January 12th, and twelve lectures on first aid, with demonstrations, on Mondays at 4 p. m., beginning January 10th. These lectures are free to alumnae.

An X Ray Clinic in Brooklyn.—On January 1st there was opened at 960 St. John's Place, Brooklyn, an x ray clinic for patients unable to pay the usual fees for radiographic examination. The examinations will be conducted by Dr. Milton G. Wasch, and the clinic hours are from 8 to 10 a. m., Mondays, Wednesdays, and Fridays. The only charge will be the nominal cost of the plates, one dollar each, except where extra size plates are necessary, for which an additional charge will be made. No prints will be provided and the skiagrams become the property of the laboratory. Patients must be referred by physicians.

Mental Clinics.—On January 8, 1916, a mental clinic was established in the out patient department of the Williamsburg Hospital, Brooklyn, under the direction of Dr. E. M. Somers, superintendent of the Long Island State Hospital, Brooklyn, and Dr. W. A. Macy, superintendent of the Kings Park State Hospital. There are now three mental clinics in Brooklyn, the other two being at the Long Island College Hospital and the Long Island State Hospital, under charge of Dr. E. M. Somers. These clinics have been established as the result of a statewide effort inaugurated by the New York State Hospital Commission, assisted by the State Charities Aid Association, for the purpose of giving free advice and treatment with respect to incipient mental conditions and offering early treatment in the hope of preventing complete mental breakdown. Aftercare work among the insane is also a feature at these clinics, and social workers have been employed.

The American Orthopedic Association announces the appointment of Dr. Mark H. Rogers, of Boston, as editor of the *American Journal of Orthopedic Surgery*, the only periodical in the English language devoted to orthopedics. This journal, which has now completed thirteen volumes as a quarterly publication, will henceforth be issued monthly, the first number in the new form being that of January, 1916. The office of publication has been transferred from Philadelphia to Ernest Gregory, 126 Massachusetts Avenue, Boston. The subscription price is \$4 per annum.

Federal Quarantine Favored by Governor Whitman.—The transfer of quarantine work at the Port of New York to the Federal Government is advocated by Governor Whitman, and one of the reasons given by him for favoring the change is that it would save the State \$300,000 a year. He believes that quarantine at the greatest port of the country is a national function and the cost should not be borne by the State. From the medical standpoint Governor Whitman believed that it could be demonstrated that under Federal control the department would be able to maintain its present high standards.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, January 17th, Philadelphia Clinical Association, Medical Society of the Woman's Hospital, Society of Normal and Pathological Physiology; Tuesday, January 18th, West Branch, County Medical Society; Wednesday, January 19th, County Medical Society (business meeting), Section in Otology and Laryngology, College of Physicians; Thursday, January 20th, Section in Ophthalmology, College of Physicians, Southeast and Northeast Branches of the County Medical Society; Friday, January 21st, Medical Club (annual meeting), Jefferson Hospital Clinical Society.

Medical Association of the Greater City of New York.—A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, on Monday evening, January 17th, at 8:30 o'clock. Dr. John Edward Jennings will read a paper on Cancer of the Breast which will be discussed by Dr. Robert T. Morris and others. Dr. Victor G. Heiser, of the Rockefeller Foundation, formerly director of health of the Philippine Islands, will read, by invitation, a paper on Recent Developments in the Treatment of Leprosy, with reports of a number of cures. Among those who will discuss this paper are Dr. John A. Fordyce and Dr. George H. Fox. Both papers will be illustrated with lantern slides.

The Prevention of Insanity.—The Mental Hygiene Committee of the State Charities Aid Association has issued a pamphlet containing the names of twenty-seven distinguished physicians and other mental health authorities who have agreed to aid in the statewide campaign of education for the prevention of insanity by delivering public lectures on mental hygiene for organizations in New York State, without cost, except actual traveling expenses. The list includes such men as Dr. Smith Ely Eliff, Dr. Henry Smith Williams, Dr. Stewart Paton, Dr. Thomas W. Salmon, Dr. August Hoch, and Dr. William Mabon. Arrangements for lectures should be made through Mr. George A. Hastings, executive secretary of the committee.

Grippe and Pneumonia Still Causing a High Death Rate in New York.—During the past week eighty-five persons died of grippe, compared with ten during the corresponding week of 1915. Since the mortality of grippe per se is low, it is impossible to estimate the number of cases that occurred during the week, but it was undoubtedly large. Four hundred and sixty-six persons died of bronchitis and pneumonia, compared with 347 during the first week of 1915. Heart disease and nephritis show an increased mortality of thirty-four. Undoubtedly, some of these deaths were hastened by "colds" recently contracted.

So far as grippe, pneumonia, and bronchitis are concerned, the following table showing the deaths from these causes during the past four weeks is of interest:

Deaths from	Week ending—			
	Dec. 18.	Dec. 25.	Jan. 1.	Jan. 8.
Influenza	12	24	83	83
Bronchitis	18	39	29	25
Lobar pneumonia	183	251	272	293
Total	213	314	375	401

The total number of deaths reported during the week was 1,880, giving a rate of 17.03, compared with 1,714 deaths reported during the corresponding week of 1915, with a rate of 16.01.

Personal.—Dr. Harvey Cushing, professor of surgery at Harvard Medical School, delivered an address on the Pituitary Body, on Friday evening, January 14th, before the Eastern Medical Society of the City of New York, at a stated meeting held in the New York Academy of Medicine.

Surgeon General William C. Gorgas, of the United States army, has been presented with the gold medal of the Geographic Society of Chicago. The presentation was made at a banquet given by the society Saturday evening, January 8th; after receiving the medal, Doctor Gorgas spoke on Sanitation in Its Relation to Geography.

Dr. Max Lubman has been appointed associate otologist to the Har Moriah Hospital, New York.

Bureau of Psychology at Police Headquarters.—An advisory committee has been appointed for the bureau of psychology recently established at the police headquarters, under the direction of Dr. Louis E. Bischoff and his assistant, Eugene C. Rowe. This committee is composed of the following members: Dr. Edward L. Thorndyke, professor of educational psychology, Columbia University; Dr. Frederick C. Tilney, professor of nervous and mental diseases, medical department, Columbia University; Dr. August Hoch, director of the Psychopathic Institute, Ward's Island; Dr. Woods Hutchinson; former Assistant District Attorney Arthur Train; and Mr. Raymond D. Fosdick. The district attorney's office will cooperate with the work of the bureau.

Enforcement of Patent Medicine Ordinance Held Up.—In the Supreme Court of New York an application has been made for an injunction restraining the Board of Health of the City of New York from the enforcement of Sections 116 and 117 of the Sanitary Code, which sought to require either the publication of the names of the active ingredients of proprietary remedies on the label or their deposit with the board of health. The hearing has been postponed with the understanding that no further cases will be brought by the board until this hearing has been disposed of. Several million labels have been distributed by the department of health to retail druggists to be attached to the stock of proprietary remedies which they had on hand December 31, 1915, when the ordinance went into effect.

Resolutions on the Death of Dr. A. Alexander Smith.—At a meeting of the Medical Board of Bellevue Hospital, held on January 3d, the following resolutions were adopted:

1. A. ALEXANDER SMITH, whose death in the sixty-ninth year of his age occurred suddenly on December 13, 1915, had, for thirty-three years, been a member of the Medical Board of Bellevue Hospital, and for the greater part of that time of its Executive Committee.

The genial quality of his temperament and his abounding faith in his fellows made of Doctor Smith a peculiarly lovable man, endearing him to all with whom he came in contact, but lessening in no wise the forcefulness of his character. He was instant in service, and gave to the poor and needy of his best; not mere outward service, but that supported by strong sympathy and deep religious conviction. Apparently enjoying the best of health, he continued his work actively until almost the very day of his death, and it came as a distinct shock to his colleagues to learn that the silver cord of his life had been loosed, the golden bowl broken.

This minute is to record the sorrow of the Medical Board, their sense of profound loss, and to express their sympathy with the surviving relatives.

Volunteers Wanted for the American Ambulance Corps in France.—Eliot Norton, Esq., of New York, has received a cable from his brother, Richard Norton, commander of the American Volunteer Motor Ambulance Corps, in France, that the corps is in need of ten volunteers. This corps began work at the start of the war and has been doing for the last months the regular ambulance service for one of the French army divisions. It is accordingly held in high esteem and both the methods of conducting it and the merits of its volunteers have been highly commended by the French army and by medical authorities.

The essential requirements for volunteers are that they should be good Americans, in sound health, capable of withstanding hardships and doing trying work in connection with wounded men, with kindness and without complaint. Volunteers should also be good tempered and capable of getting on well with men of all kinds and conditions. In addition, they must be able to drive a motor and talk some French. The men attached to the corps have been principally American college graduates from twenty-five to fifty years of age.

Mr. Norton, whose address is 2 Rector Street, will pass upon the qualifications of men who wish to volunteer.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSII, M. D.,

Olivet, Mich.

Department of Biology, Olivet College.

Second Communication

ACETANILIDE, ACETPHENETIDIN, AND THE COAL TAR DERIVATIVES.

These anilin derivatives have been extensively used both as antipyretics and as analgesics. As antipyretics their chief application has been in cases of bronchitis, influenza and pneumonia, the exanthemata, phthisis, and typhoid. In the two latter conditions their use has fortunately been largely abandoned. Is there any real justification for their retention as antipyretics in other conditions?

Let us accept the theory that fever is the chemical expression of the increased catabolism resulting from the attempts of the organism to combat the toxins of disease. The increased heat, which if not rapidly dissipated would quickly produce death, is kept fairly near the limits of safety by surface radiation from the cutaneous capillaries. The aim of the physician should be, then, failing to find an antidote for the cause of the pyrexia, to assist nature in the process of keeping the temperature within due bounds. This he may do in one of two ways. He may increase rapidly of surface radiation by, 1, providing conditions favorable to increased radiation (e. g., cool, moist applications), or by, 2, reducing the temperature-equilibrium point of the heat centre in the medulla (acetanilide action). The former of these alternatives is almost always adequate, and when used with discrimination never produces any ill by-effects. The second alternative is not always trustworthy, and has, moreover, constant secondary effects which are detrimental and may even prove dangerous. These secondary effects consist of a depression of the normal metabolism of cardiac muscle, and a considerable decrement of the oxygen capacity of the blood through the formation of methemoglobin. This means naught else physiologically than that the patient's resources in his fight against toxemia have been somewhat seriously depleted. In the face of this can any one feel justified in thus reducing his patient's powers of resistance when other and harmless means are at his disposal?

As *analgesics* the various coal-tar preparations have been successfully employed in the treatment of migraine and in neuralgia. Pharmacologists assume that these results are obtained by a chemical blocking of the nerves that mediate sensations of pain, said blocking taking place presumably in the region of the thalamus. So efficient have these products proved in wisely selected cases, that their use seems at present to be justifiable, despite their undeniable ulterior effects, many of which are sometimes ex-

ceedingly alarming and some of which have resulted in fatalities. In using these preparations it should be strictly borne in mind that the obvious benefits secured in neuralgia and migraine are palliative only; the drugs are in no sense curative, even though their power to give grateful alleviation may readily continue until the provocative cause of the distress has more or less completely disappeared. Nevertheless the conscientious physician will earnestly endeavor to ascertain the source of the neuralgic toxin and will seek to eliminate that poison even while he administers another for the temporary relief of pain.

It is probably the part of wisdom, moreover, to select the less poisonous of these several products, acetphenetidin for exauple, and administer it in the smallest adequate doses, 0.2 to 0.6 gram (grains ij to x) being usually sufficient.

The Control of Persistent Cough.—Dr. John B. Todd, of Syracuse, N. Y., writes that persistent cough, caused by streptococcic infections which are characteristic of grippe and infectious colds, is often difficult to control. The cough itself is a cause of prolonging its own existence and often produces pleuritic pain, headache, and inability to sleep. Todd has found the greatest relief can be obtained by the simplest of measures. A few doses of sodium salicylate increase the resistance of the system, and repeated small doses of mineral oil soothe the throat and relieve the cough.

The following Todd has found to be a good combination that is taken readily by children as well as adults:

R Pure mineral oil,3vi;
Oil anise,m̄v;
Syrup of citric acid,3ij;
Syrup of tolu, aa q. s. ad.3iv;
M. Shake. Sig.: One half teaspoonful every hour.

Most of these cases are found in homes when a prejudice exists against the use of fresh air, so whenever we are able to induce the use of a cloth screen in the window of the sleeping rooms, the troubles fade away at once.

Treatment of Rheumatic Fever.—Beverley Robinson, in the *Medical Record* for January 1, 1916, recommends the administration of the salicylates by rectum or intravenously where the stomach is rebellious or the case requires rapid action. The intravenous injections are of ten to twenty grains in twenty per cent. solution and given two or three times in twenty-four hours if necessary. Rectal injections are preferred, and as much as two drams may be given, with fifteen minims of tincture of opium, repeated in twelve hours. The alkaline treatment may be combined with this and salicin in ten to twenty grain doses may be given every two hours when pain in the joints has diminished.

In Robinson's opinion the best combination in-

ternally is ammonium salicylate, five to ten grains, with phenacetin, one to two grains, and caffeine citrate, one grain, in capsules, every two hours. He also prefers warm precordial applications to the use of the ice bag, and advocates the splinting of acutely inflamed joints. Too restricted a diet is a mistake; whisky or brandy may be given in small repeated doses. Too rapid return to walking or to work must be avoided in convalescence, while the best tonics are the glycerophosphates of lime and soda with kola and cinchona.

Prevention of Frost Bite.—S. Delépine (*Brit. Med. Jour.*, Dec. 18, 1915) has conducted an investigation on the mode of production of frost bite involving the feet and has devised a satisfactory means for its prevention in exposed persons. He showed the condition to be due to the loss of heat through combined wetting and chilling of the feet. Prevention could be accomplished by first covering the foot with a woolen sock or stocking, which should be thick and well fitting, but not tight. After the wrinkles have been smoothed out, a thin oiled silk waterproof bag should be carefully drawn on over the sock. Over this in turn should be drawn a second and lighter sock. Then boots two sizes larger than usually worn should be put on. By this means the foot is perfectly protected from moisture and is insulated against the rapid loss of heat by the air confined in the meshes of the inner sock. If the wearer is compelled to indulge in severe exercises, such as long marches, the moisture from the skin may condense within the bag to a sufficient extent to dampen the inner sock, and then the foot will become more or less susceptible to the effects of cold. Under such circumstances the foot covering should be changed as soon as possible. Attention to general health should be urged to keep the patient in as good physical condition as possible.

Local Treatment of Subglottic Ulcerations Following Intubation.—H. Mallet, in *Revue médicale de la Suisse romande* for August, 1915, writes concerning the management of cases of intubation in which reinsertion of the tube, after its temporary removal, is repeatedly necessary, and the total period of intubation is almost indefinitely prolonged. The condition in such cases is attributed to the formation of ulcers in the laryngeal mucous membrane in the region of the cricoid cartilage, upon which the tube rests, these ulcerations, in turn, provoking edema below the glottis and laryngeal spasm. Cure of the ulcers is the chief indication, but this is difficult owing to the fact that the child is unable to breathe without the tube. The only remaining alternative is to perform tracheotomy. In a case of pneumococcal croup recently under the author's observation, intubation was required no less than nine times, the total period of intubation being twenty-seven and a half days, in the course of which the tube was out of the larynx altogether only forty-two hours. On the sixteenth day, extubation, even with the extractor, becoming difficult, tracheotomy had nearly been decided upon when, at the suggestion of D'Espine, a procedure originally recommended by O'Dwyer and subsequently reported on by von Bokay was resorted to. Strips

of commercial gelatin, four to six mm. broad, were prepared, softened in hot water, carefully coiled about the tube, and dusted with desiccated alum, the latter being then forced into the gelatin with the fingers; a second layer of gelatin and alum was then applied. Upon introduction the tube was retained for a time, but then became plugged with the gelatine and had to be removed. Mallet next devised a new mode of application, preparing a mixture of alum, starch, water, and a little glycerin, in such proportions as to form a thick paste. A thick coating of this was applied to the tube, the latter allowed to dry a few hours, and then inserted. The tube was easily retained for seventy-four hours. The action of the alum on the ulcerations was so satisfactory that upon removal of the tube at the end of this period, the child breathed with great ease, and two weeks later its voice was entirely restored to normal. Mallet recommends the use of the alum coated tube whenever the period of intubation exceeds 150 hours or the tube, upon removal, shows black or white spots indicative of laryngeal ulceration.

Recurrent Bronchitis.—In a paper on this subject in the *Texas Medical Journal* for December, 1915, Dr. L. P. Tenny, of Troup, Texas, recommends, to prevent a return of the attack:

℞ Sodii salicylatis, 3ii;
Sodii bicarbonatis, 3ii;
Elixiris simplicis, 5iv;
Aque destillate, q. s. ad 5iv

M. Sig.: Teaspoonful in half a glass of water three times daily, after meals.

Treatment, he says, is directed to the relief of the attack, and in the interval to prevention of a return of this distressing condition. Treatment of the acute symptoms differs radically from that of acute bronchitis. It is useless and positively harmful to give those little patients a lot of expectorants and syrups. He has tried them all repeatedly, and, if they have an effect at all, it is to aggravate the symptoms.

Ten grains of bicarbonate of sodium, begun early in the attack, and repeated every two hours, will do more to cut it short than anything else. He also gives sodium salicylate in doses of five to ten grains, according to age, every three or four hours.

If the dyspnea becomes very marked, and breathing labored, steam inhalations of creosote will often alleviate the symptoms and add to the comfort of the patient. Ten drops of creosote are used in a quart of boiling water.

The Nature of Pharmaceutical Naphthene Oil.—Under this title Benjamin T. Brooks (*Journal A. M. A.*, Jan. 1, 1916) discusses the composition of the so called liquid petrolatums of American and Russian origin. He finds that, although the crude petroleum from different sources vary widely in composition, the refined products intended for internal use are all composed of the naphthene hydrocarbons and the American products have the same medicinal properties as the Russian. The process of purification in each case completely removes the paraffins and other constituents which are not desired. Many tests have been proposed for the determination of the suitability of oils of this class for

internal use, but the best and most satisfactory are the determination of viscosity or specific gravity; the taste, or absence of taste; and the keeping quality. The presence of a slight fluorescence is of no importance. Many samples of oil which appear to be perfectly satisfactory when fresh, will acquire a yellow color and a disagreeable taste when kept, especially if exposed to the light. On account of the greater danger of leakage from the lighter oils, no oil should be used internally which has a specific gravity less than 0.885. Owing to the chemical nature of the suitable oils the name, "White naphthene oil" is suggested to replace the less descriptive term, "Liquid petrolatum."

Chronic Poisoning by Emetine. In a preliminary note, H. H. Dale (*Brit. Med. Jour.*, Dec. 18, 1915) cites some clinical observations of instances in which the long continued use of emetine in doses which were individually harmless apparently led to the development of toxic symptoms. The symptoms observed included diarrhea and general toxic manifestations, and suggested the possibility of cumulation. Experiments made on cats and rabbits showed that the repeated administration of subtoxic doses invariably led to cumulation with the development of diarrhea, lethargy, somnolence, and even coma. Post mortem examination of these animals showed intestinal irritation and damage to the kidneys and liver. These animal observations together with the clinical experiences led to the warning not to indulge in the indiscriminate use of emetine beyond the limits already established as the result of expert observation.

Pharmacological Action of Protiodine. V. Susanna, in *Riforma Medica* for December 18, 1915, reports that experiments show protiodine to be less toxic than Iago's solution, and to contain more iodine than any other organic combination. It is painless when injected subcutaneously.

Treatment of Tetanus at the Front. N. Caprioli, in *Giornale internazionale delle scienze mediche* for December 15, 1915, recommends treatment of lacerated wounds, especially from shrapnel, by irrigations of hydrogen peroxide with iodine, and then the application of a mixture of balsam of Peru, one part; castor oil, one part; and ethyl alcohol, two parts. Immunization with antitetanic serum is of great value, while curative treatment with the serum in doses of at least 100 units, repeated two or three times daily, gives surprising results in seemingly hopeless cases. This antitoxin may be given subcutaneously, intravenously, intraspinally, endocranially, or along the course of nerves in localized tetanus.

Injections of Whole Blood in Purpura.—H. W. Emsheimer (*Journal A. M. A.*, Jan. 1, 1916) believes that the best methods of treating purpura hæmorrhagica are by the intravenous injection of human blood serum, blood transfusion, or the intramuscular injection of whole human blood. These should be given in addition to the usual methods of treatment. The third method is specially recommended on the grounds of simplicity and effectiveness, and should be given preference over the two others in every case. Owing to the fact that it may

have to be repeated in severe or intractable cases, it is wise to withdraw a considerable amount of blood from the donor at the first sitting, which can be citrated and kept for future injections when needed. A case is reported in which the intramuscular injection of whole human blood led to prompt recovery after all other methods, including the administration of calcium lactate, epinephrine, arsenic, and codeine, had failed. The intramuscular injection of whole blood should also be useful in the treatment of hemophilia and other hemorrhagic conditions, wasting diseases, and in many infections.

Candy Medication.—A fairly inclusive outline of the possibilities of candy medication is given by Bernard Fantus (*Journal A. M. A.*, Jan. 1, 1916), largely from his own researches. Three bases are available for the extemporaneous preparation of candy prescriptions. The first has the following formula:

R	Tincturæ vanillæ,	5.0;
	Pulveris cacao }	
	Dextrose, }	10.0;
	Sacchari pulverati,	80.0.
	M. Tritura bene.	

If 0.5 c. c. of ten per cent. spirit of cinnamon is substituted for the tincture of vanilla in the preceding formula a preparation will be available for disguising thyroid, sulphur, podophyllum, etc. The third vehicle has the following composition:

	Alcoholic solution of saccharin (3%).....	15.0;
	Liquid petrolatum,	25.0;
	Starch	75.0.

Mix the starch with the saccharin solution, allow the alcohol to evaporate, then rub in the liquid petrolatum.

This last preparation should be mixed with sugar, when it will form a dry powder. Each of these three vehicles may be kept on hand and be mixed with the prescribed amounts of the active drug desired and made into compressed tablets. It is advisable to adjust the proportions so that the finished product will yield a tablet of 0.30 gram size (grains v). Among the drugs which can be suitably administered to children in the form of these candy tablets may be mentioned: Cocaine, anesthesin, morphine, bismuth subnitrate or subcarbonate, and cerium oxalate as antiemetics; apomorphine, tartar emetic, or emetine, as emetics or nauseant expectorants; sodium bicarbonate, magnesia, or chalk as antacids; many cathartic drugs; calomel, gray powder, and certain salicylates as intestinal antiseptics; powdered digitalis, atropine, strychnine or caffeine as stimulants; hexamethylenamine, sajodin, sabromin, adalin, sulphonal, phenacetin, antipyrin, salophen, reduced iron, arsenic trioxide, iron carbonate, and many others. Even quinine in the form of aristochin can be given in perfectly disguised form in these tablets.

The Bromides in Epilepsy.—W. Alden Turner communicates (*Brit. Med. Jour.*, Dec. 18, 1915) his experiences with the use of bromides, summarizing them by saying that in 25 per cent. of the cases their administration caused a reduction in both severity and frequency of the fits and their ultimate arrest in many instances. The cases in which these results were secured were mainly mild and free from mental symptoms. In a second

similar proportion of cases less marked, but still noticeable beneficial results were observed, while in the remaining 50 per cent. the drug had no influence. The last were the severe cases.

Treatment of Sterility in Women.—R. von Fellenberg, in *Correspondenz-Blatt für Schweizer Aerzte* for November 6, 1915, after reviewing the various causes of sterility considers the possibility of its being due to faulty internal secretions. He has found that the administration of ovarian extract has been followed by conception in some cases, and that thyroid treatment has produced the same result in others. He has used the latter successfully in a number of cases of habitual abortion, and calls attention to the reciprocal influence of the thyroid and genital organs. During this treatment the blood count must be made carefully, every two weeks at least.

Novocaine and Adrenaline.—Bechtol (*Journal of the Indiana State Medical Association*, December 15, 1915) says that the preparation of novocaine and adrenaline for local anaesthesia is simple. For minor operations, or when working in a home, sterile tablets of from one third to one grain are employed and are ready as soon as dissolved in sterile water. In hospital practice, for an ordinary hernia or laparotomy, two to three ounces of a 0.5 per cent. solution, to which is added six to ten drops of a one to 1,000 adrenaline solution, is prepared by first boiling the crystals of novocaine and later adding adrenaline. A fresh solution is made for each operation. The maximum dose of novocaine is variously given as from seven and a half to twenty-two grains.

Pyorrhoea alveolaris.—Barnes (*Medical Review of Reviews*, December, 1915) says that the important thing in the treatment of this disease is the cleaning of the teeth and gums. Whenever emetine, vaccines, or any other specifics have been successfully used, they have been supported by energetic cleansing of the teeth and gums from tartar and food debris, and the latter alone or with the addition of an antiseptic, often results in the disappearance of the inflammation.

Tropical Dysentery.—F. F. Martinez, in *Revista De Medicina y Cirugia Practicas* for November 21, 1915, asserts that the older treatments have been discarded as not efficacious; such are rectal irrigations with tannin, alum, sulphate of copper, potassium permanganate, nitrate of silver, also the internal administration of calomel, magnesia, and castor oil. Five treatments have withstood the test, of which the first is the administration of sulphate of sodium or magnesium in doses of four grams an hour in a little water until the bowel movements become normal. The second is the use of ipecac which, according to the Brazilian method, is given in an infusion of the root, from two to eight grams daily. A second method is that of infusing four grams of ipecac root in a 100 c. c. of water, to which are added cinnamon and opium. This mixture is given in teaspoonful doses every hour with the patient's head low and with avoidance of even the slightest movement. At the end of eight hours, treatment is suspended until the

next day. Laveran advised the use of ipecac, calomel, and opium in powdered form, combined with intestinal irrigation with an infusion of ipecac. Elkossan and simaruba are two drugs less commonly known. Lastly, the specific action of ipecac in amebic dysentery was demonstrated by Leonard Rogers, in 1907. Velder showed that a solution of emetine was fatal to these amebas in dilutions up to one in 100,000. The feeding of dysentery patients is difficult, milk being badly borne, and it is better to give rice water or barley water instead. As soon as the diagnosis has been made, an injection of four cgm. of emetine hydrochloride should be given and repeated in twelve or twenty-four hours. This treatment may be repeated in about ten days to dispose of whatever amebas may have resisted the first medication.

Hyperthyroidism.—Baar (*Medical Sentinel*, December, 1915), in the discussion of a paper on this subject before the Tri-State Medical Association, called attention to a class of cases in which this condition is present without exophthalmos, enlarged thyroid, or even tachycardia, when it is often overlooked. X ray treatment over the thyroid had a surprisingly good result in two cases, one of which had been treated for cardiac insufficiency, the other for asthma. The former patient, who had been unable to leave the house, was able within two weeks to walk fifteen or twenty blocks without shortness of breath, and with no cardiac medication.

Specific Treatment of Leishmaniasis in Children.—R. Jemma, in *Riforma medica* for December 4, 1915, says that in Palermo this disease is next as a causative factor of mortality to tuberculosis, the exanthemata, and diphtheria. Spontaneous cure occurs in only fourteen per cent. of all cases, while immunizing treatment has been unsuccessful. Drug therapy has been unsuccessful, even with the recent preparations of arsenic or with mercury or iodides. Brasile has obtained wonderful results with antimony tartrate, which is given in a sterile solution of one per cent. in water intravenously, as necrosis frequently follows its subcutaneous or intermuscular use. Six to eight injections are usually sufficient, containing altogether thirty to forty cgm. of the antimony salt. Contraindications are nephritis and profound anemia. It seems established that this treatment does not produce lesions in the vital organs, and that its action is first on the endothelium of the bloodvessels of the liver, then on the bone marrow, and lastly on the spleen.

Recovery of Motor Function in Old Hemiplegia.—In a preliminary report (*Journal A. M. A.*, December 18, 1915) Shepherd Ivory Franz, Mildred E. Scheetz, and Anita A. Wilson present the records of five cases of long standing hemiplegia in which they secured further recovery of motor function long after the paralytic state might have been regarded as permanent. The results were secured by suitable massage and vibration, by passive movements, and by the encouragement of the patients to use the semiparalyzed muscles. The first two methods were employed to prepare for the third. During the second of the methods considerable pain

was often produced in the attempt to overcome contractions. The results were surprisingly good and did not seem to differ with regard to the different causes of the hemiplegia. The best results were obtained in patients who cooperated in carrying out the voluntary movements.

Extrapleural Pneumolysis Treated by Injections of Paraffin.—F. Oeri, in *Korrespondenz-Blatt für Schweizer Aerzte*, for October 23, 1915, comments on the method used by Baer for compressing the lung in pulmonary tuberculosis. The object is practically the same as that of artificial pneumothorax, but the compression can be made more accurately upon the diseased area and can be applied in cases in which local conditions prevent an effective pneumothorax. A small piece of a rib is resected over the diseased portion of the lung, or over a cavity, which cannot shrink sufficiently on account of its fixation to the breast wall. The pleura is dissected from the lung, in the layer between the costal pleura and the endothoracic fascia, the surface of the lung is pressed in so as to bring the walls of the cavity in contact, and the extrapleural cavity thus found is filled with a paraffin mixture that is kneadable at the temperature of the body. The wound is then closed carefully. The entire operation is done under local anesthesia. The results in the three cases seem to have been very good.

Spengler's Immun-Körper in Tuberculosis.—This preparation, according to Granville N. Ryan (*Chicago Medical Recorder*, Dec., 1915), contains lysins which disintegrate the sheath of the tubercle bacillus and expose the organism to destruction. It also contains antitoxins and, by the absorption of the poisons liberated from the destruction of the bacilli, leads to an active immunity. The preparation may be used either in relatively large doses with short intervals for rapid immunization, or in smaller ascending doses at longer intervals for the gradual development of immunity. It may be given either hypodermically or by injection, the former being the more satisfactory. Four years' experience with the remedy has shown it to be of value in very advanced or moribund cases in giving comfort. When uncombined with institutional care, it has given good results in a considerable number of early cases, most of the patients having been able to continue at their daily work during the course of treatment. It seems to be a valuable adjunct to other measures commonly employed in the treatment of pulmonary tuberculosis.

The Technic of Skin Grafting.—W. R. Griess, at a meeting of the Academy of Medicine of Cincinnati (*Lancet-Clinic*, December 11, 1915), condemned the dressing of skin grafts with large meshed gauze, followed by irrigation, or with a dusting powder or heavy caged dressing. The following improved technic, recently employed by him, is recommended as having yielded better results than any he had previously obtained or seen obtained in other clinics: A large graft is first cut with the razor in the usual way. The granulating surface is not curetted, but simply washed with gauze saturated with normal saline solution, great care being taken not to induce bleeding. The graft

is then put in place, the necessary spreading being effected with large needles. Adjoining grafts may be overlapped slightly, a little retraction usually following. No powder or gauze is applied as a dressing, but the part is protected with a cage of netting about eighteen inches from its surface. Each day thereafter, the grafts are compressed gently with the fingers or with a sponge moist with saline solution, to squeeze out from under the edges any secretions that may have accumulated. The grafts are usually adherent at one point in from twenty-four to thirty-six hours. With great gentleness in the aftertreatment, firm union usually takes place throughout the graft in from ten days to two weeks. The author lays stress on the falsity of the prevalent view that because a little secretion exists under a graft, the latter will perish; with proper aftertreatment every vestige of the graft can usually be saved. To be remembered, however, is the fact that grafts will not hold on exuberant granulations.

Electricity in War Injuries.—M. Bartolotti, in *Riforma medica* for December 4, 1915, remarks that radiodiagnosis is of vital importance in clinical work, and it is important that the fighting forces in the field be supplied with a portable x ray apparatus, which is best mounted on a special automobile. Radiography must not be considered as a luxury in war hospitals, but as a most important part of examination and treatment.

Practical Therapeutical Notes from India.—Thakur Ramdhari Sinha, a native Hindu practitioner, in the *Indian Medical Record* for October, 1915, writes of his personal experience with drugs. Gelsemium, he says, is a trustworthy remedy when there is determination of blood to the head, indicated by bright eyes, contracted pupils, restlessness, and excitement of the nervous system. Sodium phosphate is a valuable saline laxative, acts on the blood, favors elimination of urea, is an excellent chologogue, and increases all the secretions of the body. In alopecia a small quantity of equal parts of glacial acetic acid and chloroform may be applied lightly with a camel's hair brush once a day. Yellowness of the conjunctiva, jaundice, intestinal colic, and tenderness of the right hypochondriac region indicate chionanthus. Salicin is a stimulating antiperiodic, antimalarial drug where there is much muscular pain and soreness. Bromide of potassium one dram and chloral hydrate twenty grains, with plenty of water, given every half hour or hour is good in strychnine poisoning. Balsam of Peru applied after the child nurses, and washed off with warm water before the next nursing, is almost a specific for cracked and fissured nipples. Good results are obtained in urticaria from sulphocarbolates of zinc, soda, and lime, preceded by a saline laxative. Calcium sulphide in doses of one quarter to one half grain every two hours, is efficient in tonsillitis. It is not generally known that irritated lids are caused occasionally by the use of tobacco, and that the irritation will disappear when the tobacco is discontinued. Drop doses of tincture of cantharides is useful in the dribbling of urine common among women past middle life. In the treatment of remittent and intermittent fevers in a malarial region, one sixth grain doses of quinine ferro-vanide several times a day are recommended.

Pith of Current Literature.

BULLETIN DE L'ACADÉMIE DE MEDECINE.

October 26, 1915.

Gangrenous Rigidity, by Prat.—This hitherto unrecorded condition consists in the appearance, in a gangrenous limb or one doomed to early gangrene, of muscular rigidity so pronounced that considerable force, even in the case of the fingers, has to be applied before motion can be induced. It may be limited to a single muscle, e. g., the biceps, or involve a group of muscles or an entire segment of a limb. Repeated back and forth movements of the stiffened parts remove the rigidity, and can be executed without pain, the parts being already insensitive. The rigidity appeared at an interval of eighteen to forty-eight hours after reception of the wounds, in the author's cases. It is considered related to direct traumatic changes in the main vessels of the affected limb, each case witnessed exhibiting such vascular injury. It is not due to nerve irritation, for in two cases complete section of the nerve supplying the muscles of the injured part was noted; such section should have entailed paralysis and not contracture. The rigidity appeared to be a grave premonitory indication of massive gangrene, and experience leads Prat to recommend immediate amputation or disarticulation where the sign is met with. Recovery took place in those of his cases in which thoughts of conservative treatment were abandoned from the outset.

November 2, 1915.

Assimilation of Fats in Typhoid Fever, by Mercier, Michelon, and Chemineau.—In the normal subject 95 per cent. of the fats ingested are assimilated. In typhoid cases the authors found that whereas at the height of the febrile period fats are assimilated almost as well as normally, their assimilation thereafter becomes more and more imperfect throughout defervescence and well on in convalescence, only 48 per cent., for example, being in one case retained on the fiftieth day. This imperfection in assimilation persists, gradually diminishing, for a long time, only 56 per cent., for example, being assimilated five months after the onset of the disease. Qualitative study of the fats excreted, moreover, showed that, whereas in health neutral fats represent 44.5 per cent. of the total of fats excreted, the fatty acids, 55.4 per cent., and the soaps, nil, the fatty acids and soaps rise sharply in typhoid fever to a combined figure of 75 to 85 per cent., comprising a large proportion of soaps, and remain slightly above normal for a long period after the termination of the disease. Comparative observations in other infectious diseases showed, e. g., a rise in the excretion of fats to 8 to 13 per cent. in measles, and in erysipelas to 20 per cent., followed by a rapid return to normal. Purely intestinal disorders were found always to cause an excessive fat excretion, which persisted according to the degree of chronicity of the affection present.

PRESSE MÉDICALE.

November 4, 1915.

Cardiac Neuroses in Military Practice, by Alfred Martinet.—More than two thirds of the heart cases met with by the author in military prac-

tice have been instances of cardiac neurosis. From the latter group are excluded, not only all organic heart disorders, but also all cardiac manifestations dependent upon an organic central or peripheral nervous condition and all temporary cardiac disturbances of reflex origin, e. g., extrasystoles, the result of indigestion. Stress is laid on the close relationship of the circulation to the nervous system, the former reacting with surprising ease to the nervous excitation resulting from war conditions, whether this excitation is latent or manifest, conscious or unconscious. In the majority of apparently normal subjects the effect is merely a temporary insomnia, tachycardia, and nervous state, which passes off in a few days; but in others the psychic shock sustained induces a prolonged or permanent neurocirculatory disorder. The differential diagnosis between cardiac neurosis and organic disorder is not always easy. The most important distinguishing sign to be looked for is the neuropathic basis which always stands in the background of cardiac neurosis. Another feature is the striking prominence of nocturnal manifestations such as sleeplessness, angor, dyspnea, and pseudocardiac asthma. Neurocardiovascular instability, characterized by marked variations in the pulse rate, blood pressure, auscultatory findings, and arrhythmia from very slight causes, are also manifest. The customary original causes of organic heart disease, such as rheumatism, typhoid, syphilis, diphtheria, plethora and autointoxication, gout, etc., cannot be elicited, and the vasomotor reflex manifest in changes in the pulse rate and blood pressure upon changes from the recumbent to the erect position or upon motor tests is found exaggerated. In the majority of cases of neurosis the systolic and diastolic pressures, contrary to prevalent views, are high; in only a small minority are they low.

BRITISH JOURNAL OF CHILDREN'S DISEASES

December, 1915.

Efficacy of Antimeningococcic Serum in Epidemic Cerebrospinal Meningitis, by Arnold Netter.—The results are based on a series of cases observed at the Hospital Trousseau in Paris during the 1915 epidemic. A generalized infection, a meningococcus septicemia, was frequently seen, generalized eruptions were quite common, especially generalized purpura. Exomeningeal localizations, such as suppurative arthritis, metastatic iridocyclitis, and ulcerative vegetative endocarditis have also been more frequent; 226 cases, treated with serum since March, 1908, show a mortality of 27.4 per cent. When the deaths occurring within twenty-four hours and those which could not be attributed to the meningococcus are deducted, the mortality is only 12.5 per cent. Before the serum was used the mortality was 48.5 per cent. for sporadic cerebrospinal meningitis and 83.3 per cent. in epidemic cerebrospinal meningitis. Some of the causes of death were association with tuberculous meningitis; bronchopneumonia; tuberculous bronchopneumonia, marasmus, and cachexia following obstinate vomiting. The decline in mortality is not the only result of the treatment with antimeningococcic serum. In general, the symptoms are more mild, the recovery is more rapid, and complications and sequelæ are rare. Owing to the rapid

recovery extreme emaciation was never noticed in the convalescence. Intraarticular injections were given in cases of suppurative arthritis. In a case of vegetative endocarditis it was given intravenously. The serum should be given early, in large doses and repeated often—at least daily for three days, and longer if the spinal fluid contains meningococci. Never less than seventy c. c. was given during the course of the treatment. In infants a symptom which should be looked for is prominence of the fontanelles. Meningococcal spasm may show itself in the form of purpura, a morbilliform eruption, inflammation of the joints or eyes, or fever of an intermittent type. Polyvalent serum gives better results than monovalent serum, as there are several species of parameningococci, each of which requires a special serum. Beside being given intramuscularly, intraspinally, and intravenously, it has been injected into the lateral ventricles through the fontanelle in infants and after trephining, into the joints and into the vitreous of the eye.

BRITISH MEDICAL JOURNAL.

December 18, 1915.

A Classification of Meningococci, by Arthur W. M. Ellis.—A total of forty-six different specimens of meningococci from widely different sources were studied for identification and classification by means of agglutinin reactions. All the organisms studied were found to belong to two strains as determined by their agglutination properties, although three were rather feeble in agglutinating powers. From these observations the need for so called polyvalent antimeningococci serums disappears and only two serums should be made, one from each of the two types. In the treatment of the disease, the organism should be isolated and tested against these two serums to determine the one which should be employed. In the preparation of the serums the strain used in each case should be selected for its power of producing agglutinins, for different strains of organisms in either class differ widely in their properties. Both types were found to be widely distributed, although in different epidemics their relative occurrence differed. The so called parameningococci were found to belong to the second type of true meningococci.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

January 1, 1916.

Occupational Injuries Due to Radium, by Thomas Ordway.—No less than nine persons engaged in the routine handling of radium were observed by Ordway. In each of these cases there were marked local changes involving the fingers. These comprised chiefly a flattening of the typical skin ridges, thickening and scaling of the superficial layers of skin, atrophy of the skin, and even intractable ulceration. These local lesions were usually slight, but they were combined with marked subjective symptoms, such as anesthesia, paresthesia, tenderness, throbbing, and pain, all of which tended to be persistent. General systemic symptoms may occur and certain blood changes may follow exposure to radioactive substances. The most typical blood change is a relative and absolute increase in the lymphocytes. Both the local and gen-

eral disturbances produced by radium may be avoided by the careful observation of protective measures and by having the exposed persons work in rotation with periods during which they are not exposed.

Tardy or Late Paralysis of the Ulnar Nerve, by J. Ramsay Hunt.—Three cases of this uncommon condition are described, all resulting from a fracture of the elbow in the supracondylar region. The intervals which elapsed between the fracture and the first signs of neuritis were thirty-six, thirty-nine, and six years, respectively. The signs were typical of a pressure neuritis of the trunk of the ulnar nerve leading to muscular atrophy and sensory disturbances. The treatment in these cases should be surgical for the relief of some pressure or constriction affecting the nerve, as it lies in the groove just at the inner condyle of the humerus.

Hypertrichosis and Variations in Female Secondary Sex Characters, by G. R. McAuliff.—From the careful observation of a typical case and a survey of the literature of the subject, the conclusion was reached that the condition rests on a basis of disturbed pluriglandular equilibrium. The suprarenals seem to be the glands chiefly concerned with sexual characteristics, and next in importance are the pineal, the hypophysis, the ovaries, the thymus, and the thyroid in order of importance. The disturbance of a single one of these glands seems seldom able to produce marked hypertrichotic changes.

Abderhalden Test in Tabes and General Paralysis, by Frederick H. Falls.—It is again brought out that the Abderhalden reaction is not due to the presence of specific protective ferments, but merely to the action on the blood proteins of the contained tryptic ferment after the antitrypsin has been absorbed by the substrate. Quantitatively, however, the amount of tryptic ferment in the blood serum differs widely in different pathological states, and a study of the blood in cases of tabes showed it to be increased above normal. The increase in general paralysis was found to be even greater, which serves to substantiate the belief that this is the more active process and conforms to the findings in certain acute infectious diseases. In tabes and in general paralysis the reaction was found to bear no relation to the duration of the affection or the age of the patient. These findings may possibly prove of diagnostic or prognostic value.

MEDICAL RECORD

January 1, 1916.

Frontal and Maxillary Sinusitis Due to Staphylococcus Albus, by Ralph Oplyke. A case with sequelæ requiring, in all, twenty-one operations, was due solely to *Staphylococcus albus*, which is usually more or less harmless.

LANCET-CLINIC.

December 18, 1915.

Dyspnea, by J. E. Greiwe.—That accumulation of carbon dioxide in the blood is the essential factor in the production of Cheyne-Stokes breathing is denied. The importance of other factors in

this and other types of dyspnea is emphasized. Clinical as well as laboratory researches have shown that acids diminish and alkalies in general increase the affinity of the hemoglobin of the blood for oxygen. A comparatively slight physical effort involving muscular action results in the formation of an excess of lactic acid, which is sufficient to reduce the oxygen fixing property of the hemoglobin. Barcroft has demonstrated further that the salts of the blood play an important role in sustaining the affinity of hemoglobin for oxygen. In some cases of dyspnea showing Cheyne-Stokes breathing the writer was able to demonstrate a marked acidosis. In cases with dyspnea unaccounted for by mechanical circulatory lesions we are brought back to imperfect renal function as the actual cause of the dyspnea. It is not the retention of urea which causes the difficulty, but the formation and imperfect elimination of nonvolatile acids, often only in extremely small quantities, which reduce hemoglobin efficiency and thereby produce dyspnea. In the treatment heart tonics alone will, in consequence, not yield the best results. Physical rest, limitation of the diet to six ounces of milk every three hours, the administration of plenty of pure water, and free purgation, together with digitalis or strophanthus, will lead to a much more pronounced improvement in these cases.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

December, 1915.

Gas in the Tissues, by J. M. Woodburn Morison.—Cases are divided into cases of true gangrene and those of localized gas formation. In the former, the gas formation is exceedingly rapid, spreads along the muscle sheaths, and leads to complete disintegration of the muscles. The smell of the gas is indescribable. In the second group of cases the gas forms in the vicinity of the metal and collects in bubbles of varying size, forming slowly and showing no tendency to spread. In the first group of cases the diagnosis can be made without the x ray; in the latter group, the x ray frequently shows the presence of gas long before it can be diagnosed by any other method. If present, surgical interference is at once indicated.

Alternating Current from the Public Mains in the Treatment of Neuritis and Muscular Atrophy, by H. Bordier.—The same current as is used for lighting is employed. The current is of a strength of 110 volts with a periodicity of fifty a second. Its intensity is regulated so that it can be gradually increased from zero by the chloroform bottle rheostat. In the treatment of muscular atrophy the alternating current should be rhythmic in character. This can be obtained by three methods: 1, The roller electrode, in which the indifferent electrode is placed at the proximal end of the affected limb or on the back, and the roller, which should be soaked in warm water, is slowly passed up and down the affected muscles. 2, the metronome; this instrument gives a very regular rhythm, but it has the disadvantage of making and breaking the current very sharply; 3, the rheostat interrupter; this instrument has the advantage of giving a rhythmic effect which is very regular and, moreover, slow and progressive. In

the treatment of neuritis, whether the reaction of degeneration is present or not, the alternating current should be kept steady, no rhythmic device being used. Practically, the industrial alternating current has the advantage that it cannot produce burns. The sensation of the alternating current is not painful when the current is weak. It can also be used to diagnose the reaction of degeneration.

The Electrocardiograph in the Diagnosis of Diseases of the Heart, by George E. S. Ward.—An electrocardiograph record of a single contraction of the heart produces four or five deflections. These deflections are labelled empirically P, Q, R, S, and T. The first or P wave is caused by a contraction of the auricles; the others all occur during ventricular systole. The Q wave may be entirely absent and the depth of the S wave is variable. The P, R, and T waves should be in an upward direction, but the Q and S waves are downward deflections. Clinically three nonpolarizable electrodes are used. One is placed upon each forearm and one is applied to the left leg. When any two of these electrodes are fixed and the patient is connected to the galvanometer, the usual deflections above described can be obtained. Three different tracings are usually taken from each patient: 1. With both arms in circuit with the galvanometer; 2, when the right arm and left leg are in circuit; 3, when the left arm and left leg are in circuit. By means of these tracings, changes in the ventricular muscle, changes in the auricle, and cases in which the connecting link between the auricle and the ventricle, the auriculo-ventricular bundle of His, is involved in a general myocardial process, can be diagnosed.

Proceedings of Societies.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-first Annual Meeting, Held at Lexington, Kentucky, October 19, 20, and 21, 1915.

The President, Dr. HUGH CABOT, of Boston, in the Chair.

(Continued from page 94.)

Gastric and Duodenal Ulcer from the Standpoint of the Internist.—Dr. W. F. BOGGESE, of Louisville, urged that the internist be more careful and painstaking in his examination of the various digestive disturbances that came to him, to fit himself to recognize these conditions in their earlier stages, and to appreciate the fact that there was a medical side to the question, and that if the majority of these patients went to the surgeon, it was a reflection on the internist's diagnostic as well as his therapeutic acumen. When did these cases cease to be medical and become surgical? In answer he would say that no time limit could be stated. Each case was an individual one. Not in two weeks, nor in six weeks, nor even in six months, if the patient was holding his own, could they feel that medical means had been entirely exhausted or had proved futile. Certainly not surgical when the patient was symptomatically and comfortably well, nor when the patient showed no signs or symptoms of pyloric stenosis; not when nourishment and

nutrition had not proved impossible. But when all medical means had been intelligently tried, and the patient was threatened with a condition of chronic invalidism and threatened emaciation, then they should call a surgeon, with the assurance that he could and would take the case out of a chronic invalidism and restore it to a fair, if not perfect condition of health and happiness.

The Etiological Relationship between Gastric Ulcer and Gastric Cancer.—Dr. FRANK SMITHIES, of Chicago, stated that review was made of certain phases suggested by the study of 921 operatively and pathologically demonstrated cases of gastric cancer and of 500 similarly proved instances of benign, peptic ulcer. Particular attention had been paid to the search for facts demonstrating the existence of an etiological relationship between gastric cancer and gastric ulcer. It seemed to have been shown that benign gastric ulcer could be produced in a multitude of ways, the method of production having only a relative effect upon the ulcer pathologically. It seemed that in a given gastric ulcer it was impossible to foretell its course, duration, or type of termination. There were no experimental, clinical, nor pathological data that absolutely demonstrated the mechanism of the malignant transition of benign gastric ulcer. This problem would apparently remain unsolved until the exact nature of the mechanism of malignant processes in general was determined.

Clinically, the histories of instances of gastric cancer strongly suggested that such neoplasms arose most frequently from chronic, calloused gastric ulcer, clinically benign. It would appear that clinically it was impossible to segregate the group of chronic gastric ulcers which would undergo change to cancers, from that which would continue as self limited, benign processes. On account of the uncertainty in this regard, free excision of chronic gastric ulcers should be performed whenever such procedure was mechanically possible. That this was a most important feature of cancer prophylaxis was proved by the fact that when gastric cancer could be definitely diagnosed, clinically and macroscopically, at laparotomy, hope of radical cure was slight. The knowledge of the foregoing facts imposed a moral responsibility upon internists and surgeons with respect both to the patient and the human family.

Dr. CHARLES G. LUCAS, of Louisville, said as to the time factor, none of them was competent to give a statement as to when an ulcer might become malignant nor how long it would continue. He had in mind a patient who had a tumor of six months' standing before seeking consultation. A laparotomy was done and the tumor was found to be inoperable. Patients with ulcer of the stomach should be placed in bed as soon as they came under the care of the internist, and they should then be carefully treated from four to five weeks. They should report often and submit to frequent examination. If, after six or seven weeks of effort of this kind, no results were obtained, then a surgeon should be called. These cases should be treated by both internist and the surgeon working together, and finally they should come back to the internist.

Dr. WILLARD J. STONE, of Toledo, would like to

ask Doctor Smithies what percentage of gastric ulcer and duodenal ulcer in his experience showed a positive Wassermann reaction?

Doctor Smithies said, in answering Doctor Stone's question, in his proved ulcer cases, the ratio of positive Wassermanns was one to 300. One of the first points in the cure of disease was to remove all the foci of infection, not only in the mouth, throat, and nose, but they should also look out for an infected appendix or an infected gallbladder. If they let these organs pass by unnoticed, they were simply locking the door after the horse had gone.

Dr. CHAUNCEY DOWDEN, of Louisville, said that so far, they knew practically nothing as to the etiology of gastric and duodenal ulcer; hence it followed that their methods of treatment were more or less imperfect at the present time. If conditions incidental to appendicitis caused ulcer, then obstipation and constipation became important etiological factors. If appendicitis caused gastric ulcer, why would not chronic obstipation bring about a like condition? In his opinion it might even produce pyloric spasm. They also had a condition which would in time cause gastric ulcer. He would like to impress upon the internist the importance of treating the ulcer patient before the condition became an ulcer. The majority of patients who came to them showing a condition of hyperacidity were in all probability ulcer patients. This was the time when they needed proper attention and, in all probability, the right treatment administered at this time would prevent the development of duodenal or gastric ulcer.

Breast Feeding.—Dr. J. ROSS SNYDER, of Birmingham, Alabama, suggested that medical associations throughout the country start an agitation to have midwives furnish for distribution, concise, accurate, and practical printed instructions to lactating mothers. Such an agitation would result in threefold good. A large number of mothers would be directly helped; it would, on account of their curiosity and their desire for advancement, educate many midwives to greater usefulness, and last, but not least, it would bring to a realization of their own deficiencies a considerable number of doctors taking part in the agitation.

The Heart and Bloodvessels in Tuberculosis.—Dr. FRANCIS M. POTTENGER, of Monrovia, California, stated that tuberculosis might affect the bloodvessels either from within or without, and the lesion might be of all degrees of severity from that of very slight trauma to necrosis. Sometimes an infection was followed by an opening in the vessel wall and hemorrhage; at other times an exudation resulted which went on to repair; and again an endarteritis with obliteration of the lumen occurred. It seemed probable that many of the hemorrhages which they had in tuberculosis, particularly those where only small amounts of blood were expectorated, might be due to the injury of the vessels resulting from action of toxins.

Bacilli invaded the endothelial cells, gave off toxins which attracted leucocytes, and thus formed tubercles in the walls of the vessels. Miliary tuberculosis was a tuberculosis of the bloodvessels in which many bacilli had escaped into the blood stream and found lodgment in vessels of the same

tissue. It was from just such lesions as those described that the bacilli which produced acute miliary tuberculosis came. The capillaries were most commonly affected, while small veins and arteries were less commonly so. Tubercles might be found in the walls of any vessels of the body, including the aorta. This being true, it was surprising that miliary tuberculosis was not a more common infection. That it was not was probably due to the fact that the vessel was often occluded by the inflammatory process so that bacilli did not get into the blood stream, and secondarily that protective cell sensitization and antibodies reduced the virulence of, or destroyed the bacilli which gained entrance to the blood stream before they found lodgment in the tissues, in patients in whom infection had been present long enough to build up a specific immunity.

For the heart muscle itself, he had great confidence in the use of digitalis and citrate of caffeine. If the early symptoms mentioned above were recognized, and the patient was put in the recumbent position and given digitalis in proper doses, the crisis could often be averted. Digitalis strengthened the heart's contractions and in this way probably afforded better nutrition to the organ; but, whether this was the explanation or not, he had great confidence in its use. If digitalis was to be used, it should be in doses sufficiently large to produce an effect. He used a standardized tincture in doses of ten to fifteen minims three times a day until the pulse improved or the physiological effect was reached. This was generally shown by nausea or irregularity of the heart. He then discontinued the remedy for three days and then repeated it again, giving the remedy three or four days and then withholding it for a like period. If the case was urgent, he often gave digalen intravenously in fifteen minim doses three times a day until the effect was produced. Citrate of caffeine could be given in three grain doses every four hours and continued as long as was necessary.

The patient should have nourishing food in concentrated form. The bowels should be kept free to release any toxins that could be removed through the alimentary canal. The important thing in the handling of these cases was to recognize them early, and to treat them properly. These degenerative changes in the heart muscle might threaten the patient's life and yet the heart might recover itself as the patient improved.

Cardiac Anatomy and Pathology from the Röntgen Standpoint.—Dr. P. M. HICKEY, of Detroit, said if the Röntgen tube was placed at only a comparatively slight distance, say eighteen inches from the plate, it would follow that the distortion of the shadow cast by the heart would be considerable. Accordingly, some years ago, two methods were proposed: First, orthodiagraphy by which parallel rays were employed, and, second, where the same result was secured by placing the tube at such a distance from the plate that the rays coming from the tube were practically parallel. Such a distance, it was assumed for some time, should be about eighty inches. This procedure, where the distance of the tube from the plate was extreme, was called by Alban Kohler teleoröntgenography. The disadvantages of this latter procedure were, that inas-

much as the time of exposure increased with the square of the distance, the strain upon the tube was considerable.

During the past year, the writer had made comparisons of plates made with a tube distance of thirty-six inches in comparison with the plates of the same patient with a tube distance of sixty inches, and found that he could practically see no difference in the size of the heart with the plate made at thirty-six inches. This statement applied to plates made with the tube behind the patient and the plate placed against the anterior chest wall. Where the tube was placed in front of the patient and the plate was against the back of the patient, slight distortion would be found. However, in general, he would state that plates made with the tube distance of thirty-six to forty inches and the plate placed against the anterior wall of the chest, were satisfying for studying the comparative size, contour, and position of the heart.

Spasmophilia.—Dr. J. P. SEDGWICK, of Minneapolis, from forty tabulated cases from private and consultation practice, in addition to the children in the university clinics to whom calcium was given, felt warranted in drawing the following conclusions: 1. In the acute and subacute cases under one year, with high electrical reactions, the results obtained with large doses of calcium chloride were brilliant. 2. In the more chronic and very severe cases as well, as with the older children, calcium was of definite value. He had also used the magnesium sulphate injection treatment, as advised by Behrend. This consisted in the subcutaneous injection of twenty c. c. of a 0.125 per cent. solution of magnesium sulphate. The results with this method had also been satisfactory, but the injections were painful and frightened the older children.

The electrical reactions gave them a means of diagnosing the condition, whether active or latent, distinguishing it in its various manifestations, such as the convulsions from epilepsy and the laryngospasm from inflammatory croup. Laryngospasm, general convulsions, tetany in children, spasmodic apnea, the Chvostek and Trousseau phenomena were manifestations of the same diathesis or condition. The condition was closely related to some metabolic disturbance, probably of the calcium salts, and was markedly benefited by a carbohydrate, cow's milk free, or a breast milk diet. Phosphorus and cod-liver oil were of value by the effect on the calcium retention. Calcium and magnesium gave quicker and more definite results. The prognosis was usually good in cases in which treatment was begun early.

Mechanics of Renal Infection.—Dr. EDWARD L. KEYES, of New York, said renal colic was an acute stoppage of the ureter, the cause of which was usually a small stone or a slight kink. Upon being called to such a case, they should immediately administer morphine to the point of relieving pain, not only for the purpose of consoling the sufferer, but also for the purpose of curing the condition, for if they relieved the pain and thereby relaxed the spasm, they actually relieved the retention and permitted the unfolding of the kink for the passage of urine about the stone, or even the passage of the stone itself. In the second place, they had a clue to the

mystery that surrounded irrigation of the renal pelvis. Much of the benefit attributed to this treatment was undoubtedly due to the passage of the ureteral catheter, for it was to be noted that many cures attributed to this treatment followed the first or the second washing. Such cures were due to mechanical relief of slight obstructions. He had several times relieved acute renal infection by ureteral catheterization, and Dr. Howard Lilienthal, some years ago, recorded several striking illustrations of the therapeutic effect of ureteral catheterization in acute renal infection.

Orthopedic Treatment during Improvement after Infantile Paralysis.—Dr. H. WINNETT ORR, of Lincoln, Neb., stated that the paralysis of infantile paralysis was due to partial or complete destruction of the motor cells and peripheral nerves. This paralysis, so far as the nerve supply of any muscle or set of muscles was concerned, was usually temporary. This was for two reasons, first because the motor cells for any muscle or muscle group lay at different levels of the cord and were rarely all involved, and second, because many of those actually involved recovered. Permanent paralysis of any set of muscles was usually due to the fact that such muscles had been permitted to be overstretched by the contraction of unparalyzed opponents or by weight bearing without protection, to such an extent that they would not respond to stimuli when the nerve elements regenerated. Mechanical protection of the muscles in the affected area against overstretching was the factor of first importance in treatment following the acute attack. He concluded, therefore: 1. It was a serious fault to use electricity, exercises, or massage, or in fact almost any other treatment than careful splinting during the inflammatory or painful stage of infantile paralysis. 2. No treatment following the acute attack was complete nor adequate unless it was accompanied by splints or apparatus fully to protect and relax the muscles involved. 3. It was a serious mistake to put a patient on his feet during the first year after the acute attack, unless he was fully protected by splints or apparatus against deformity on account of paralyzed muscles or muscle groups. 4. The problem of getting the maximum of recovery during the first year after infantile paralysis was about fifty per cent. spontaneous improvement and somewhere between twenty-five and fifty per cent. more splinting and apparatus. 5. Finally, orthopedic writers had not succeeded in conveying to the profession at large satisfactory information as to the proper relationship of the different therapeutic agencies appropriate after infantile paralysis.

Tendon Transplantation in Infantile Paralysis.

—Dr. ALBERT H. FREIBERG, of Cincinnati, said operations for infantile paralysis had in the past been too complicated or had been so planned as to violate the laws of muscle mechanics. He found himself in accord with Stoffel in determining that: 1. The transplant must bear a fairly close morphological and functional relationship to the muscle whose function it was to supplant. 2. In order to possess effective contractility the transplant must be fastened to its new point of insertion under physiological tension only. 3. The transplanted muscle must not be used to hold the limb in a corrected

position. In consequence of simplifying the operations, much more might be expected in functional efficiency and uniformity of results.

Prolapse of Bladder and Uterus.—Dr. THOMAS J. WATKINS, of Chicago, stated that the pathological changes in the part of the bladder wall which was attached to the vaginal wall had not received sufficient attention. These changes were due to the stretching of this part of the bladder wall and produced vesical symptoms. The urethra was usually displaced downward and disturbed continence of urine. The pathological changes in the uterus resulted mostly from circulatory disturbances, such as congestion, edema, varices, and hyperplasia. He advised the following operations, the choice depending upon the amount of prolapse, and the age of the patient as regards future pregnancies: 1. An advancement operation. 2. Fixation of the round ligaments to the anterior vaginal wall and fascia. 3. The transposition operation, transposing the relative position of the bladder and uterus. This was also called the interposition operation. Partial excision or amputation of the cervix was done with all of these operations as might be indicated and a perineorrhaphy was performed.

The advancement operation was valuable, as it was well adapted for the cure of many cases and was easily and safely performed. The operation consisted chiefly in advancing the vaginal wall, including the submucous connective tissue, upon the cervix. The redundant tissue was excised; the peritoneal cavity was not opened; the bladder was freely separated from the anterior vaginal wall and the cervix; pursestring sutures were passed through the vaginal wall, the fascia, the cervix, and out through the connective tissue and mucous membrane. These sutures were so placed that they restored the urethra to its normal site and closed the ring of the bladder hernia. This operation gave excellent results in cases of a moderate amount of prolapse and did not interfere with subsequent pregnancies. It should displace all anterior elytrorrhaphies for reasons that must be obvious to all surgeons. Vaginal attachment of the round ligaments into the vaginal wall was done in conjunction with the advancement operation in cases with a greater amount of prolapse, during the child bearing period, and in cases of retroposition of the uterus.

The chief points in the technic were, in addition to the advancement operation, opening the peritoneal cavity; the pursestring sutures included generous loops of the round ligaments, and might include some of the anterior tissue of the broad ligaments. The transposition operation was one of election after the menopause. The fundus of the uterus was attached to the connective tissue and vagina sufficiently low to make recurrence of the bladder hernia impossible. He had had no recurrence of cystocele after this operation which he had been doing for seventeen years. The uterus was never in obstruction in the vagina when so sutured. Modifications of the operation were given for cases of very large uterus and for cases of complete prolapse with a very small uterus. The cavities of the uterus and vagina might be completely closed in very extensive cases of prolapse in old women, where there was no objection to occlusion of the vaginal canal.

PHILADELPHIA PEDIATRIC SOCIETY;
SECTION IN PEDIATRICS OF THE
NEW YORK ACADEMY OF MEDICINE;
AND THE NEW ENGLAND
PEDIATRIC SOCIETY.

*Joint Meeting, Held at Philadelphia, Tuesday,
November 9, 1915, at 8.15 p. m.*

Lobar Pneumonia; Correlation of Its Symptoms and Physical Signs with Röntgen Ray Findings.—Dr. HOWARD H. MASON, of New York, said that during the past two years all cases of lobar pneumonia in the children's service at the Presbyterian Hospital had been x rayed at least once. In cases showing a shadow, but in which bronchial voice and breathing were not heard, repeated röntgenograms had been taken at varying intervals. The purpose of these examinations was to ascertain whether the consolidation as evidenced by this shadow passed through any regular development, and if so, whether the different stages of its progress could be correlated with the development of certain physical signs.

Thirty-seven cases of lobar pneumonia had been studied with the Röntgen rays, most of them repeatedly. All thirty-seven cases showed a definite shadow. The shadow was always so placed that it touched the pleura at some point. The early shadows were triangular in shape, with their bases on the pleura and their apices separated from the region of the root by normal lung. In their later development the shadows extended in size and became uniform from the periphery to the root of the lung. When the shadow involved this entire stretch, bronchial voice and breathing were present, but not otherwise. He believed that the inference was justified that the dimensions of the shadows corresponded to the extension of consolidation.

The following conclusions might, therefore, be drawn: 1. The consolidation of lobar pneumonia in children began in that portion of the lung which lay just beneath the pleura. 2. A central pneumonia in the strict sense never occurred. Silent consolidations were subpleural consolidations and were separated from the hilus by normal lung. 3. Bronchial breath and voice sounds depended upon the presence of a medium of comparatively uniform density from the site of their origin (the trachea and large bronchi) to the point where the ear or stethoscope was applied. These conditions were fulfilled when the consolidated area extended from just beneath the ear to the region of the hilus.

Tuberculosis in Infancy.—Dr. CHARLES HUNTER DUNN, of Boston, said the purpose of his paper was to discuss certain limited aspects of tuberculosis in the first two years of life. He had been impressed from the literature that in many articles the conclusions drawn were not supported by the final proof afforded by post mortem examination. The importance of tuberculosis as a cause of death in the first two years of life was shown by the fact that in a series of sixty-two successive autopsies tuberculosis was found in twenty-five, was considered the direct cause in twenty-three cases, and the contributing cause in the other two. Extremely divergent views were held concerning the source of

infection and its portal of entry into the body. One set of writers believed that milk infected with the bovine type of bacillus was the most common cause of the disease in infancy, and the intestinal tract or the tonsils the most common portal of entry. Other writers believed the human type of bacillus to be the most common cause, and the portal of entry the lungs. The two most important forms of evidence bearing upon this question were, 1, that derived from bacteriological study of bacilli obtained from infants by culture or animal inoculation; 2, that derived from a careful study of the lesions found post mortem. Post mortem findings showed a greater frequency of involvement of the peribronchial and mediastinal lymph nodes than of the mesenteric. Advocates of milk infection tried to explain this upon the theory that the bovine bacillus could pass without causing a lesion, through the intestinal mucous membrane and through the mesenteric lymph nodes, locating in the lymph nodes of the chest as the point of minimum resistance. This theory Doctor Dunn believed to be untenable. The contradictory evidence upon the source of infection and portal of entry could be explained only upon the ground of a variation according to locality. Such variation was probably largely dependent upon the character of milk supplies and the frequency of tuberculous disease in cattle in various parts of the world. He believed that infants could be infected either with human bacilli, usually entering through the lungs, or with bovine bacilli, usually entering through the intestine. The most generally accepted view was that tuberculous infection showed the primary lesion in the lymph nodes. He said that in his studies at the Infants' Hospital a primary lesion was actually found at the portal of entry in twenty-two of the twenty-five post mortem examinations. He was, therefore, inclined to believe with Ghon that it was more probable that when a primary lesion was not found at the portal of entry, it had been overlooked. The primary lesion was found in the lung in twenty cases; in the intestine, in two. Adding to the twenty cases the three in which the only chronic lesions were found in bronchial lymph nodes, there was a ratio of twenty-three cases of infection through the lung to two cases of infection through the intestine. Tuberculous ulceration of the intestinal mucous membrane was found in seven cases beside the two in which the lesion was considered primary. He said he believed it to be a probable conclusion that these tuberculous ulcerations of the intestines were secondary to swallowed tuberculous material coughed up from the softening of the primary lesion. These seven cases with secondary tuberculous ulceration of the intestine were identical with the seven cases in which the mesenteric lymph nodes were involved in addition to the bronchial lymph nodes. His findings he believed to be against the likelihood of the tubercle bacillus passing through the intestinal mucosa without leaving traces of its progress in the form of a definite lesion. In the series the diagnosis of tuberculosis was made in twenty-three out of twenty-five cases, but these were all seen in the last stages of the disease. Three important points beside tuberculous meningitis or tuberculous peritonitis upon which the diagnosis of tuberculosis in infancy was based, were: 1. Physical

signs suggesting tuberculosis in the chest; 2, tuberculin reaction; 3, Röntgen ray examination of the chest.

Practical Value of the Guineapig Test for the Virulence of Diphtheria Bacilli was the title of a paper by Dr. JOHN A. KOLMER, Dr. SAMUEL S. WOODY, and Dr. EMILY L. MOSHAGE, of Philadelphia, in which the necessity in the practical management of diphtheria and healthy carriers of diphtheria bacilli, for some method of determining the possible harmfulness of diphtheria bacilli was emphasized. The animal virulence test had been found in their hands the only test for determining the virulence of diphtheria bacilli. Differentiation among diphtheria bacilli by morphological and biological characteristics was not reliable. Experimental data had shown quite conclusively that a nonvirulent culture of diphtheria bacilli could not be made virulent; however, a culture that had lost its virulence to a large extent might be made again virulent by animal passage or by transference from throat to throat among persons. Therefore, they wished to emphasize the necessity of conducting virulence tests in such a manner as to detect the potential harmfulness of cultures of a low degree of virulence. In addition to that prime requisite, the test should be conducted in an economical manner and yield its results as quickly as possible.

Doctor Kolmar and Doctor Moshage had experimented during the past year with various methods of determining in a practical way the virulence of diphtheria bacilli. They found that the subcutaneous injection into 250 to 300 gram guineapigs of four c. c. of a twenty-four hour Löffler culture washed off with ten c. c. of sterile salt solution, yielded best results; the subcutaneous injection of seventy-two hour serum dextrose bouillon cultures likewise yielded good results. The intracutaneous test they found less serviceable for detecting the pathogenicity of cultures with low virulence, and the reactions were more difficult to read.

With the subcutaneous method they conducted 1,054 virulence tests in the Philadelphia Hospital for Contagious Diseases. Cultures of the granular or beaded and barred types of diphtheria bacilli from the throat, nose, and ear yielded about seventy-two per cent. of positive results; cultures of the long solid types were virulent in about forty-two per cent. of cases; cultures of the short solid types yielded uniformly negative results. In practical work they regarded the granular and barred types of bacilli as dangerous, no matter how long they persisted on a mucous membrane after recovery from diphtheria. Of all types they were most likely to remain virulent and should be so regarded until proved otherwise. The animal inoculation test of virulence of cultures with cultures of the solid types. Doctor Kolmer for several years had disregarded the short solid types in cultures often in the past, the bacilli belonging to this variety. In the Philadelphia Hospital for Contagious Diseases, they found that the granular and barred types of bacilli were virulent in only a few cases, and that the short solid types were uniformly negative. The same of the granular and barred types. The same of the granular and barred types. The same of the granular and barred types.

were present before the attack, and were likely to remain for an indefinite time afterward, yielding a line of positive cultures which would require quarantining over a long period of time, unless the culture was submitted to the virulence test. If the physician took cultures carefully, conscientiously, and freely, especially several cultures before excluding the diagnosis of diphtheria in a given case, and if three consecutive negative cultures were required instead of two before quarantine was lifted, combined with the efforts of the bacteriologist to differentiate between virulent and nonvirulent bacilli with the judicious use of the animal inoculation test in suitable cases, they believed that the bacteriological diagnosis and management of diphtheria would be efficient and satisfactory to all.

Letters to the Editors.

PROSTATIC TOXEMIA.

NEW YORK, January 10, 1916.

To the Editors:

I should like, with your permission, and provided that the expression has not been used before, to file a caveat for the term, Prostatic Toxemia. Many physicians must have felt that in many cases of enlarged or congested prostate the symptoms produced were altogether out of proportion to what one would expect, and could only in small part be accounted for by the mechanical obstruction to urination. The severe somatic and *psychic* symptoms produced by a diseased prostate and the remarkable—one feels occasionally like using the term magical—improvement which often follows one thorough prostatic massage, make the conclusion almost inevitable that a toxic substance is produced by the prostate which is absorbed by the blood current. The term, prostatic toxemia, signifying an absorption into the system of a toxic substance generated by an abnormal prostate, is therefore both necessary and appropriate.

WILLIAM J. ROBINSON, M.D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Diseases of Infants and Children. By HENRY DWIGHT CHAPIN, A. M., M. D., Professor of Diseases of Children, New York Post-Graduate Medical School and Hospital; Supervising Physician of the Children's Department, New York Post-Graduate Hospital; Consulting Physician to the Willard Parker Hospital, etc. and GORDON ROBERT PISKÉ, M. D., Sc. D., Professor of Diseases of Children and Attending Physician to the New York Post-Graduate Medical School and Hospital; Professor of Diseases of Children, University of Vermont, Medical College, etc. Third Revised Edition. With 179 Cuts and 12 Colored Plates. New York: William Wood & Co., 1915. Pp. xviii+578. (Price, \$3.25.)

This volume of moderate size is beautifully constructed as to binding, finish of the paper, arrangement, and illustrations. The illustrations include a large number of original photographs, and the text is full of practical advice. The book is a complete and up-to-date reference work for the physician and the student. It covers the most important diseases of infants and children, and gives a full and complete description of each, including the latest methods of examination and diagnosis. Infant feeding is not gone into very deeply, probably because there are many works devoted to this subject. The book is a most valuable addition to the library of the physician and the student.

Radium in the Light of Recent Discovery. (*Radium and Rejuvenescence*.) A Presentation of New Facts and Problems. Third Edition. By PAUL BÖRNSEN. Washington, D. C., 1915.

After indulging in a veritable diatribe against various exploded notions about the rejuvenating properties of small amounts of radium, and against the imposture alleged to be perpetrated by many of the so called radium institutes, the author turns to a discussion of his own views and "discoveries." He asserts that he has evolved a marvelous compound of strontium and radium for which he claims the properties of a true panacea or *elixir ad longam vitam* to dispel the effects of old age including the removal of facial wrinkles and the restoration of lost hair to its original color.

Interclinical Notes.

A tribute to Dr. E. S. Trudeau appears in the *Virginia Medical Semi-Monthly* for December 24, 1915, under the name of Cornelia W. Brown:

A sadness broods o'er Saranac!
The very sunshine seems to lack
Its cheering brightness, and the breeze,
Seems whispering among the trees
That Edward Trudeau is no more.
The balsams murmur o'er and o'er
The plaintive, sorrowful refrain,
"He never will return again."
The wise, the good, the peerless one
Is silent now—his work is done."
He came into "the wilderness"
Long years ago—in sore distress;
But in the pure and bracing air
He lost the feeling of despair;
Then in his heart a longing grew
A great and helpful work to do.
This purpose all his being fired
And others, coming, were inspired
To follow where he led the way
The white plague's ravages to stay.
Humanitarians gave their wealth
To aid him in restoring health.
Then cottages, among the trees,
He built to treat the dread disease;
And very near his little church
A laboratory for research.
To these he gave his heart and mind
In willing service to mankind.
From far and near the sufferers came,
And many live to bless his name;
And all were comforted who heard
His cheery voice and kindly word.
His rare, magnetic presence drew,
All hearts to love and trust him too.
A leader in the healing art,
How nobly he has done his part!
How worthily has won a place
With benefactors of the race!
But Edward Trudeau's work is done,
Our country mourns her gifted son!

We are not likely to have another Ada Rehan until we get another Augustin Daly. Even if the natural talent is discovered, who is to give the hard and patient training, to confer the refined accent and musical intonation to the voice, to know what ideals are to be reached and how to reach them? Not the newspaper writers, and not the average manager

* * *

The *Outlook* for January 5, 1916, tells the benighted city dweller some of the remarkable work accomplished by the National Department of Agriculture, particularly in the prevention and treatment of disease among animals. It also discusses the reported outbreak of typhus in Mexico and the possibility of our having to intervene forcibly in order to control the epidemic, which apparently does not impress the Mexicans as serious. The *Outlook* agrees with us as to the enormous value of military drill for high school boys. Our boys are rather a slouchy lot, not only

in physique, but in application to their work. There is a strong defense of Osborne's management of Sing Sing prison, by Frank Marshall White.

Meetings of Local Medical Societies.

MONDAY, January 17th.—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York (annual); Elmira Clinical Society; Psychiatric Society of Ward's Island.

TUESDAY, January 18th.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine (annual); Medical Society of the County of Westchester.

WEDNESDAY, January 19th.—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medico-Legal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society.

THURSDAY, January 20th.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society (annual); German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, January 21st.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; University of Virginia Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital.

SATURDAY, January 22d.—New York Medical and Surgical Society (annual); West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the fourteen days ending January 5,

Banks, Charles E., Senior Surgeon. Granted six days' leave of absence on account of sickness, from December 21, 1915. **Blue**, Rupert, Surgeon General. Designated by the Secretary of State as delegate to the Second Pan-American Scientific Congress, which met in Washington, D. C., December 27, 1915-January 8, 1916. **Carter**, H. R., Assistant Surgeon General. Detailed to attend sessions of Section VIII of the Pan-American Scientific Congress at Washington, D. C., December 27, 1915-January 8, 1916. **Cofer**, L. E., Assistant Surgeon General. Granted six days' leave of absence from January 3, 1916. **Collins**, G. L., Surgeon. Directed to proceed to the Marine Hospital, Baltimore, Md., to perform an operation for cataract. **Gardner**, C. H., Surgeon. Granted two days' leave of absence from December 24, 1915, under paragraph 103, Service Regulations. **Heterick**, R. H., Assistant Surgeon. Leave of absence on account of sickness for one month from December 7, 1915, amended to read "one month's leave of absence from December 7, 1915, to January 1, 1916," relieved from temporary duty at the Marine Hospital, San Francisco, Cal., and ordered to proceed to Washington, D. C., for conference and to await further orders. **Lanza**, A. J., Passed Assistant Surgeon. Directed to proceed to Miami, Okla., to investigate eye trouble among the miners. **Roberts**, Norman, Surgeon. Granted three days' leave of absence from December 30, 1915.

Robinson, D. E., Surgeon. Authorized to present a paper on housing conditions in Cincinnati, Ohio, before the Social Workers' Club on January 10, 1916. **Rucker, W. C.,** Assistant Surgeon General. Designated as alternate to the Second Pan-American Scientific Congress, in Washington, D. C., December 27, 1915-January 8, 1916; designated to represent the United States Public Health Service at the Safety First Exhibit, to be held at Washington, D. C., in February, 1916. **Schereschewsky, J. W.,** Surgeon. Directed to proceed to Harrisburg, Pa., via Washington, D. C., for conference with the Director of Labor and Industry of Pennsylvania; also directed to proceed to the State of Wisconsin, to supervise studies of industrial hygiene now being conducted in cooperation with the Wisconsin Industrial Commission. **Tuch, D. H.,** Assistant Physicist. Directed to proceed to points outside of the city of Pittsburgh to make studies of illumination in industrial plants. **Voegtlin, Carl,** Professor. Detailed to attend a meeting of the Section in Physiology and Experimental Medicine of the American Association for the Advancement of Science, at Columbus, Ohio, December 31, 1915-January 1, 1916. **Warren, B. S.,** Surgeon. Detailed to attend the ninth annual meeting of the American Association for Labor Legislation, at Washington, D. C., December 28-29, 1915. **White, J. H.,** Senior Surgeon. Granted five days' leave of absence from December 24, 1915, under paragraph 193, Service Regulations.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending January 6, 1916:

Borden, A. B., First Lieutenant, Medical Corps. Has sailed from New York for duty in the Canal Zone. **Flynn, James G.,** First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Crockett, Texas, and from further duty in the Medical Reserve Corps. **Ford, Clyde S.,** Major, Medical Corps. Leave of absence for two months on surgeon's certificate of disability has been granted. **Haverkamp, Charles,** Captain, Medical Corps. On temporary duty at the United States Military Academy, will be relieved from further duty at Fort Jay, New York, and will report to the superintendent of the above academy for duty. **Hill, F. R.,** Captain, Medical Corps. Departs from Fort Myer, Virginia, for Fort Howard, Maryland, for temporary duty. **Woodson, Thomas D.,** Captain, Medical Corps. Relieved from present duties, and will proceed to Balboa Heights, Canal Zone, and report to the Governor of the Panama Canal for duty.

Births, Marriages, and Deaths.

Born.

Cook.—In Mansfield, Mass., on Sunday, December 24, to Dr. and Mrs. John W. Cook, a daughter. **Sorapure.**—In New York, on Monday, January 3d, to Dr. and Mrs. Victor E. Sorapure, a son.

Married.

Baum—Shumate.—In Denver, Colo., on Tuesday, December 14th, Dr. Harry Baum and Miss Martha Shumate. **Collins—Hollister.**—In Lake Linden, Mich., on Saturday, December 25th, Dr. William T. Collins, of Freeport, Ill., and Miss Gertrude Hollister. **Cooley—Stone.**—In New Britain, Conn., on Monday, December 20th, Dr. Clifton Mather Cooley and Miss Ethel Woodruff Stone. **Downs—Ehrich.**—In Allentown, Pa., on Tuesday, December 14th, Dr. James Tickell Downs, of Dallas, Texas, and Miss Elizabeth F. Ehrich. **Faison—Cameron.**—In Winston-Salem, N. C., on Wednesday, December 15th, Dr. Yates Wellington Faison, of Charlotte, N. C., and Miss Mary Cameron. **Goffe—Atocha.**—In Terre Haute, Ind., on Sunday, December 26th, Dr. J. Riddle Goffe, of New York, and Miss Alice L. Atocha. **Hirschle—Harless.**—In Chicago, Ill., on Saturday, December 11th, Dr. Harvey G. Hirschle, of Canton, Ill., and Miss Leota L. Harless. **Lawson—Mellinger.**—In Dallastown, Pa., on Wednesday, December 15th, Dr. Thomas A. Lawson and Miss M. Mellinger. **Reitz—**

Englert.—In Easton, Pa., on Saturday, January 1st, Dr. Charles B. Reitz and Miss Minnie Englert. **Wiley—Doyle.**—In Bakersfield, Cal., on Wednesday, December 15th, Dr. Harvey J. Wiley, of Los Angeles, Cal., and Mrs. Edith Doyle.

Died.

Ashenfelter.—In Pottstown, Pa., on Saturday, January 1st, Dr. William J. Ashenfelter, aged sixty-eight years. **Brailey.**—In New York, on Tuesday, December 21st, Dr. Alfred V. Brailey. **Bryant.**—In San Francisco, Cal., on Thursday, December 30th, Dr. Edgar R. Bryant, aged forty-nine years. **Bullard.**—In Los Angeles, Cal., on Wednesday, December 22d, Dr. Rose Talbot Bullard, aged fifty-one years. **Chalfant.**—In Cleveland, Ohio, on Wednesday, December 29th, Dr. Caleb M. Chalfant, aged eighty-two years. **Crane.**—In Grand Forks, N. Dak., on Friday, December 31st, Dr. Charles Stanley Crane, aged fifty-three years. **Crowell.**—In New Brighton, S. I., on Monday, January 3d, Dr. Edward B. Crowell, aged eighty-six years. **Dearborn.**—In Charlestown, Mass., on Tuesday, January 4th, Dr. John G. Dearborn, aged eighty years. **Emmerling.**—In Pittsburgh, Pa., on Monday, December 27th, Dr. Charles H. Emmerling, aged eighty-one years. **Garzer.**—In Ephrata, Pa., on Monday, January 3d, Dr. Michael Garzer, aged seventy-two years. **Johnson.**—In Alhambra, Cal., on Sunday, December 26th, Dr. Adolph P. Johnson, of Tacoma, Wash., aged fifty-one years. **Jones.**—In Tchula, Miss., on Monday, December 27th, Dr. Robert K. Jones, aged seventy-one years. **Kiernan.**—In Bridgeport, Conn., on Tuesday, December 28th, Dr. James Matthew Kiernan, aged thirty-six years. **Kroos.**—In Brooklyn, N. Y., on Thursday, December 30th, Dr. Edward C. Kroos, aged fifty-three years. **Lawrence.**—In Longview, Texas, on Tuesday, December 21st, Dr. Howard Miller Lawrence, aged forty-eight years. **Lee.**—In New York, on Friday, December 31st, Dr. Arnold Lee, aged forty-three years. **Lichtenwalner.**—In Reading, Pa., on Sunday, December 26th, Dr. Milton D. Lichtenwalner, aged sixty-nine years. **Lisle.**—In Columbus, Ohio, on Thursday, December 23d, Dr. James Lisle, aged sixty-seven years. **McMahon.**—In Detroit, Mich., on Saturday, December 25th, Dr. James J. McMahon, aged sixty-seven years. **Maxwell.**—In Greenville, S. C., on Thursday, December 30th, Dr. John H. Maxwell, aged eighty-four years. **Montgomery.**—In San Francisco, Cal., on Monday, December 27th, Dr. Cary Rice Montgomery, aged sixty years. **Montgomery.**—In Northfield, Mass., on Saturday, December 25th, Dr. W. Ernest Montgomery, aged thirty-seven years. **Norris.**—In Akron, Ohio, on Wednesday, December 29th, Dr. Charles E. Norris, aged fifty-seven years. **Palmer.**—In Brooklyn, N. Y., on Friday, January 7th, Dr. Warren B. Palmer, aged fifty-eight years. **Preston.**—In Utica, N. Y., on Thursday, December 30th, Dr. H. Frank Preston, aged fifty-two years. **Priest.**—In Emerson, Iowa, on Friday, December 24th, Dr. W. A. Priest, aged seventy-one years. **Reeve.**—In Brooklyn, N. Y., on Monday, January 3d, Dr. Arthur L. Reeve, aged forty-five years. **Robinson.**—In Warrensburg, Mo., on Saturday, January 1st, Dr. Leonard H. Robinson, aged thirty years. **Ryan.**—In Milwaukee, Wis., on Thursday, December 30th, Dr. Edmond Emmet Ryan, aged forty-seven years. **Silvey.**—In Pittsburgh, Pa., on Tuesday, December 28th, Dr. John H. Silvey, aged seventy-two years. **Stretch.**—In Philadelphia, on Monday, January 3d, Dr. Richard Stretch, aged seventy-four years. **Townsend.**—In New Haven, Conn., on Friday, January 7th, Dr. Joseph H. Townsend, aged fifty-three years. **Van Heekeren.**—In Portland, Oregon, on Wednesday, December 29th, Dr. Abraham J. Van Heekeren, aged eighty-eight years. **Ware.**—In Berryville, Va., on Thursday, December 23d, Dr. Charles A. Ware, of St. Louis, Mo., aged seventy-four years. **Weber.**—In Chicago, Ill., on Sunday, December 19th, Dr. Alfred Weber, aged fifty-eight years. **Weber.**—In Norristown, Pa., on Monday, January 3d, Dr. C. Z. Weber, aged sixty years. **Wilson.**—In Philadelphia, on Saturday, January 1st, Dr. Robert N. Wilson, aged forty-two years. **Wilson.**—In West Alhambra, Cal., on Friday, December 17th, Dr. Daniel C. Wilson, of Maryville, Mo., aged seventy-six years. **Worthen.**—In Ashland, N. H., on Saturday, January 1st, Dr. Eugene M. Worthen, aged forty-three years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 4.

NEW YORK, JANUARY 22, 1916.

WHOLE No. 1938.

Original Communications.

COMMON AFFECTIONS OF THE EYE.*

Their Early Recognition and Treatment.

By S. D. RISLEY, M. D.,
Philadelphia.

Emeritus Professor of Diseases of the Eye, Philadelphia Polyclinic and College for Graduates in Medicine.

I have been requested to present a brief review of the common affections of the eye, particularly those forms of injury, abnormality, or disease which may fall first under the care of the family physician. The obvious design is to warn against certain pitfalls which a larger experience along special lines of study and practice will enable us to avoid. The part allotted to me is rich in opportunity; the main difficulty is to avoid a too discursive treatment.

The suggestions placed in my hand are: 1. Study of ophthalmia neonatorum; 2, injuries, e. g., foreign bodies on the cornea, lime burns, and punctured wounds; 3, glaucoma; 4, phlyctenular disease; 5, school hygiene.

Regarding ophthalmia neonatorum, it is well to remember that "an ounce of prevention is worth a pound of cure." It is an encouraging fact that since the uniform adoption of preventive measures I comparatively rarely see an example of this disease even in my Wills Hospital clinic, whereas in former years the service was never free from these little sufferers, either in the acute stage or afflicted with its baneful sequelæ. Prevention rests primarily upon careful treatment of the mother prior to parturition. This is important, especially when vaginal discharges are present. A laboratory study of such discharges should be made in every case. I urge this for the reason that it is not only an important measure, but because every case of ophthalmia of the newborn babe is not due to gonorrheal infection, but to a variety of other microorganisms, and it is signally important to the family, for obvious reasons, that this should be demonstrated. Derby found 51.3 per cent. to be due to the gonococcus in 149 cases, while Stevenson found in 1829 cases sixty-five per cent., which Derby thinks too high because of the methods employed in the laboratory study. Bartels, also quoted by Derby, found but fifty per cent. of gonococcic origin. Clinically the gonorrheal infection is usually more virulent.

A second and signally important means of prevention is the care of the child immediately after birth. Suitable methods of cleansing the face, eyelids, and eyes of the infant will do much to prevent the entrance of germs into the conjunctival sac. Flushing with water should be avoided until after the cleansing of the lids and lashes with petrolatum ointment, or a weak bichloride, or carbolized oil, and then the conjunctival sac may be flushed with a saturated solution of boric acid, or Dobell's or other unirritating alkaline solution. If these precautions are carried out, viz., the cleansing of the vagina by suitable washes for a few days before labor, and a judicious care in cleansing the face of the child immediately after birth, the use of nitrate of silver will rarely be necessary. Unwisely used, the usually recommended solutions of nitrate of silver may injure the delicate protecting corneal epithelium of the infant and so open the door for infection. I wish to urge the great importance, however, of early and efficient treatment in every case where infection of the conjunctiva has occurred. I cannot recall a single instance in my own experience in which serious corneal involvement has resulted if it had not already occurred when first seen. In my personal experience the complete eversion of the lids, and the careful but thorough application of a strong solution of silver nitrate to every portion of the infected tarsal conjunctiva followed by flushing, has been the most effective treatment. In unskilled hands solutions stronger than two per cent. should not be used. Care should be taken to avoid injury to the cornea by allowing the solution to come in contact with it, or by mechanical injury.

The second of the commonly occurring forms of disease with which we must certainly meet is phlyctenular ophthalmia, usually occurring in early childhood. The differential diagnosis is important since it may be mistaken for the catarrhal types of conjunctival disease, from which it differs widely as to symptoms, etiology, and the treatment required. It is differentiated from catarrhal conjunctivitis by the nature of the discharge and by the appearance of the conjunctiva. In infectious catarrh that membrane rapidly becomes opaque, red, and velvety, and the discharge is purulent or mucopurulent; there is very little or no photophobia or pain. In phlyctenular disease, on the other hand, the conjunctiva may be somewhat edematous, but remains transparent, is often covered profusely with isolated elevated points or phlyctenulæ; or, there may be, and usually is, a chain of larger phlyctenulæ along

*Read before the Philadelphia County Medical Society.

the limbus of the cornea, or the cornea itself may have one or more of these phlyctenulæ on its surface with or without a leash of vessels approaching it from the corneal limbus. The mucous membranes covering the soft palate and arches are also covered with phlyctenulæ, suggesting the systemic character of the disease. There is distressing photophobia, profuse discharge of tears with excess of mucus floating in them. Pain is not a marked feature. The cases of phlyctenular disease, for the most part, belong to two distinct types, differentiated by their etiology. The older writers classified this disease as scrofulous or strumous ophthalmia.

In one group of cases the disease is habitually associated with, if not absolutely dependent upon alimentary disturbance. The eye trouble may be regarded as a local expression of a general toxemia, the origin of which is the alimentary canal. They are rebellious to all local treatment, but recover rapidly under alkaline washes, atropine, and dusting with calomel or bismuth powder, as soon as the digestive troubles are relieved by suitable treatment and a wisely regulated diet and general regimen.

Another group, which to the casual observer may, so far as local expression is concerned, seem in all respects similar, are nevertheless essentially different. Notwithstanding all the above suggested treatment they do not tend to recover, but to grow worse. The phlyctenulæ become open ulcers along the border of the cornea, there are gray isolated nests of opacity on the cornea, or on the membrane of Decimet, especially at the angle of the anterior chamber; the appetite is precarious, the child is pale, ill nourished, and the lymphatics are enlarged. Under corrected regimen, life in the country, iodide of iron and arsenic, codliver oil, etc., they make partial recovery, but soon relapse. These cases form a numerous group and we now know they are due to tuberculous infection and tend to permanent recovery only under treatment addressed to relief from this specific infection.

Foreign bodies lodged in the cornea, simple as they may seem, are fraught with peril. The eye should first be flushed with a sterile unirritating wash, followed by a few drops of a sterile cocaine or holocaine solution, and the foreign body removed. This can often be done by a small pledget of cotton wrapped tightly on the fine point of a steel probe, light lateral pressure being sufficient to dislodge the foreign body, when the eye should again be flushed with a suitable wash. When too firmly imbedded for removal by this simple procedure, a small steel spud, or the point of a secondary cataract knife, may be cautiously placed under the foreign substance to lift it from its bed. But the possibility of infection, either from the foreign substance being impure, or by the contents of the conjunctival sac, which is rarely free from micro-organisms, should always be borne in mind and carefully guarded against. If the patient is restless, or the foreign body is deeply imbedded in the firm tissue of the cornea, it is not always possible to avoid the destruction of a considerable area of corneal epithelium. Under these conditions it is often wise, after thorough flushing of the denuded surface, to apply a bandage firmly over the closed lids. This prevents the movement of the lids over the un-

covered surface and exposed corneal nerves and so avoids discomfort for the patient, is security against infection, and gives opportunity for rapid replacement or repair of epithelium over the denuded area. If, in spite of these precautions, infection supervenes and corneal ulceration occurs, vigorous treatment should be begun at once. Judicious cauterization is the surest method of arresting its advance. My own preference is for the well controlled application of trichloroacetic acid. A convenient and safe method is to dip the fine point of an orange wood stick into a saturated solution of the acid and apply it lightly to the ulcer, which should be freed from moisture by absorbent cotton to prevent diffusion of the acid to the surrounding corneal surface. The previous instillation of a few drops of a two per cent. holocaine solution makes the procedure painless.

Punctured wounds afford not only the dangers already alluded to in the case of foreign bodies lodged on the surface, but the added danger of direct injury to deeper structures, for example, injury to the crystalline lens causing traumatic cataract; or, if the wound is sufficiently large and so situated as to open the anterior chamber, it may lead to a prolapse of the iris into the wound. The puncture may be made by some surgically impure substance which may be retained within the eyeball, or, if withdrawn, lead to destructive infection and loss of vision. We have all seen so many eyes lost from what at first appeared as an unimportant injury that the experienced surgeon is guarded in his prognosis and is anxious until the incubation period has passed without a serious sequel. The eye should be carefully flushed by an alkaline wash and, if there is any threatened inflammatory reaction, by the instillation of a one per cent. atropine solution, and by the continuous application of cold compresses. If the iris is prolapsed into the wound, it is usually good surgery to excise it and free the wound from remnants which may remain. If the wound is more than a mere puncture at the corneal limbus, a safer and more rapid convalescence is secured by a stitch closing the lips of the wound. The eye should then be bandaged, the patient placed in bed, and the fellow eye kept at rest in a well shaded room.

Injuries from lime frequently lead to serious and permanent injury because of the deep destruction of tissue and the subsequent contraction of the cicatrices. If seen at once these sequelæ may be prevented by the speedy removal of all particles of the lime before they have time to slack in the tears. As the accident is liable to occur to workmen, the late Dr. William F. Norris advised that the man's face should be placed under the hydrant, the lids held apart and a forcible stream of water turned upon it to wash away all particles of the lime as soon as possible. This certainly emphasizes a prime necessity, viz., its speedy removal. The physician usually sees the patient after the lapse of several hours and the damage has been done. Then the eye should be bathed in sterile oil or liquid petrolatum, the lids everted and all the lime removed, atropine instilled, and an ointment of atropine sulphate and iodoform, one grain of each, to two drams of petrolatum prescribed for frequent use.

while continuous iced compresses are applied to the closed lids.

One of the most common, serious and fateful pitfalls for the feet of the inexperienced is the group of ocular affections which culminate in increased tension of the eyeball; fateful, because if neglected or improperly treated they lead to the hopeless destruction of function. Glaucoma is not an entity but a symptom, or a culmination of a symptom complex. It occurs usually during or after middle life in patients with impaired health of the nutritional and toxic or infection types. The uveal tract of the eye is very prone to participate in these general maladies in the form of choroiditis, inflammations of the ciliary body, and the iris. The excretion of the intraocular fluids is retarded or prevented, the contents of the globe increase, and the eye becomes hard, red from injection, the cornea hazy or steamy and insensitive, the pupils dilated. There is pain, often extremely violent, in the eye and head, one or both; the vision is impaired; the field of vision contracted. The attack may be transient, but is sure to recur. The danger is that this striking symptom complex may be mistaken because of the redness, increased flow of tears, dread of light, and the apparently sudden onset, for infectious disease of the conjunctiva and be treated accordingly; or, because of the pain, redness, and impaired vision, for iritis and be treated vigorously with atropine, which always does harm in increased tension and may precipitate an attack of acute inflammatory glaucoma when such a culmination is imminent; or in relatively mild cases, that is to say in subacute or noninflammatory glaucoma, the pain produced by the increased tension may be referred to the temples, brow, or occipital region and the case diagnosed as a neuralgia, the eye conditions being overlooked or regarded as secondary. In case of doubt as to the correctness of diagnosis, I know of no form of eye disease in which the interest of both physician and patient suggests more strenuously the wisdom of consultation with some trusted and experienced colleague than glaucoma imminens.

In the matter of school hygiene I wish first to speak for the earnest cooperation of every physician. Space does not permit extended treatment. I can mention, and that all too briefly, but one phase of the subject of ocular hygiene and one which I conceive to be the most important. In my own examination of the Philadelphia schools, it was shown that while there was great need for the reconstruction of our school houses, in the interest of suitable and sufficient lighting and seating in the school rooms, and reform in the printing of school books, that these defects were not the most important etiological factor in the injury to the children's eyes which had been shown to occur by observers all over the world; but that notwithstanding these untoward conditions, the model or emmetropic eyes passed through their school lives with a minimum of peril. Unfortunately the statistics revealed the astounding fact that there were but eleven per cent. of these model eyes, while eighty-nine per cent. were congenitally defective, that is to say, had defects of refraction or anomalies of binocular balance. That in upward of sixty per

cent. of these defective eyes, the defect was present in sufficient degree to cause discomfort or pain, impaired acuity of vision, and pathological changes in the fundus oculi. From these congenitally anomalous eyes were recruited the steadily increasing army of myopes, the sequel being not only asthenopia and a large group of nervous symptoms retarding the school progress of the child, but a more or less seriously handicapped career. The following conclusions were then formulated, and after many years of added experience and study of the subject, I do not see any reason for modification of these conclusions, but rather for their emphasis.

1. Before entering school the possible presence of defective vision should be excluded and any existing error of refraction corrected.

2. The probability of harm resulting from the school life diminishes with every added year of age in all states of refraction, therefore our children are placed in school at too tender an age.

3. The cooperation of the family adviser in securing the examination of the eyes of every child before entering school would go far in securing the conservation of vision in the rising generation. Physicians should also discourage the entrance of children into school before the seventh or eighth year of age.

2018 CHESTNUT STREET.

CHRONIC TONSILLITIS.

A Form with Recurring Gastric Attacks, Simulating Dietetic Derangement; Tonsillar Enucleation; Recovery.

By LOUIS FISCHER, M. D.,
New York.

Chronic hypertrophic tonsillitis with frequent exacerbations of fever, headache, vomiting, and anorexia, may be mistaken for gastric or gastro-enteric derangement. The intoxication is due to the absorption of the toxins from the pathogenic bacteria harbored in the recesses of the tonsils. Such toxemias not only will give a train of symptoms simulating gastric fever, but by their frequent recurrence will excite suspicion that something else beside the diet and the digestive tract must be at fault. It is this class of cases that retards development because of the frequent explosions of fever and the toxemia which can be detected by the odor of the breath, also by the examination of the urine, in which acetone is present.

In this class of cases we do not always encounter the hard, scybalous stool nor the intoxication shown by indican in the urine. The diagnosis rests, therefore, on careful examination of the throat and tonsils and palpation of the adjacent glands.

Many cases of gastric disturbance recurring at frequent intervals were once ascribed to cyclic vomiting. These deep seated inflammations give rise to swelling and patches resembling follicular tonsillitis, which is the etiological factor of this disease.

In the urine we find an important diagnostic aid. Many cases show albuminuria, many do not, but in all cases we have acetoneuria and diacetic acid.

Children old enough will complain of headaches; there will be nausea and frequent eructations. The following case illustrates the condition:

CASE. B. N., aged four years, had had measles, tonsillitis, otitis, bronchopneumonia, and several attacks of influenza. He was a bottle-fed infant, with deficient glandular secretion, an inactive liver, marked coprostasis, and hard dry, scybalous stools, requiring laxatives almost daily for months. There was a general atony of the gastric and intestinal canal, with loss of appetite and deficient intestinal secretion as evidenced by the dry stool.

With the aid of general restorative treatment and continuous dieting, the child progressed favorably. He was normal mentally and his physical condition was up to the average. He was markedly neurotic, very sensitive, but a well balanced child otherwise. There were no stigmata nor hereditary conditions which could influence his present condition. Both father and mother were in good health. There was no taint of specific disease.

Despite continuous dieting, great care and supervision, with excellent hygiene, this child will now have, without evidence of gastric indiscretion, a sudden attack of anorexia, vomiting, a total refusal of food, and temperature ranging between 101° and 103° F. The pharynx is reddened, the tonsils are swollen, and after the second or third day the lacunæ will be filled with pin point deposits.

Bacteriological examinations made at least six times during these attacks, have shown the presence of *Staphylococcus pyogenes aureus* and an occasional streptococcus chain, but never the Klebs-Löffler bacillus. The urine is characteristic. The following analysis was made on the second day of illness during one of these febrile attacks, and after the child had had three attacks of vomiting during the forenoon.

ANALYSIS OF SPECIMEN OF URINE. REPORT NO. 50831.

Reaction, acid. Sediment, very moderate. Nature of sediment, heavy. Albumin, faint trace. Bile pigment, absent. Urea, 1.2 per cent by weight. Indican, 1.0 excess. Color, amber. Odor, not offensive. Specific gravity, 1022. Sugar, negative. Acetone, large amount. Chlorides, 1 per cent by weight. Phosphates, no excess. Diacetic acid, traces.

Examination of Sediment.—Blood, none. Pus, none. Mucus, small amount. Casts, none found. Bacteria, no apparent bacteria. Epithelium, few bladder cells.

Summary.—The specimen contains a faint trace of albumin, but no casts were found, with a normal gravity, and a considerably depressed relative amount of urea.

A large amount of acetone and traces of diacetic acid are present.

FREDERIC E. SONDERN.

The examination of the urine shows that there is a large amount of acetone, traces of albumin, and traces of diacetic acid. The casual study of many cases would lead one to believe that the gastrointestinal canal is responsible for these attacks. When the throat is carefully examined, however, we always find that deep seated, submerged, swollen tonsils are at the root of the trouble. Many of the patients suffer from inanition owing to these recurring febrile disturbances which deplete the body.

Since the publication of my first paper in the *Medical Record* for November 21, 1914, I have received many interesting clinical data which show the prevalence of this condition.

A most interesting report of a case was received from Dr. John M. Biffel, of Milwaukee. This was of a boy thirteen years of age, who from the time he was three years old until he was seven, had al-

most periodical attacks of vomiting, with constipation and acetoneuria. These attacks were almost malignant in their character, the boy being unable to retain a mouthful of water on his stomach for frequently three days at a time. The abdomen, after the first few hours of the attack, would become contracted or collapsed. There was always high temperature, and examination of the tonsils showed them to be inflamed. These attacks were always accompanied by a decided systolic murmur. The tonsils were removed and since then he has had no attacks.

The point I wish to emphasize is that no case presenting gastric symptoms should be permitted to pass with such a diagnosis until we have assured ourselves that there is no chronic inflammatory tonsillitis at the root of the trouble. It would be a very disagreeable commentary on our diagnostic ability, if after several of these attacks, our patient was taken to one more skilled in diagnosis, who ascertained the real cause. The danger is not so much in the gastric disturbance, as in the possible endocarditis or nephritis which the repeated tonsillar infection is likely to cause.

The treatment is surgical. The tonsils must be enucleated, and the whole of the diseased tissue removed. This radical treatment will suffice to stop the recurring attacks. General restorative treatment with diet, iron, and arsenic, is indicated.

155 WEST EIGHTY-FIFTH STREET.

DERMATITIS FACTICIA.

By HENRY KENNEDY GASKILL, M. D.,
Philadelphia,

Assistant Professor of Dermatology, Jefferson Medical College;
Attending Dermatologist, Philadelphia General Hospital.

Dermatitis facticia or feigned eruption or any eruption which has been produced by the patient by any artificial means is a complete entity in itself in that the character of the lesions differs in nearly every instance, from any recognized dermatological disease. There is no generalized distribution or configuration or grouping that is significant of so many skin troubles. The eruptions, on the contrary, are more or less isolated; they present odd contours, sometimes more or less linear; occasionally eruptions have been produced where the lines would cross each other at right angles. At other times, the outline is irregular and serpiginous in character or with sharp corners and jagged sides. In a word, they frequently assume characteristics which are entirely at variance with any typical eruption, and a manifestation of this sort should immediately put the physician in charge on his guard.

In a large percentage of cases, the nervous system is a great factor, and eruptions of this character are usually produced in those who are of a very emotional nature; frequently in those who crave sympathy and will resort to an act of this sort to secure it. Some have employed this means to avoid work which is distasteful or work of any kind. A child with some imagination and of highly emotional temperament may produce such an eruption to escape attendance at school. There are a thousand and one such reasons, most of which are trivial

and some few of major importance, to the patient, at least. Again, there are certain phases of life that bring with them more or less psychic disturbances, for instance, the menopause, or puberty, when the individual is passing through a cycle of sensations and emotions, both mental and physical, where the equilibrium is more quickly disturbed than when normal, there being considerable self consciousness and many acts are performed then which would not have been thought of at an earlier or later period.

While woman, with her delicate organism and emotional nature, is more prone to present examples of this disease, yet she has not by any means the monopoly, for at least thirty per cent. occur in the male sex. Here, however, it is much more common in young boys than in men, for after adolescence the emotional side of man's nature by reason of his constant occupation is apt to be less marked; in woman, on the contrary, on account of her more or less monotonous household duties, child bearing, etc., it increases. A boy about the age of puberty will solicit sympathy for the same reason that the girl does, and both from the glandular change that is so mysterious to them both.

The patients are usually very clever, using great artifice to avoid detection, and it is frequently impossible to ascertain the method employed to produce the lesions. In spite of careful watching, in an inadvertent moment they will gain access to the material, whatever it may be, that is causing the trouble. They are so subtle that an extra supply will be kept in hidden places so that if one is found, they can resort to others.

In a very large proportion of cases the lesions will be found associated with hysterical stigmata, altered reflexes, modified tactile sensations, etc. Considerable effort has been exerted to differentiate the cases of known origin from those where the lesions have happened spontaneously, and as far as the physician is aware, without special cause. While it is impossible to deny that a person in a hypnotic state could produce such eruptions, yet it is difficult to prove this. If the eruption appeared while the patient was unconscious, he naturally would feel no pain; he has simply been following out some act he has seen while conscious and when he awakes he will have no recollection of the procedure and later can honestly deny that he produced the eruption.

Many observers are of the opinion that some of these eruptions are not consciously produced, for Pernet (1) has said:

I believe in some instances we have to deal with altered personality, such as have been so ably dealt with by Pierre Janet in his notable and classic book on *l'Automatisme psychologique* and by your own Morton Prince in his delightful *Dissociation of a Personality*.

Sometimes patients have appeared to be honestly unable to account for the presence of self inflicted cutaneous lesions and there is a possibility that though self inflicted, they may have been done in another state of personality, of which the patient at the moment of cross examination remembers nothing.

Whenever possible, I have examined patients as thoroughly as I could from the point of view of hysterical stigmata, generally finding positive signs in this direction, such as hemianesthesia, etc.

The men who are making hypnotism and psychology a special study have considerable to say on this subject, but personally, while I am willing to

admit that there may be some psychic disturbance acting as an attenuating factor, yet I do feel that from the present status of the study it exerts little influence; the deeds are done wilfully and deliberately. Illustrating this, suggest in a casual way that it would be much easier to understand the nature of this eruption if it appeared on some other part than that affected, for instance, if it is on the left arm, suggest that it is much more common to have this type of eruption on both arms. In a few cases, the patient will accept this suggestion and at the first opportunity will produce an eruption on that part, but as a rule, they are so extremely crafty that they are able to detect the subterfuge and will carefully avoid producing anything on the part of the body toward which a suggestion has been directed and redouble their efforts on the parts affected. They are quick to detect suspicion, resembling very closely the morphine habitué who will resort to any strategy to obtain his beloved drug.

There is another group of patients having this kind of eruption—emotional persons who are constantly chafing or irritating some part of the body until a sore is produced, as in the case of a nine year old boy, reported by Dr. Andrew J. Gilmour (2), who was so nervous that he could not remain at the table during the entire meal and was continually swinging his hands and feet. For two years previous to 1913, there was an excoriation on the right side of his lip, also one on the chin which had never healed. These lesions were produced by the patient protruding the tongue downward and outward toward the right; then he swept the tongue around the lower lip and chin to the left corner of the mouth, where for a short time he allowed the tongue to remain. He then immediately wiped off the chin with the back of his hand. This performance was kept up more or less all day.

Another illustration of this type is W. B. in my series. A subject has been known to rub the tip of the ear until it became sore. Another man was found picking at a sore on his arm until he removed the crust and then irritated the inflamed surface: as soon as a crust had formed he removed it and kept up a discharging sore for months. This type is purely emotional, as nothing was gained by such a procedure nor was it done with any special object in view.

As many of these eruptions occur on the extremities and particularly on the hands and arms, the diagnosis has been made erroneously of a gangrenous condition from some trophic disturbance of the part and for which amputation has been performed. In looking over the reports of cases of dermatitis facticia, I was confronted several times by cases in which amputation had been resorted to for this so called gangrenous trouble and which has recurred above the stump and later has been proved by the use of occlusion dressings to be factitious, as the eruption would heal completely under such treatment, only to return again as soon as the patient had access to the part. When it is necessary to apply a dressing in such a manner that the patient is unable to reach the part, an ordinary plaster of Paris or starch dressing can be used, but perhaps the best is of silicate of sodium, or "water glass." The affected area will be carefully wrapped in dry gauze

and the silicate painted on, which dries in a very few minutes, leaving an absolutely impervious dressing, allowing no motion. Of course, if there is any suggestion of moisture or infection, it would be impossible to use a dressing of this type, as it

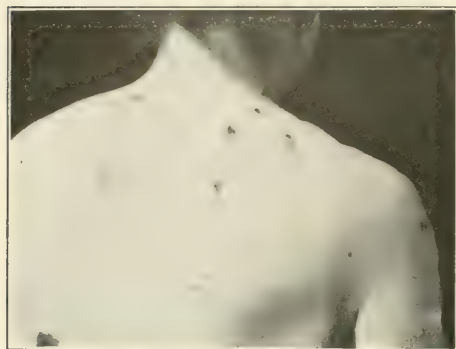


FIG. 1.—Case 1; eruption on back only.

must remain intact for several days and the wound cannot be dressed. Towle (3) reports four cases:

Presenting in common an eruption occurring in crops at various intervals for long periods, appearing first in the neighborhood of a preceding trauma and with a tendency to upward spread; the eruptions quickly became gangrenous, sometimes with preceding erythema and vesicles, sometimes without one or both. Slow healing was characteristic. In three cases the eruption was limited to one hand or arm, and one, beginning on one arm, involved the body later. The lesions usually appeared at night or when the patient was free from observation. Healing progressed under closed dressing without other treatment. The patients were never detected. Although two patients were discovered rubbing the lesions, it is probable that by this they merely prevented healing and that the original eruption was caused by other means. The inaccessible parts were exempt from attack. Especially to be noted was the presence, or at least the history of more or less marked hysteria. No adequate motive for self mutilation was discovered. Sometimes the eruptions were preceded by subjective symptoms of pain or burning. The lesions resembled those of no known disease. Continued study led to the conviction that the eruptions were continued, at least, by artificial means even if not artificially begun.

Up to the present time no single theory of etiology has been presented which can be applied to all, or even to the majority of the cases of multiple gangrene. The theory that the eruption is caused by vasomotor or trophoneurotic changes is obviously incomplete. Some, recognizing its incompleteness, seek a remedy in a presupposition of some sort of disturbance in the central nervous system. Other men assign the cause to an ascending neuritis produced by trauma and, to explain the outbreaks on distant parts, assume that the neuritis, having reached the cord, involves other segments and thence spreads to other nerve trunks. This is, of course, merely an unproved theory. In the absence of atrophy and other signs which usually accompany a long continued injury to the nerve, the assumption of an ascending neuritis is not justified even in such cases as are limited to a single part. Further, there are men who are reluctant to admit that any human being would voluntarily submit to such pain and disfigurement, and apparently base their conviction of the spontaneous origin of the eruption upon their failure to find the motive or the means of artificial production.

While the world is full of men who doubt whatever they cannot see for themselves, yet the fact remains that patients do inflict such injuries upon themselves. While it is almost impossible to make

patients who do commit such acts confess, yet they have done so when abruptly confronted by the knowledge that their practices are known.

Dr. Louis A. Duhring said, in discussing a paper by Pernet (1), that he had in practice seen but few cases of this disease. In fact, he had "often remarked to professional friends how few cases of this kind he had observed among the thousands of patients that had come under observation during a life's experience. Most of the cases seen were to be classified in the nonfactitious group. He could recall certain cases where the eruptions had been regarded by other physicians as factitious in origin but which were subsequently proved, by careful examination and observation, not to have been so. The experience of different observers apparently varies widely on this point and he had often wondered why it happened that he had seen so few of the factitious cases."

Dr. James N. Hyde, on the contrary, said on one occasion that he and his colleagues had collected notes on about twenty-five cases of dermatitis factitia that had come under their personal observation.

The remark of Doctor Duhring suggests that perhaps the disease is becoming more common. The changes that have been made in the mode of living; the strenuous effort put forth to keep up appearances and its associated nerve strain all tend to produce neurotic men and women who will beget nervous children—just the type who resort to self



FIG. 2.—Enlargement of Fig. 1 showing coin-shaped lesions.

chastisement to gain a point. Certain it is that some skin diseases have grown more common with recent years, for instance, dermatitis herpetiformis; Duhring in one of his many articles on this subject, says he saw twenty cases in fifteen years. In a recent article (4) on this disease, I reported sixteen cases

in five years, and in the year that has just elapsed, I have seen at Jefferson Hospital alone six more cases.

CASE I. Mrs. A. B., aged thirty-six years, white, house-keeper. When this patient was first seen (at which time Fig. 1 was taken) there were on the back about a dozen lesions varying from the size of a small pea to that of a ten cent piece. The eruption was entirely confined to the region shown, none being on any other part of the body, and it was the unusual character of this eruption which made us suspect a dermatitis facticia. The top of most of the lesions had a punched out craterlike appearance; the edges were rather sharply defined, with little or no induration. There was necrotic material in some of the lesions and in one or two where the tops had been scratched off, hemorrhagic. Below a large number of these lesions was a gradually fading eruption distinct in character from the upper portion, looking more like the tail of a comet. These are clearly shown in the enlargement (Fig. 2). The tail of the comet at the upper portions showed a deep pitting around the follicles; the dusky color faded gradually to a lighter tint as the distal end was approached. The patient said that this eruption had been present for about five or six months; that it had always been in the same place and had never shown any tendency to heal over. This was not the truth, however, as there were scars on her back which showed where the eruption had been previously. She was a highly neurotic person and suspected her husband of having syphilis, and for that reason wished to obtain a divorce. She said she could feel bugs crawling in those lesions, and on one occasion brought me some of them wrapped in a small piece of paper. They consisted of nothing more than inspissated blood which she had scratched from the top of one or more of the lesions. The patient had seen several physicians, but they had not been

ways in the same situation. Most of the lesions were on the right side and the patient was right handed. There was one lesion on the left side, going horizontally across the back at the upper part of the scapula, which was rather more characteristic of this disease than any other individual lesion; while it would be more natural for a right handed person to inflict lesions on the left side of the body, yet when they were produced on the back, it was far easier to reach the right side than the left with the right hand. (This is especially so in the case of women who have diffi-

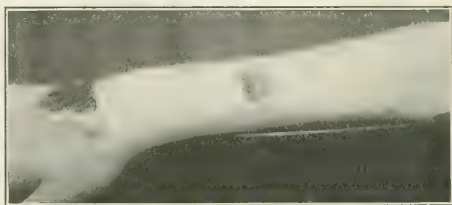


FIG. 4.—Case III; twenty lesions on the arm.

cult feats to perform in fastening their garments in the back.) This patient evidently stood in front of a mirror, for at times there would be a fresh outbreak of a lesion or two that had begun to undergo involution. Without doubt she applied a drug (the character of which we were never able to ascertain) with some applicator, rubbed it around vigorously and the tail of the so called comet was produced by the drug running down. It was not carbolic acid with its whitish scar, but rather suggested a strong alkali such as liquor potassii. She was finally confronted with our diagnosis, became very hysterical, wringing her hands; made various comments about the hardness of this world and the people in it, and refused to return for further treatment. However, she did return several times, always protesting her innocence. Her protestations proclaimed her guilt. In this patient, the stigmata of hysteria were marked. A tongue depressor could be pressed against the fauces with no more reflex sensation than if it had been applied to the palm of the hand. There were frequent headaches, nausea and vomiting, and a very considerable loss of weight. The patella reflex was very much diminished, though the eyes acted normally to light and accommodation.

CASE II. W. B., male, white, aged seventeen years, presented himself at the Jefferson Medical College Hospital, in July, 1914, for an eruption on the face. There were in all, probably twenty-five lesions scattered over both cheeks, chin, and forehead with one pronounced lesion on the tip of the nose (Fig. 3). The lesions consisted of a very thick crust situated on an inflammatory base, irregular in outline and following no general configuration. Scattered here and there over the face were many superficial scars where former lesions had been present. While the diagnosis of impetigo contagiosa was considered, it was quickly eliminated on account of the character of the crusts and the deeper inflammatory area on which the lesions were situated. While in impetigo contagiosa we find the crusts very superficial and thin on a mildly inflammatory base, looking as though very thin yellowish putty had been flecked on; in this case the crusts were piled up hard and thick, resembling in some remote way an ecthyma. The patient, who was an orphan living with relatives, was questioned closely about having applied drugs to his face to produce these lesions. He absolutely denied the use of any caustic drugs and maintained this attitude for two or three visits. His manner was very indolent; he would saunter into the department as though time was no object and he had a strong antipathy for work. He finally confessed that he would feel a stinging sensation in some part of his face and would pinch up the skin with his left hand and rub so vigorously with the fingers of the right hand that, as he expressed it, a "sore" would develop. This friction would be kept up long after he had produced the spot and there seemed to be a great amount of gratification to him in doing this. Perhaps it was from the same irresistible impulse that impels the average person to scratch the top off of a boil. Seemingly this boy did not produce the lesions with the direct intention of soliciting sympathy,



FIG. 3.—Case II; lesions of cheek, chin, forehead, and tip of nose.

able to effect a cure. I suggested that the diagnosis would be much easier if some of the lesions would occur on the inner side of the arms, thinking that she might probably accept this bait, but she was entirely too wily, for the lesions never appeared where we had suggested. She could not be kept under very close observation, and each time she was seen one or more new lesions would be present, al-

but there was an undercurrent that suggested to him that as long as he had the eruption, very little would be expected of him. His relatives were communicated with, were highly indignant at our suspicions, and were thoroughly surprised at his confession. The boy did not seem of a particularly neurotic type, but probably had found that a disfiguring eruption would make life run in extremely smooth channels for him. It is probable that the first few lesions had been produced in an absent minded manner, just as some persons will constantly drum with one finger on the table or twist and untwist the hands. The camera caught his dreamy far away habitual look, indicating a person who might be expected to perform unconscious acts. The harmfulness of this practice was explained to him, and it was stopped with the result that his face was soon perfectly well, with the exception of a slight scarring which probably will disappear in the course of a few years.

CASE III. E. L., female, white, aged fourteen years, was first seen in September, 1915, with an eruption on the right

of the Jefferson Hospital, very closely watched, and no new lesions made their appearance. She was a highly neurotic child and was passing through that period of a girl's life when menstruation begins and when she was more highly sensitized than probably at any other time. We should not describe her attitude as shy or diffident, but as coldly defiant in that it was almost impossible to have her answer a direct question. She would either evade or refuse by absolute silence to respond to an inquiry; she rarely looked one squarely in the eye, but as soon as she was observed, would drop her eyes. She would lie for hours in her bed, speaking to no one, and while she was closely observant of everything that was going on in the ward, this interest disappeared as soon as anyone spoke to her. She was closely questioned on many occasions, and while she absolutely denied applying anything herself, yet her answers were never straightforward. If evasion was possible, she resorted to that; if she was compelled to give an answer, it was with the lowered eyes of a deceitful person. Finally,



FIG. 1. Case IV, first stage, eruption on right side of face only.

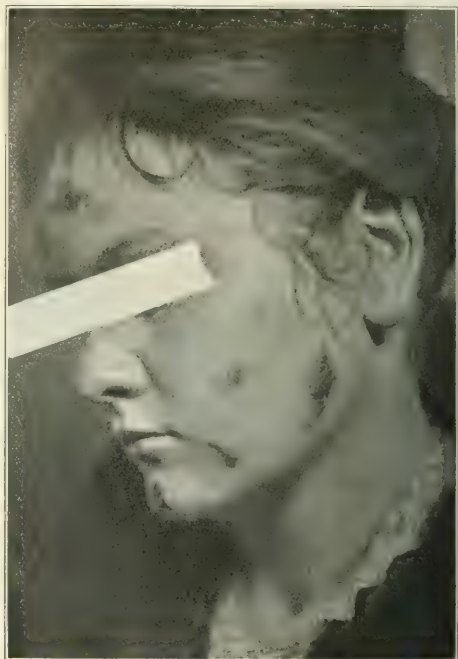


FIG. 2. Case IV; eruption on both sides of face.

arm extending from the insertion of the deltoid to the dorsal aspect of the hand (Fig. 4). In all, there were about twenty fresh and old lesions. The one on the back of the hand was by far the largest and most typical and the earliest to appear. It was irregular in outline with jagged edges and considerable induration and filled with a black gangrenous crust. At intervals up the arm, were lesions of the same character, but none of them so deep nor so gangrenous. Between, were purplish scars which were the aftermath of lesions similar to those which now existed. The patient gave the history that the first eruption appeared on the back of the hand following a scratch from a black headed pin, which she said was accidental, but which some of her schoolmates said they had seen her do purposely. The eruption had existed since January, 1915, and she had been under the care of a very careful physician, who had used every means to cure the patient, but without avail, as new lesions were constantly appearing, and as soon as the large one on the back of the hand was almost well, it would break out again. The patient was admitted to the wards

she said that the doctor in charge had from the beginning dressed her sores with bichloride of mercury and had given her tablets to dissolve at home and bandage her arms with the wet dressings. This was the first intimation we had received of anything that might have produced the trouble. When confronted with the statement that she had used this bichloride tablet on her skin, rubbing it in vigorously and producing these sores, she absolutely refused either to deny or confirm the accusation. This child refused to stay in the hospital and relatives took her away, and in a recent communication from the doctor in charge, I was informed that all the lesions had healed, leaving deep scarring and that no new ones had occurred as the supply of bichloride of mercury had been cut off and it was impossible for the patient to purchase any more. A small piece of tissue was removed from the site of the lesion on the hand and examined carefully for one of the infectious granulomata, but no such condition was found, the diagnosis being that of a dermatitis of undetermined origin.

I have seen another patient with an eruption very similar to that, which I know was produced by the application of a bichloride of mercury tablet to the skin, rubbing it in vigorously in the effort to cure a ringworm. In this case marked sloughing resulted with deep scarring, but this eruption was not a feigned one, but was produced in an effort to cure the condition as soon as possible. This patient had consulted a druggist about the eruption and he had advised the bichloride tablets without giving her instructions as to their use, and she took it upon herself to apply it full strength, though she had the tablets at home, using them as a douche.

CASE IV. I. C., female, white, aged seventeen years, came to Jefferson Hospital, December 3, 1915, with an eruption confined to the right side of the face. From its appearance, dermatitis facialis was suspected. The patient told us that she had a similar eruption just a year before and we had treated her at the hospital December 12, 1914, and a like diagnosis was made on that occasion and she was shown to the senior class of Jefferson Medical College as an illustration of this disease. This year, she was again exhibited to the senior class and seemed rather proud of the fact. The girl was excessively nervous, very shy or diffident, never looking one directly in the face; answered all questions in an extremely subdued manner with evasions when such were possible. Her previous history had been the usual diseases of childhood; had never been seriously ill, but had always been considered extremely nervous. She lived on a farm and had not attended school for the last year. On her first visit to the hospital, in 1915, I casually remarked to the patient that it was not a particularly common disease and was more apt to occur on both sides of the face. This patient did not show the usual craftiness, and came to the hospital, December 17th, presenting an eruption on the face as depicted in Figs. 5 and 6; the lesions were distinctly symmetrical. When she was seen in the early part of December, 1915, the two lesions were on the right cheek, and as shown in the photograph, a little down and out from the white block out of the eye a fine scarring was noticed. The lesions are all similar, extremely superficial, and covered with a reddish brown central crust with many small papular flat lesions of the same color surrounding the main lesion. There was no induration, no secondary infection, nor anything to suggest impetigo contagiosa, though the lesions in the photographs rather resemble impetigo. Besides the more or less uniform lesions on the cheek, there was one directly in the median line of the chin, one directly in the middle of the lower lip, and one over each eyebrow. There were no subjective symptoms.

The patient was told that we fully recognized the condition and were aware of the fact that she had produced these lesions of her own free will. This she denied in a phlegmatic manner with none of the emphasis that one would expect a person to give who had been wrongfully accused. She only wrung her hands and wept and denied that she had done anything. Finally, after long questioning and threats to inform her parents, she confessed that she had produced the lesions on her face, in 1914, but that she had not done so this time. This confession was all that we wanted, as the eruption this year was exactly the same as had appeared the year previous.

CASE V. S. P., white, female, aged fourteen years, presented on the left side of her forehead two irregular streaks almost parallel, extending down to the outer edge of the eyebrow. These lines were approximately an inch and an inch and a quarter long; about three eighths of an inch in the widest part. The edges were extremely irregular, and the whole surface of the lesions was covered with a brownish black crust. The inflammatory zone extended for some distance on each side of the lesions. The patient said that when the eruption first made its appearance, which was four days ago, it was pure white and soon

turned to a pinkish hue. The linear appearance of the lesions with the history of having been pure white left no question of doubt, and she was asked plainly why she used carbolic acid for such a purpose. The few faint denials were quickly overcome when she realized that we knew just what had happened and she confessed to having done this to avoid going to school, where she had had a little disturbance with a teacher and had been threatened with punishment.

REFERENCES.

1. PERNET: *Jour. Cutaneous Diseases*, 1909, p. 547.
2. GILMOUR: *Ibidem*, 1915, p. 34.
3. TOWLE: *Ibidem*, 1907, p. 477.
4. GASKILL: *Ibidem*, 1914, p. 443.

1610 SPRUCE STREET.

PROBLEMS OF SYPHILITIC REINFECTION.

With Report of a Case,

BY MIHRAN B. PAROUNAGIAN, M. D.,

New York,

Adjunct Professor of Dermatology, New York Post-Graduate Medical School and Hospital; and Dermatologist, Gouverneur Hospital and St. Luke's Hospital, Newburgh, N. Y.

Cases of syphilitic reinfection should be reported for two reasons. In the first place, though the fact that reinfection takes place is now conceded, instances of true reinfection are not as common as many writers suppose. Secondly, as cases accumulate, it becomes more and more evident that reinfection occurs under various and conflicting conditions. I shall attempt to draw distinctions that have not been sufficiently emphasized between the different classes of cases. In other words, it is my purpose to define somewhat more strictly than usual the proper limits of syphilitic reinfection.

True reinfection is the most satisfactory evidence of a cure or sterilization of the body that we have. The most critical view of cases of reinfection is given by Wechsleman (*Behandlung der Syphilis*, I, p. 120, 1911). He reviews Schreiber's three cases of reinfection (II, p. 87). In these cases, reinfection seemed to develop when salvarsan and mercury have been used at different intervals. (See Schreiber, *Münchener Med. Wochenschrift*, 1911, p. 893.) As a mere matter of experience, reinfection after salvarsan is often recorded, a fact which is held to show the effective power of this agent; and there is now a tendency, especially among physicians who have abandoned the regular use of mercury, to lay an exaggerated stress on the importance of these remarkable cases. In regard to salvarsan cases, that is, cases treated with salvarsan alone, there are two elements of error. For instance, it is a common mistake to assume that healing of the symptoms and curing the disease are one and the same thing. There is, in fact, a gulf between them. Symptoms of syphilis sometimes disappear in an unaccountable manner. Sometimes, symptoms that we naturally expect to see, do not appear. One of the most conspicuous signs of syphilis is the spirochete in the primary lesion. The quick disappearance of this organism after salvarsan is an indication of cure or of sterilization. Now when this disappearance of spirochetes from the chancre takes place after a single injection, far too much is often taken for granted. It is often supposed that the groundwork of a speedy cure is laid. Unfortunately, it is now known that this rapid sterilization, even if as com-

plete as we may desire, is not always a proof of cure. For, though a few injections of salvarsan have made the symptoms of syphilis disappear, a different process is produced when mercury and sal-



FIG. 1.—Scrofula chancre, March 5, 1914.

varsan are both used. This process, if systematically carried out, culminates in the cure of syphilis. The case I have to report is an instance. In connection with this subject it may be remarked that Ehrlich did not profess to cure by means of a single injection of salvarsan, except, perhaps, in the early experimental stages of the remedy, if by cure or sterilization is meant the complete destruction of the spirochetes in the host. In fact, experience shows that complete destruction of the spirochetes is no easy task.

It is still a question how far salvarsan destroys the spirochetes in the host, or, to be more specific, how far it produces complete sterilization. If we take reinfection as the crucial test, we find that sterilization may be effected by mercury and with as complete success. John (1) describes what he calls an ideal case of reinfection. This occurred after injections of salicylate of mercury. It is a case of vast importance, being recorded before salvarsan, and being a quite perfect instance of the postulates of Benario, before Benario had published his monograph, *Die Reinfektionen bei Syphilis*, in 1914. It is a case, therefore, that is worth describing in detail. I translate from the account given by John in Volkmann's *Sammlung klinischer Vorträge, Inn. Med.*, 1907-1909, p. 565.

I. IV, 1872. X. Son of the freeman infection from weeks previously during coitus. Indurated chancre, indo-

lent swelling of the neighboring glands; four weeks later, polyadenitis, roseola, headache, alopecia.

A four weeks' inunction cure caused the disappearance of these symptoms and of the adenitis. Later, mucous patches of the mouth, condylomata of the anus. September, 1872, papular exanthem; again mucous patches of the tonsils and mucous membrane of the mouth; a second course of inunctions; disappearance of the symptoms. March, 1873, papules of the scalp; six injections of mercury salicylate one in ten. December, psoriasis palmaris, iritis; four inunctions. January, 1875, patient returned to his physician, Dr. A.; gummatous periostitis of the right tibia and a serpiginous ulcer of the right thigh. Disappearance of the symptoms after potassium iodide. 1876, patient married, after another course of inunctions and potassium iodide. Had two healthy children. July, 1887, during the absence of his wife, patient had intercourse with a prostitute; three weeks later, he noticed an erosion of the prepuce; eight days later, his physician found an indurated chancre and indolent swelling of the inguinal glands. The physician examined the prostitute, who had chancre of the commissure and condylomata. Several days later, another patient, after intercourse with the same prostitute, came to Dr. A.; florid syphilis. X had a typical roseola, three weeks later. Both husbands were treated, and for years have been free from symptoms of syphilis. 1888, the wife of X gave birth to a dead fetus.

It is also stated that the examination for spirochetes and the serodiagnosis were made with positive results. This must be an error, for such examinations were not known in 1888.

It is rather surprising to find new methods introduced in a case dating from 1888, and this fact shows what care is needed in establishing a clear case of reinfection. Except for this fault, the history is vivid, and agrees with Benario's postulates. These are:

1. Clinical demonstration of the primary sore,
2. Microscopical demonstration of the spirochetes;
3. Corresponding glandular swelling;
4. Positive Wassermann reaction;
5. Discovery of the source or medium of infection.

A very interesting and practical side to the question of reinfection is this: If, according to these postulates, the Wassermann reaction must be negative, we are obliged to admit that the patient is in



FIG. 2.—Mercurial chancre, March 5, 1914.

a state of receptivity; in other words, it follows that he may have a new chancre, if exposed to infection. But what then becomes of the question of immunity?

Immunity is now supposed to lie in what is called latent infection. Yet it is not at all clear how latent

immunity protects, and how it gives way to infection. In the case above cited, latent infection must have existed for several years, and the immunity it produced gave way only at the end of a long interval, during which we may assume that the Wassermann reaction was negative. It seems to be clear that one of these postulates is variable, and so we find when we investigate further. The following case, for example, is one in which reinfection occurred, yet the Wassermann reaction was positive. It is reported by Western in the *British Journal of Dermatology* for June, 1914.

CASE. November, 1913. Primary sore, indurated chancre. Wassermann positive; neosalvarsan. In April, Wassermann negative; neosalvarsan intravenously. April 12th, seven days after coitus, a new primary chancre far from the place of the first one. Pallida in dark field; injections of neosalvarsan; Wassermann plus, then minus. A similar case is reported by Neugebauer in the *Verhandlungen der Wiener dermatologischen Gesellschaft*, 24 Mai, 1914.

January, 1914, primary sore. Wassermann negative, spirochetes in dark field; no further symptoms. Treatment, four injections of neosalvarsan; mercury salicylate. Primary sore healed quickly. May 10, 1914, patient had a new chancre, but the Wassermann was still minus.

In tertiary syphilis, we may say that there is a latent infection. It appears to be possible to graft a new infection on this parent tree, as the following case reported by De Agua shows (*Sociedad Espa-*



FIG. 3.—Scar of the scrotal chancre and remains of the meatal chancre.

nola de Dermatologia y Sifiliografía, February, 1913):

CASE. The patient, aged thirty-seven years, had a papulogummatous syphilide of the head in July, 1913; six injections of gray oil were administered, and two intravenous injections of salvarsan; Wassermann positive. Nine months after, the patient had a new primary sore.

In these cases new infection took place, though the Wassermann was positive, that is to say, during an interval of latent infection. The last case, in which infection occurred during tertiary syphilis, is at variance with two postulates of Benario. The fact is that such postulates are too rigorous. Reinfec-

tion, as we have seen, occurs in the following circumstances:

1. After a course of salvarsan and mercury, administered intravenously, or after sterilization, which may or may not be complete.

2. A new primary lesion, not on the site of the old.

3. Infection through coitus, during an interval of health, without symptoms of syphilis.

These conditions are all that reasonable men could lay down. For all practical purposes, if a man has a new chancre, after apparent cure and a negative Wassermann reaction, it surely matters very little whether we call it a relapse or not. It is a new case of syphilis requiring the treatment of all primary cases. As an instance of reinfection, agreeing with all these postulates, with a very slight difference, I may cite the following from my own practice:

CASE. F. B., aged thirty-five years, waiter, born in Germany. March 5, 1914, first visit to Post-Graduate Hospital. The first primary lesion appeared about the latter part

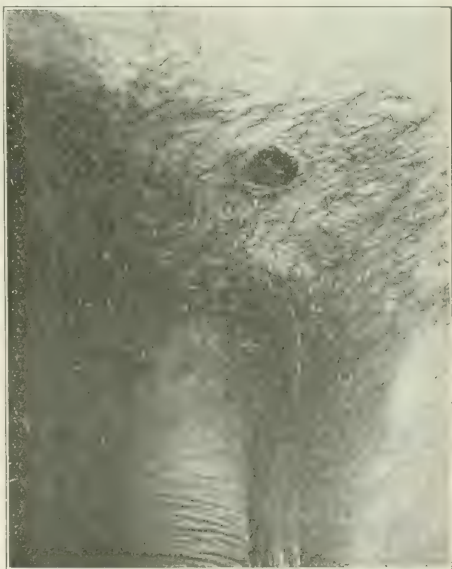


FIG. 4.—Pubic chancre, reinfection, ten months after the scrotal chancre.

of February on the lateral aspect of the scrotum of the left side.

March 5th, the day of his first visit, spirochetes were found in the dark field examination at the Post-Graduate laboratory. A few days later a similar lesion appeared at the meatus urinarius. He was presented at the March meeting of the Manhattan Dermatological Society as having a scrotal chancre. March 12th, Wassermann reaction was doubtful, though as the spirochete examination was positive and the lesions were painful and causing considerable destruction, treatment was started early.

Subsequently, while under treatment, adenopathy and a maculopapular eruption appeared, and on March 26th, Wassermann reaction was strongly positive.

The following was the treatment: March 17th, mercury salicylate. April 7th, salvarsan intravenously, 0.4 gram.

April 9th, mercury salicylate, also on April 16th, 23d, 30th, May 7th, 14th, 21st, 28th, June 4th, 11th, and 18th.

Potassium iodide in ten grain doses, was administered for three weeks. August 19th, Wassermann negative, Post-graduate laboratory. The patient manifested no symptoms nor lesions of syphilis; discontinued his visits to the hospital. December 29, 1914, called at the Gouverneur Hospital clinic with a lesion of the pubic region. During my absence he was seen by one of my associates, who regarded it as an ordinary infection or late manifestation of the old malady. After prescribing ammoniated mercury ointment, my associate referred him to me for my lecture at the Post-Graduate Hospital, December 31st. On this date, examination revealed a sharply circumscribed, circular lesion, about the size of a ten cent piece, with sloping borders and indurated, which had appeared on December 24th.

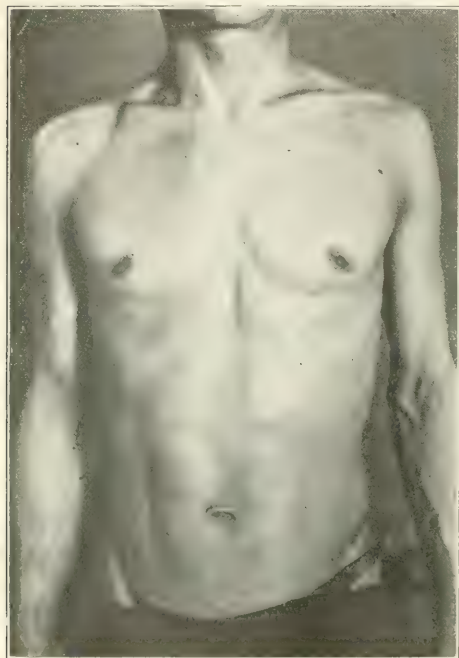


FIG. 5.—Pubic chancre or reinfection.

Spirochete and Wassermann examinations were negative. There were no other symptoms or lesions.

January, 1915, he was presented at the dermatological section of the Academy of Medicine, also at the Manhattan Dermatological Society, with the diagnosis of chancre reinfection. At both meetings, many agreed with the clinical diagnosis, though a positive spirochetal examination was considered to be necessary to establish the diagnosis of reinfection.

Feeling confident of the correctness of the diagnosis, no treatment was given. He was instructed to make weekly visits, either to the Post-Graduate or to Gouverneur clinic and was carefully watched.

February 20th, roseola and other secondary symptoms appeared. March 11, 1915, Wassermann's made at the Post-Graduate laboratory, and by Dr. Cyrus W. Field, at Bellevue, were strongly positive.

He was again presented at the March meeting of the Manhattan Dermatological Society and April meeting of the academy with almost unanimous concurrence in the diagnosis of reinfection.

The following treatment was administered for the rein-

fection: April 24, 1915, mercury salicylate; April 27th, salvarsan, 0.4 gram; April 29th, mercury salicylate; May 4th, salvarsan; May 6th, mercury salicylate; May 11th, salvarsan; May 13th, mercury salicylate; May 18th, salvarsan; May 20th, mercury salicylate; June 3d, mercury salicylate, also on the following dates: June 17th, 24th, July 8th, 15th, August 5th, 12th, 26th, and September 8th. Wassermann, October 27th, negative.

In connection with this case, it must be remembered, as Browning and McKenzie have remarked in their excellent manual, *Methods in the Diagnosis and Treatment of Syphilis*, p. 288, that real immunity in protozoal diseases is short lived, and when infection with syphilis is contracted in the usual fashion, after treatment with salvarsan and mercury there is a very strong presumption that



FIG. 6.—Condylomat about the genitals, following the pubic chancre.

these agents had in the first instance effected complete sterilization of the patient's tissues. The patient in this case manifested no symptoms after injections of salvarsan and mercury salicylate, which, as we have seen, are alone or both capable of sterilizing the host. It is reasonable to suppose that my patient was sterilized by the course of mercury and salvarsan. Again, his second chancre followed the usual course of events in case of reinfection. Thinking himself cured, for he found himself free from all symptoms, he repeatedly had connection.

It may be asked, Was this a case of autoinoculation? The question may be answered in the negative. It has been remarked by Fournier, in his *Recherches sur la contagion du chancre*, that the sore of inoculation is soft, not indurated. In support of this view a great deal of evidence has been collected;

by Quentin (1) and LeDuff (2). Quentin noted that the sore of autoinoculation resembled experimental lesions in apes, and I myself observed a certain resemblance of the second chancre in my patient to the experimental chancres in rabbits described by Uhlenhuth and Mulzer (3). But it is certain that these chancres are short lived, disappearing in a fortnight or less. Again, we know, as Dupuylat (4) points out that in all cases of autoinoculation the second chancre appears from two to three weeks after the first. In my patient ten months had passed.

It might also be asked whether the case I record was one of chancre redux. I think not, and for this reason: A chancre redux appears at the site of the old. Thus, an instance is reported by Petges and Dubreuil (*Journal de méd. de Bourdeaux*, xv, 32, 1914). The patient had syphilis in July, 1911; two injections of salvarsan and Ricord's pills; there were no secondary symptoms. In April, 1913, after repeated connection during three weeks, an induration formed at the place of the first chancre. Plaques in the mouth appeared as a secondary effect, and the case was considered as one of relapse.

In explanation of this case, three hypotheses may be put forward:

1. Reinfection; 2, pseudoreinfection; 3, superinfection. The possibility of superinfection has been very clearly discussed by McDonagh (5). He dismisses it with this brief summary. Superinfection can hardly be allowed, since we know that an inoculation of spirochetes, in any period, can only give rise to lesions of that period, namely, papules in the secondary and gummata in the tertiary. Therefore, when a typical rash occurs within six months of the first infection (i. e., early in the secondary stage), it cannot be explained by superinfection.

Autoreinfection, as LeDuff and Quentin have pointed out, is marked by a chancre with a soft base. It occurs not later than three weeks after infection.

In considering reinfection, Fournier's postulate that a period of years without symptoms must pass, was a good rule at the time. The case mentioned by John is an instance. But in these days of abortive treatment with mercury and salvarsan, reinfection unquestionably takes place in a short time. In Western's case, described above, the period of incubation was only seven days. In reviewing the recent literature, I have been struck by the agreement between my case and cases described by Queyrat (6) and H. Boas (7). Thus Boas says: After mercury the Wassermann reaction is usually negative, to become positive again in the course of a few months, when if treatment is not renewed, a relapse takes place. It seems to follow that cases, like Western's, in which spirochetes were found though the Wassermann was negative, becoming positive after injections of neosalvarsan, are true cases of reinfection.

In the case in my own experience, it will be observed, the Wassermann reaction had a normal course, and the only variation from the rule was the negative examination for spirochetes, but this I ascribe to the use of an ointment of ammoniated

mercury, the spirochetes being very easily destroyed by all antiseptics.

I desire to express my sincere thanks to Dr. George M. MacKee for the excellent photographs of this case.

REFERENCES.

1. QUENTIN: *Thèse de Paris*, 1905. 2. LEDUFF: *Thèse de Paris*, 1908.
3. UHLENHUTH and MULZER: *Kannchenversuche*, 1913. 4. DUPUYLAT: *Ann. Jour. Méd.*, 1914, p. 276.
5. McDONAGH: *Salvarsan in Syphilis*, p. 73. 6. QUEYRAT: *Sec. des hop. de Paris*, xxxvii, 1914, p. 379. 7. H. BOAS: *Derin. Zeitschr.*, xxii, 1915, p. 79.

133 EAST TWENTY-NINTH STREET.

THE GRIPPE AND OVERHEATING.

BY WILLIAM BRADY, M. D.,
Elmira, N. Y.

One thing upon which we all agree, both the "all bacteria enthusiasts" and the advocates of "exposure" as an essential factor in contracting acute respiratory infections, is this: It is beneficial to everybody, baby or adult, to have a daily airing.

Now an airing is thus described in a popular little catechism upon the care of children, by an eminent pediatricist:

Airing in the room may be begun with a strong, healthy child, even in cold weather, when he is one month old, at first for only fifteen minutes or twenty minutes at a time. The period may be gradually lengthened by ten or fifteen minutes each day until it is four or five hours. The airing may be continued in almost (*sic*) all kinds of weather. There is not great danger of a young baby's taking cold when aired in this manner if the period is at first short and the baby accustomed to it gradually. Instead of rendering the child liable to take cold, it is the best means of preventing colds. The child should be dressed with bonnet and light coat as if for the street and placed in its crib or carriage which should stand a few feet from the window. All the windows are then thrown wide open, but the doors closed to prevent drafts (*sic*). Screens are unnecessary.

This was published in 1915, at that! In the lexicon of the famous author a draft must be like the old lady's cats—the old lady had a small hole cut in the door for the little kitten and a large hole for the big cat. But maybe the nursemaids and timid mothers, for whose guidance the little book was intended, can protect the baby from all drafts by keeping the doors tightly closed, even without screens. It must be a dreadfully dangerous experiment, though.

As the infective character of the acute respiratory diseases—coryza, laryngitis, bronchitis, pneumonia, etc.—becomes more and more the accepted view of physicians and laymen, the importance of predisposing factors dwindles. But still our old friends, the "exposure" adherents, insist that atmospheric conditions and weather are a real predisposing cause of these infections. Here just recently they scored a distinct beat upon us "all bacteria" enthusiasts. They discovered that some polar explorer had written of certain attacks of "cold" among members of his party who were not careful about changing their wet clothes or something of the kind. Such an incident certainly merits the attention of hygienists. It is at least worthy of note that people far above the arctic circle do, on very exceptional occasions, suffer from "colds," because if that is the case, even though most other explorers brought back entirely differ-

ent reports, wouldn't it be ample proof, in the mind of any determined, adamantine exponent of the catching cold idea that, north of the circle, men really do suffer from incautious exposure, and that colds are therefore what our forefathers always thought they were—conditions wholly due to inclement weather? Of course it would. A man convinced against his will is ready to go clean to the North Pole if necessary for a scrap of evidence to support his original opinion.

We think for us here in New York the dictum of the State Department of Health is more to the point. In March, 1914, a little "health lesson," intended for the instruction of school children, appeared in *Health News*, the monthly bulletin of the department, and therein we find this view of "colds":

Every cold or other contagious disease is caused by a transfer of excreta from one person to another.

We like the confident, clear cut sound of that little sentence. One could wish it might have been printed in the catechism above cited, for the benefit of those poor, frightened, and greatly confused nursemaids who were trying to air the baby and yet preserve him from all drafts by opening the windows, shutting the doors, and relegating the screens to the attic.

Another little point upon which the most ardent bacteria man will agree with the most obstinate weather man is this: A daily cold sponge, plunge, or shower bath is especially beneficial for a person inclined to "take cold" easily—it tones and fortifies his vasomotor nervous system and helps to render him immune against exposure. That the effects of such a bath are salutary we cannot deny, no matter how we explain those effects. But why is it that we can see so much benefit in an application of cold water to the surface of the body, and see nothing but harm from an application of cold air to or about that same surface? Does cold water act upon the vasomotor nerves in any way differently from cold air? Not if our knowledge of the physiology of the nervous system and circulation is as complete as we like to imagine. Then why do our colleagues shake their heads in disapproval when we advocate short cold air baths for patients susceptible to the respiratory infections? Is there anything objectionable in advising a gentleman to go out occasionally, quite often in fact, without his overcoat, without his hat, or without his wristlets on, that his skin may receive a cold bath? Or in urging a lady to run out without bothering to put a shawl over her shoulders, or rubbers on her feet, or an extra piece of flannel across her chest? Will the impact of the cold air have any deleterious effect which a dash of cold water would not duplicate? Or will sitting in a draft bring any evil consequences that one would be unlikely to suffer from a shower bath? Provided, that in every case, the individual enjoys the experience. We can all agree here again. Not a cold bath nor a cold draft nor a cold morning can help your health the least bit if you don't enjoy it; indeed, your mentality is scarcely normal if you persist in suffering from any of these experiences on the foolish theory that the suffering is good for your health. On the other hand, supposing you are of normal mentality, in-

stinct alone ought to be sufficient guide, without any hygienic advice, in the question of exposing the body to cold water or cold air.

Another matter upon which most of us, at any rate, may find common ground, is the value of open air life. Now there is something salutary in the open air which an invalid seems to miss indoors. The sickroom may be never so well ventilated and hygienic in every respect, yet the invalid makes better progress toward recovery outdoors. The only opponent of this principle is, we suspect, the man who has not had a practical education in the value of open air treatment for many diseases. While we do not as yet know everything about the air, we do know that there is one great difference between the indoor air and the outdoor air during the greater part of the year—the outdoor air is cooler and not so dry as the indoor air.

The ill effects of vitiated, impure, or "bad" air are caused chiefly by heat and moisture. This has been scientifically demonstrated by good authorities. Warm dry air does not give the same sense of comfort as cool moist air. Air heated to a temperature of 65° F. generally contains more moisture than air heated above 70° F. Hot air, hot water, or steam heat all in about the same degree tend to dry the air too much, and none of the schemes for keeping the air moist is of any practical value. But this scheme is of practical value—the lower temperature affords the higher proportion of moisture in the air, and is therefore to be advised as a general custom.

Overheating is probably the great common predisposing factor of so called grippé—which is just another name for the acute respiratory infections. Of course crowding and contact are the ordinary means of transference of the infection, especially in moving picture theatres, street cars, subway cars and railway trains. But it is in these places of congregation and crowding that overheating is most noticeable. Some legal restriction ought to be placed upon the heating of public gathering places. It would be a simple matter to pass an ordinance setting, perhaps, 72° F. as the highest limit for heating, and attaching a heavy fine to insure respect for the law. If this was done and the law was rigidly enforced, the foul air so noticeable in many of these places would cease to be a menace to health—if our modern conception of vitiated air is correct.

Twenty years ago the idea of "colds" being infectious was scarcely given serious consideration. Today everybody knows these ailments are caused by bacteria. Twenty years hence, we venture to prophesy, the writer who sets down in his book bromidic nonsense about avoiding exposure or drafts in securing good ventilation and fresh air will be laughed out of countenance. The same predisposing causes that favor the contraction of diphtheria favor the contraction of the other upper respiratory infections, and to ignore such factors in the prevention and treatment of diphtheria and insist upon mentioning them in the prophylaxis of the other respiratory diseases, is merely pandering to a delusion that is certainly dying out, though dying hard.

CONGENITAL HERNIA.

BY WALTER B. JENNINGS, PH. B., M. D.,

Scarsdale, N. Y.

Hernia is such a common condition and so frequently seen by the physician that at first thought it might seem as if the last word had been written on the subject. In February, 1913, the writer showed in a few notes on a worsted truss that six males to one female had hernia and that there were five on the right side to seven on the left.

The photograph shows a boy, fourteen months old, with congenital hernia extending almost to the knees. The case was operated in, in the usual manner. During the operation the hernia was found to contain the transverse colon, cecum, appendix, a



FIG.—Doctor Jennings's unusual case of congenital hernia.

greater part of the small intestines, the omentum, and the posterior wall of the bladder.

That a child so young could have such an enormous hernia is interesting, to say the least. How any mother with intelligence enough to read could allow her child to go so long without consulting the family physician is beyond understanding.

There seems to be a feeling among medical men that infants and young children do not stand an anesthetic well. As a matter of fact they do. Of course, ether must be used and administered by a careful and skillful man. It seemed to the writer that this very large hernia with its contents, the age of the patient, together with the photograph might be of interest to readers of the NEW YORK MEDICAL JOURNAL.

POST ROAD.

Mild Diabetes in Children, by David Riesman (*American Jour. of Med. Sci.*, January, 1916).—There exists a mild type of diabetes in childhood and adolescence which is peculiar in its tendency to occur in several members of the same family. The glycosuria usually is moderate, although nervous excitement and other disturbing factors may augment it. Other diabetic symptoms often are slight and may be wanting. The disease is not progressive and may remain stationary or end in apparent recovery. In its general features it corresponds to the so called renal diabetes.

THE ALLEN TREATMENT IN DIABETES MELLITUS.*

A Report of Five Cases.

BY SAMUEL H. PALEY, M. D.,

New York,

House Physician, Har Moriah Hospital.

This series of five cases of diabetes treated according to the method described by Dr. Frederick M. Allen is reported because it shows that, at least in moderately severe cases and with proper treatment, patients may be kept continuously sugar free and yet maintain their metabolic equilibrium.

The Allen method of treatment consists of a fasting period during which the body is rid of its excess of sugar as shown by urine and blood examinations. When this has been accomplished, feeding is begun and the tolerance of the patient for carbohydrate, protein, and fat determined. The subsequent diet consists of such amount of each of the three food stuffs as can be given without causing glycosuria.

That this method of treatment ought to be satisfactory seems evident when we consider the pathological physiology in diabetes. The internal pancreatic function is disturbed, so that the pancreas cannot properly metabolize the food stuffs. It thus becomes necessary to test the functional capacity of the pancreas by first ridding the system of all excess of sugar and then, starting with small amounts of carbohydrate, protein, and fat, determining the tolerance for each without overtaxing the functional capacity of the pancreas or causing the appearance of sugar in the urine.

The subsequent diet, then, consists of those amounts of each of the three food stuffs as can be given without causing glycosuria.

Our method, with one modification, has been that employed by Doctor Allen. During the starvation period Doctor Allen gives his patients only a cup of tea or coffee. Our patients were given whiskey containing forty-five to fifty per cent alcohol—a suggestion made by Dr. S. Neuhof, as a means of supplying calories during the fasting period and yet adding nothing which might be converted into sugar. Indeed, our patients felt perfectly comfortable while taking the whiskey, except that they complained of some weakness which might have been due to the starvation. It is of interest to note that patients took as much as twelve ounces of whiskey in twenty-four hours; there was no evidence of alcoholism nor, in cases where nephritis was present, was there any evidence of damage to the kidneys. In detail, our treatment has been as follows:

Fasting. The patient is put to bed and all food withdrawn. He is given one ounce of whiskey with four ounces of black coffee, or four ounces of vichy every two hours, day and night. Women get half this amount. It has taken on an average three days for the patient to become sugar free.

Carbohydrate tolerance. When the twenty-four hour specimen of urine is sugar free, the patient receives 150 grams of vegetables containing about five per cent. carbohydrate. Such vegetables are asparagus, string beans, spinach, lettuce, sauerkraut, cucumbers, tomatoes, cabbage, cauliflower, radishes,

*Read before the Clinical Society of Har Moriah Hospital, November 1; Alumni Association of Har Moriah Hospital, November 5, 1915.

and olives. Every day the amount is increased. Later potatoes containing twelve per cent. carbohydrate and oatmeal containing sixty per cent. carbohydrate and other starchy foods are added until sugar appears in the urine. The amount of carbohydrates given during the day preceding the reappearance of sugar, shows the tolerance of the patient for that food.

Protein tolerance. When the patient has been sugar free for three days, two eggs, containing fifteen grams protein are added. Every day another egg is added until six eggs are given containing forty-five grams of protein. Now chicken is added to make up a total of seventy grams of protein.

Fat tolerance. The average diabetic can take about forty grams of carbohydrates and eighty grams of protein, giving a total of about 500 calories. The remaining number of calories, about 1,200, required in the twenty-four hours, must be made up from fat. Since one gram of fat contains about nine calories, 130 grams of fat are needed. The six eggs given according to our diet contain thirty grams of fat. The required remainder of fat may be given in the form of cream containing

twenty-four hour urine contained 1,300 c. c., specific gravity 1.023, sugar negative. Blood sugar 0.14 per cent.

On the fifth day the patient was given 150 grams of vegetables and six ounces of whiskey in the twenty-four hours. The amount of vegetables given was increased daily; eggs and cheese were added. On the fourteenth day, sugar 0.4 per cent., reappeared in the urine. At this time patient was getting about thirty grams of carbohydrate, sixty grams of protein, sixty grams of fat, and six ounces of whiskey. All food was immediately withdrawn and whiskey, one ounce every two hours, allowed. Within twenty-four hours the urine again became sugar free. The diet preceding the reappearance of sugar was gradually resumed and several days later, chicken added. Day by day the diet was increased and on the twenty-fifth day sugar again reappeared in the urine. The same regime was followed until the sugar disappeared; the diet was then slowly resumed. On the thirty-ninth day the patient was discharged sugar free. At this time he was getting about thirty-five grams of carbohydrate, eighty grams of protein, and 110 grams of fat, in the form of vegetables, soups, eggs, cheese, cream, chicken, and two slices of bread daily. These gave him about 1,450 calories and kept him sugar free. On admission the patient weighed ninety-three pounds; on the fourth day, ninety-one pounds, after which he began to gain and when discharged from the hospital he weighed ninety-nine pounds.

CASE II. W. B., aged thirty years, male, married, tailor, present complaint of nine weeks' duration. Symptoms were chiefly weakness and pain in both lower extremities,

CASE I. MALE, ONSET IN 1905 AT FORTY-THREE YEARS
URINE

Date, 1915.	Weight in pounds.	Volume, Gms.	Reaction.	Specific gravity.	Acetone and diacetic		Blood sugar, per cent.	Carbohydrates, Gms.	Diet			
					Sugar, per cent.	diacetic, per cent.			Protein, Gms.	Fat, Gms.	Whiskey, ounces.	Calories.
June 21.....	93	1,400	Acid	1.040	8	0	0.85	0	0	0	12	1,135
June 22.....	93	1,400	Acid	1.040	8.25	0	0.84	0	0	0	12	1,135
June 23.....	93	1,400	Acid	1.043	8	0	0.84	0	0	0	12	1,135
June 25.....	91	1,400	Acid	1.040	0	0	0.11	7.5	0	0	0	600
June 30.....	95	1,400	Acid	1.025	0	0	0.11	18	48	40	6	820
July 4.....	85	1,400	Acid	1.021	0	0	0.11	30	174	60	0	930
July 8.....	85	1,420	Acid	1.018	1.4	0	0.11	0	0	0	12	1,135
July 8.....	96	2,100	Acid	1.018	0	0	1.2	15	6	0	12	1,181
July 12.....	99	1,400	Acid	1.023	0	0	0.11	0	0	0	0	600
July 14.....	99	1,400	Acid	1.018	0.5	0	0.11	35	180	0	0	1,270
July 17.....	99	1,400	Acid	1.018	0.5	0	0.13	0	0	0	12	1,135
July 20.....	99½	1,400	Acid	1.023	0	0	0.11	20	60	90	0	1,130
July 21.....	99	2,000	Acid	1.020	0	0	0.14	35	80	110	0	1,450
July 30.....	99	1,850	Acid	1.020	0	0	0.11	35	80	110	0	1,450

twelve per cent. fat and butter containing twenty-five per cent fat.

Reappearance of sugar. If sugar reappears in the urine, all feeding is stopped and the patient put back on whiskey until he is sugar free, which occurs usually in twenty-four hours. The diet preceding the reappearance of sugar is gradually resumed and even increased until the full tolerance is reached, an amount found to be slightly higher than before.

It has been found advisable to keep the patient in the hospital for a sufficient length of time to accustom him to the specific diet; when discharged from the hospital, he is given full directions as to his feeding. He is also told the importance of having his urine examined at frequent intervals.

CASE I. B. S., aged fifty-three years, male, married. For the past ten years had dryness of the mouth, thirst, drinking large amounts of water, and polyuria. Itching of skin at times. Appetite good. Lost forty-four pounds during the past year. Physical examination showed moderate emaciation. Chest and abdominal organs were apparently normal.

Twenty-four hour specimen of urine contained 1,100 c. c., acid reaction, specific gravity 1.040, sugar five per cent. No acetone, no diacetic acid. Blood examination for sugar by Epstein method showed 0.85 per cent.

Patient was put to bed and all food withdrawn. Was given whiskey, twelve ounces in the twenty-four hours. On the second day the amount of urine in the twenty-four hours was 980 c. c., specific gravity 1.038, sugar 0.25 per cent. Blood sugar 0.84 per cent. On the third day the

slight itching eruption in the pubis and scrotum; severe thirst and polyuria. Lost fifteen pounds during past three months. Physical examination showed an adult male fairly well nourished and developed; chest and abdominal organs apparently normal. Urine on admission, 2,500 c. c. in twenty-four hours, acid reaction, specific gravity 1.026, sugar 5.5 per cent., no acetone, no diacetic acid.

Treatment exactly as in Case I. On the second day the twenty-four hour urine was 1,400 c. c., specific gravity 1.018, sugar 1.56 per cent. On the third day, 1,400 c. c., specific gravity 1.016, sugar none. On the fourth day patient was put on a vegetable diet with increasing amounts daily. Patient remained sugar free; on the seventh day he left the hospital against advice, saying that he felt too well to remain.

CASE III. M. R., female, aged fifty-three years, married. This case was of special interest because, beside diabetes, the patient suffered from chronic intestinal nephritis. Gave a history of diabetes of ten years' duration. Three weeks ago patient noticed occasional edema of the feet and passed less urine than formerly. Physical examination showed a poorly nourished female, lungs negative; heart, systolic murmur, heard best at apex and transmitted toward the axilla. Aortic second sound accentuated. Heart enlarged downward and to the left. Blood pressure, systolic 200 mm., diastolic 110 mm. Urine in twenty-four hours, 750 c. c., acid reaction, specific gravity 1.031, sugar 2.5 per cent. Albumin a trace. Microscopically, few granular casts and many epithelial and white cells. Blood sugar 0.22 per cent.

Treatment: Patient was put to bed and all food withdrawn. Was given whiskey half ounce with black coffee or vichy four ounces every two hours. The following day the twenty-four hour urine showed 0.25 per cent. of sugar, and on the third day the urine was negative for sugar; a

trace of albumin and a few granular casts were passed. She was put on a vegetable diet, given soup, tea, and black coffee. Later soft boiled eggs and chicken were added. On the fourteenth day she left the hospital, having gained two and one quarter pounds in weight and remaining sugar free. Her nephritic condition improved also, despite the alcohol. The edema and granular casts disappeared; the systolic blood pressure fell from 200 mm. to 180 mm. but a trace of albumin remained.

CASE IV. F. T., female, aged forty years, married. This case illustrated that the treatment might be followed even during an acute infectious disease. History of diabetes for the past two years. Present history: Typical pneumonic invasion with acute onset. Physical examination: Adult female, well nourished and developed, weight 183 pounds; heart negative. Lungs showed pneumonic consolidation of the left base. Temperature 103.2° F., pulse 105, respirations thirty-four. Blood count showed 11,000 white cells per c. mm. Polymorphonuclear cells eighty-seven per cent. and lymphocytes thirteen per cent. Urine in twenty-four hours, 1,800 c. c., acid reaction, specific gravity 1.035, sugar five per cent., no acetone, no diacetic acid.

Treatment: Patient treated precisely as in Case III. The crisis occurred on the fifth day after admission, being the seventh day of illness. The proportion of sugar had gradually fallen and on the day following the crisis showed 1.6 per cent. The patient was at first given vegetables; later soft boiled eggs, cream, and chicken were added. Eleven days after the crisis, she had gained two pounds in weight; but her urine continued to show 1.1 to 1.6 per cent. of sugar. One week later she was discharged. Her urine still showed the same amount of sugar.

In this case, then, we were able to reduce the sugar entirely, but instead of passing five per cent. of sugar, she was placed on a diet which was more than sufficient to maintain her metabolism, and yet pass only from 1.1 to 1.6 per cent. of sugar. Of extreme interest is that the treatment was carried out during an attack of lobar pneumonia in a stout woman, a poor subject for pneumonia.

CASE V. H. C., male, aged fifty-one years, married. Previous surgical history, two years ago he sustained a compound fracture of lower third of right leg, with malunion and a deep extensive ulcer. Present complaint: Three weeks ago he had pain over the precordium, radiating to the left arm and back of chest. Physical examination: Well nourished and developed. Lungs negative. Heart, systolic murmur at the apex transmitted toward the axilla. Blood pressure, systolic 180 mm., diastolic 90 mm. Urine in twenty-four hours, 1,100 c. c., acid reaction, specific gravity 1.040, sugar seven per cent., no acetone, no diacetic acid. Diagnosis, cardioclerosis and diabetes.

Treatment: Exactly as in Case I. After three days the urine became sugar free. The patient was then put on vegetables, later eggs, cheese, cream, meat, oatmeal, gruel, and two slices of bread were added. His urine remained continuously sugar free. On the twenty-sixth day, patient was discharged and at that time was getting forty grams carbohydrate, seventy grams of protein, and 125 grams of fat. He lost two pounds during the first week at the hospital; the weight then remained stationary.

The study of these cases and their treatment allow of the following conclusions:

1. A patient with sugar as high as seven per cent. may become sugar free within three days when starved and given only whiskey.

2. Beginning with small quantities of carbohydrate in the form of nonstarchy vegetables in gradually increasing amounts and later adding protein and fat, a tolerance can be established for the three food stuffs sufficient to maintain the metabolism of the patient and yet keep him free from glycosuria.

3. Apparently an acute infection, e. g., lobar pneumonia or a chronic disease, e. g., nephritis, is no hindrance to this form of treatment.

4. Patients took the treatment with no discomfort, except perhaps some weakness during the starvation period.

5. Alcohol had apparently no deleterious effects.

REFERENCES.

1. ALLEN: *Journal A. M. A.*, Nov. 7, 1914.
2. IDEM: *Boston Medical and Surgical Journal*, March 7, 1915.
3. JOSLIN: *American Journal Medical Sciences*, Oct. 1, 1915.

138 EAST SECOND STREET.

THE TREATMENT OF OBESITY.*

Some Cardinal Principles in the Dietetics of Obesity,

BY JACOB GUTMAN, M. D.,
New York.

Professor of Materia Medica, College of Jersey City, Departments of Pharmacy and Dentistry; Instructor in Medicine, New York Post-graduate Medical School and Hospital.

We are all familiar with the fact that prolonged starvation causes a diminution of bodily weight. Underfeeding, for that reason, is the underlying principle of practically every variety of obesity cure. It would seem superfluous, therefore, to speak of methods of weight reduction or of fundamental principles in the dietetics of obesity. Nevertheless, upon closer examination of the practical application of this principle in the preparation of dietaries we immediately find considerable divergence of views, not only in the manner of application, but even in the interpretation of the principle itself. With the exception of the one fact, the necessity of reducing the total daily quantity of food, few authorities agree upon the variety of nutrition or upon the mode of its administration. Indeed, many dietaries are without scientific or physiological basis. It may be permitted, therefore, to indulge in a brief discussion of the subject, laying particular stress, first, upon the more important principles governing the selection of a dietary for the obese, and second, upon the indications and contraindications of such treatment.

By obesity we mean an excessive accumulation of fat in places where normally it is found in but moderate amounts, i. e., in the subcutaneous tissues, omentum, body cavities, liver, glands, etc. The interpretation of the term, moderate, is subject, of course, to the judgment of the individual observer: what may seem moderate to one may be pronounced as excessive by another. That the normal, moderate amount of fat has a definite function cannot be denied. Indeed, it serves some very useful purposes. It protects numerous organs and sustains others in position. Its storage serves for energy production, being utilized constantly for oxidation purposes and heat production. It prevents a too rapid loss of the bodily heat. It avoids the wasting of the organism's more vital tissues, the body proteins. It also helps to impart the external form to the various organs. A certain amount of bodily fat is therefore physiologically necessary. Hence, reduction cures, whenever applied, should never be forced to such an extent as to decrease this necessary useful minimum.

On the other hand, the excessive accumulation of fat demands removal. It is not as harmless as many

*Read before the New York Physicians' Association, November 24, 1915.

laymen and some physicians would have us believe. On the contrary, the excess is more dangerous than is generally appreciated. While the fat causes no pain or visible damage, it nevertheless produces its harmful effects slowly and surely, though invisibly. The most important organ, the heart, is particularly affected by the accumulated fat. This adiposity compels the organ to provide for circulation in a greater volume of tissue. This requires greater motive force, greater expelling power, or more frequent action if the heart is inadequate for this increased force. The burden of this organ is still further increased in a mechanical way, by the localization of the fat within the heart substance, the pericardium, its grooves, the apex, etc. (*adipositas cordis*); all these conditions hamper the organ.

The adiposity of the abdominal cavity contents causes increased intraabdominal pressure, which augments the labors of the muscles of inspiration, of the diaphragm in particular. The latter is also interfered with in its downward excursions during inspiration, thus decreasing the expansion of the chest cavity and necessarily diminishing the volume of inspired air. This reduction of necessary oxygen causes inefficient oxidation of the metabolic products injurious to the organism, the retention of which is harmful to the body and creates pathological conditions.

Another deleterious effect of obesity is the heavy weight of the individual. The great volume of the body, its excessive weight compels the victim to curtail his usual exercises and activity, both of which are necessary to health. This inactivity still further aggravates the obesity, as it reduces the oxidation processes and the destruction of fatty tissues concomitant with such exercise.

By its situation in the liver, the glandular tissues, and other internal organs the fat interferes with their vital functions, which in these cases are manifold and of enormous bearing upon the metabolism and the welfare of the individual. The harmful effects of such interference may be easily comprehended without further explanation. The presence of the adipose tissue even subcutaneously is deleterious, for it interferes here with the peripheral circulation, decreasing the normal cutaneous respiration and thus interfering with the thermostat of the body. This is of great moment to the victim, as it favors sunstroke in a hot climate or on a hot day.

Nor do the skeletal muscles escape injury in the obese, for the fat, by its occupation of the intermuscular spaces, compresses the individual muscle fibres, causing pressure atrophy and degeneration. This results in constant weakness, slow activity, lassitude, early exhaustion, and such similar states on the part of the subject.

From the foregoing it may easily be concluded that the harm accomplished by excessive adiposity is varied and of serious consequence. Hence the imperative advisability of its reduction is evident. However, reduction may not always be attempted with impunity, no matter how advantageous it may appear. In conditions where there is a natural tendency to progressive loss of flesh, reduction cures are not permissible. This is particularly true in tuberculosis and diabetes; hence, only in the most extreme cases is it permitted to employ this treat-

ment. Nor is it advisable to apply the treatment to adults above fifty years of age, for the natural tendency of fat is to disappear at this age, concomitant with the gradual decline of the sexual function. Neither is the treatment indicated in those numerous cases of so called neurasthenia with a train of symptoms formerly little understood, but now better studied and correctly identified with physiological disturbances of the internal secretory glands; for in all these cases one important symptom is always to be found, loss of weight and weakness.

On the other hand, reduction cures should not be neglected in every case of high grade of obesity, no matter at what age, as the condition is always a threatening and dangerous one. Medium grades of obesity may be overlooked in middle aged persons, but never in the young. Nor must it ever be disregarded in those cases where it is the accompaniment of chronic diseases of the circulatory apparatus—myocarditis, cardiac insufficiency, arteriosclerosis. The same statement is true of the obesity accompanying emphysema, chronic pleuritis, bronchiectasis, bronchial asthma, and other similar respiratory disturbances. The adiposity occurring in those with sclerotic kidneys or the various forms of arthritic disease, whether uratic or rheumatic, must be given attention before any favorable result may be expected from the usual treatment.

Having decided upon the advisability of reducing a given case of obesity, our next problem is the preparation of the dietary. Before attempting this method of treatment, however, it is well to determine whether the diet alone will suffice to obtain successful results. While it is true, that systematic underfeeding will accomplish satisfactory results in cases of obesity, classed by von Noorden as exogenous, it will not suffice to accomplish similar results in the other class of cases, the endogenous. To the latter class belong cases resulting from the disturbances of the functions of the various endocrine glands. It seems to me, that the great majority of obesity cases belong to this class, and only a very few cases constitute the other, the exogenous class. To the latter category belong the cases of obesity caused either by overfeeding or by underexercising, or both. Repeated excessive intake of food, or diminished expenditure of energy disproportionate to the intake must leave a balance for accumulation within the organism. In the endogenous variety, on the other hand, this disproportion need not necessarily be an accompanying etiological factor. Such persons often take a moderate amount of food, and yet continue to add weight constantly. This is due to the abnormally low oxidation quotient, to a low rate of metabolism, a diminished oxygen consumption, a low nitrogen excretion. Even the respiratory quotient is depressed. This condition has been found to be constantly associated with a deficient function of the thyroid gland. What the causative reason for this subthyroidal state is, or what pathological conditions underlie it, need not be discussed here. Suffice it only to remark, that in the obese a small thyroid is a common finding.

The hypophysis cerebri also takes part in the production of obesity. The same is also true of the sexual apparatus, examples of which are daily at hand in the forms of obesity after menopause, mid-

dle age, in pregnancy, lactation, etc. It is also a known fact that the thymus, the pineal gland, the pancreas, and other endocrine glands have an important bearing upon the accumulation of fat in the body. All such cases of an endogenous nature, as it may be readily understood, cannot altogether be affected by diet alone, although their improvement may be favored by such treatment. On the other hand, the true exogenous cases are distinctly and definitely improved by diet and diet alone.

Having come to the conclusion that a dietary will be of benefit in the case in question, in the preparation thereof several cardinal principles must be taken cognizance of in order to meet the physiological requirements.

In the first place, it must be decided whether a rapid, a moderate, or a slow reduction method is to be employed, and in accordance with such a decision the total calorific value of food per diem must be graded. In the first instance, only about two fifths, in the second about three fifths, in the third about four fifths of the normal food requirement is to be administered; or, in scientific onomatology, about 1,200, 1,600, and about 2,000 calories respectively.

In the second place, it must be borne in mind that the reduction cure must not become a starvation cure, i. e., while the nourishing qualities of the food are reduced, its bulk must be sustained. A diminution in the bulk causes a sensation of hunger, resulting in dizziness, fainting spells, headache, nervousness, irritability, etc., conditions absolutely unnecessary and uncalled for. Hence we administer bulky foods.

In the third place, the preservation of the body proteins from which the cells proper are constructed should ever remain a guiding principle. We reduce, therefore, the other varieties of food, eliminate, if desired, all fats, decrease the protein intake, but never to an extent that the organism is compelled to utilize its own in the processes of life. Therefore, we never administer less than about 600 calories of proteins in any form of reduction diet.

In the fourth place, the total daily calorific value should be gauged, not by the weight of the individual, as in the obese, but by the weight of a normal individual of the same height, sex, and age, for the great bulk of inactive fatty tissue does not consume proportional energy.

In the fifth place, we do not allow more than a maximum of thirty calories per kilo a day, notwithstanding the activity of the patient, although we allow forty, fifty, and sixty calories in normal cases of moderate or excessive activity, for, as a rule, the obese individual will not indulge in much more exercise than the ordinary person when at rest. As a rough guide for the estimation of the weight, the height of the individual as expressed in cm., less 100, will determine the number of kilograms the patient ought approximately to weigh. There are other methods perhaps more accurate for weight estimation, such as Oeder's and von Noorden's, but for practical purposes the above mentioned method is adequate.

Sixth, we determine the total combustion value of the daily intake of food by multiplying the number of kilograms of normal bodily weight, as previously

calculated, by 30. This gives the necessary amount of food to sustain life and normal weight. We reduce the amount to the required fraction in accordance with the desirability of a rapid or slow loss of flesh. Under these circumstances the organism will be compelled to sustain itself at the expense of its own tissues, the fat being first sacrificed. Magnus Levy has found that an ordinary individual of medium weight expending 2,700 calories a day, distributes the calorific consumption in the following manner: 1,600 of these are utilized by him for the vital processes of life, respiration, circulation, heat production, etc., 240 calories are expended for gastrointestinal energy during digestion, while 860 calories are consumed for all other exercises, useful or useless. Jaquet found that these relative proportions hold true in cases of obesity, although the absolute expenditures are all diminished. Hence, the meagre and reduced dietary administered to the obese suffices only partly to supply energy for the most vital processes of life. The digestive and other expenditures must therefore be necessarily derived from an energy obtained from the combustion of the most easily burned material, the fat; hence, a diminution of the adiposity.

Seventh, in prescribing a diet the physician must bear in mind also the patient and not only the obesity, i. e., we must not disregard the customs, wishes, and individual predilection for foods by the patient, if it is thereby possible to gain his cooperation and satisfaction. It is not a hard problem to substitute intended food for that more palatable to the patient, provided that the nutritive value thereof is kept in mind.

Eighth, we do not attempt to reduce weight too rapidly. Rapid loss of fatty tissues may favor the destruction of other tissues, especially muscular, like that of the heart. It is a fact that in inanition the adipose tissue suffers first and foremost, so that from seventy to ninety per cent. may disappear entirely, while the fleshy albuminous organs, such as the muscles, glands, blood, etc., will lose from forty to fifty per cent. The nervous system and the nuclear protoplasm, i. e., tissues of highest function, are the last and least to suffer in inanition, losing but one to two per cent. in substance. Nevertheless, in the course of a rapid loss of flesh, exemplified in actual starvation or too rapid reduction cures, these higher tissues participate to a greater degree in the general destruction.

Ninth, while reducing the obesity of our patient, we keep him under constant observation, and are not alarmed if in the first few days his nitrogen balance, the guide to his protein metabolism, is on the wrong side, for in the next several days his organism will accommodate itself to the new conditions and new diet. We are not overjoyed when the scale shows a rapid weight reduction in the early period of treatment, for the body will soon find means to overcome this disturbance of its balance, and the reduction rate will be thus diminished. We keep in mind the carbohydrate supply as well as the protein material, for the natural deposit of the stored glycogen in liver and muscles, in amount equal to about 500 grams will soon be exhausted and the supply must again be replenished; otherwise the system will suffer.

Tenth, we must not be vague in our orders, but be explicit in our directions. We specify the articles and the amounts of every food permitted, we instruct the patient to use weight and measures. We do not let him depend upon quantities estimated by himself, but we permit him all the water he needs in his economy, yet are not too liberal.

Keeping the above described principles in mind, the actual preparation of a dietary, based upon sound physiological principles, becomes an easy matter to the physician. It is altogether unnecessary to depend entirely upon any of the numerous ready made dietaries recommended by our English and foreign writers, notwithstanding the extensive use some of these diets enjoy in the countries where they originated. While it is true that many of the recommended diets are of some merit and are applicable in a number of cases, it is also true that the demerits of these, as well as of others, are not to be disregarded. Whatever their value may be, it is better practice to prepare a diet to fit the individual case rather than to attempt to fit different cases to the same diet. A diet specially prescribed is always of more value, more scientific, better adapted to, and more appreciated by the patient. On the other hand, in order to save time, it is advisable to have on hand a skeleton diet, so composed as to meet all general requirements of a successful obesity cure. Table I exhibits one I have used for a number of years with very good results. Although modifications of this schematic diet were made in a great many of my cases, the fundamental basis was retained. The skeleton diet contains about 1,100 calories, of which over 400 are in the form of proteins, 540 in carbohydrates, and only 150 in fats. The amounts of proteins and carbohydrates suffice for the prevention of unnecessary tissue waste, while the quantity of fat constitutes a minimum. The proteins found in the dietary are of various kinds, animal, vegetable, etc., producing upon decomposition various forms of aminoacids, a fact of importance in the reconstruction of every body cell. There is also sufficient bulk of food at every meal, enough to satisfy even a good appetite. The quantity of fluid contained in the diet is also sufficient to meet the demand of the ordinary processes of metabolism. This diet, with a certain amount of modification, has enabled me to obtain a loss of weight in every case, with but few exceptions; in some even as much as twenty and twenty-two pounds were lost during the first month of treatment.

Modifications of the diet can easily be accomplished by the substitution of some articles of food by others. This may be facilitated by the use of some such table as the one hereto appended, Table II, exhibiting the calorific value of foods. Thus, personal predilection for particular foods, the habits and social usages of the patient, as well as changes of the dietary to avoid monotony, can be easily and simply accomplished. It is best also to adhere to the use of simple foods and to avoid table luxuries. The latter are often stimulating to the palate, favoring an extraordinary intake of food and an increase in the obesity. They are also difficult to compute as to their energy value, which makes their administration in exact quantities difficult.

TABLE I. SKELETON OF REDUCTION DIET (GUTMAN).

Quantity in grams.	Food.	Proteins.	Fats.	Carbohydrates.	Calories.
<i>Breakfast:</i>					
100	Baked apple	0.3	....	12.8	53
50	Egg	6.0	5.7	0.4	84
50	Roll	3.5	0.2	28.2	132
200	Tea, lemon .....	....	....	....	....
5	Sugar .....	....	....	4.8	19
<i>Luncheon:</i>					
100	Lamb chop or cold chicken	10.0	0.8	....	100
100	Salad	1.1	0.4	1.8	15
40	Rye bread	1.9	0.2	20.0	88
200	Buttermilk	7.2	1.8	7.6	84
<i>Dinner:</i>					
200	Consommé	1.2	1.2	....	16
200	Beef, steak	40.0	5.4	....	242
100	Potato	1.5	0.1	20.0	53
200	Fresh vegetables	2.2	0.4	3.6	30
150	Fruit dessert	0.5	....	18	75
200	Coffee .....	....	....	....	....
40	Rye bread	1.9	0.2	20.0	88
Total		86.6	16.2	137.2	1,114
Calories		418	156	540	1,114

TABLE II.—CALORIFIC VALUE OF 100 GRAMS OF COMMON FOODSTUFFS.

Foods.	Calories, average.
Lean beef	100
Lean chicken	110
Lean lamb	100
Fish	70-90
Lobster	90
Oyster	60
Milk	60
Buttermilk	60
Skimmed milk	45
Butter	750
Cheese	450
Eggs	150
Bread	250
Flour	350
Sugar	400
Potatoes	90
Vegetables	20-40
Fruits	50

867 ST. MARKS AVENUE, BROOKLYN.

THE METABOLISM OF TISSUE AUTOLYSIS:

Some Observations on Certain Phases Thereof.

BY BERNARD OETTINGER, M. D.,
Long Beach, California.

Osler (1) states that the mode of origin of peptic ulcers is unknown, but that trophic influences, bacterial necrosis of the mucosa, and spasm of the muscular coat in limited areas are among the hypotheses which have been advanced. Their anatomical explanation he accords to interference of the blood supply in small circumscribed areas of the mucosa, the erosion being effected by the gastric juice, i. e., the ulcer is due to an autodigestion.

In a general way evidence is not lacking that the occurrence of peptic ulcer is, on the one hand, often associated with known systemic intoxications and upon the other, coexists with chloranemic derangement of the blood of more or less obscure origin. Also, the blood condition is not the result of hemorrhage due to ulceration. For example, small abrasions of the stomach mucosa may follow acute pneumococcal or septic infections and a resulting hemorrhage may prove fatal (Dudarof). Between gastric erosion and the acute form of gastric ulcer no anatomical difference exists.

Again, anemia and chlorosis predispose strongly to gastric ulcer, particularly in association with menstrual disorders. Peptic erosions are met with in cachectic states in children. Ulcer of the small intestine and cecum is not uncommon in syphilis in

the adult as well as the newborn. In chronic tuberculosis the infection rarely attacks the stomach, yet catarrhal ulcers of the duodenum are not infrequent and the blood state is one of chloranemia. Many acute intoxications present a hematogenous jaundice evidencing blood disintegration. But some erythrocytic disintegration is also found associated with mere peptic erosion. Here the mucosa is usually blood stained by hemorrhage beneath its surface in varying stages of decomposition and absorption. Meantime pertinent to the foregoing is Vaughan's (2) statement that evidence which is at hand opposes the generally held opinion that intestinal ulcers are the direct effect of various pathogenic organisms, and favors the view that ulceration even when associated with bacterial invasion is due to tissue autolysis.¹ In the same connection, we recall that peptic ulcers of the stomach and of the duodenum have been produced by feeding cultures of *Bacillus coli* to dogs and that from peptic ulcers of very young infants Helmholtz has isolated the same organism in pure culture.

In epidemic hemoglobinuria of the newborn (Winkel's disease), the child has fever, is jaundiced, and sometimes cyanosed. Post mortem examination shows a swollen spleen and punctiform hemorrhages of different viscera and mucous surfaces. Methemoglobinemia exists since methemoglobin is found in the urine.²

Jaundice and methemoglobinemia make evident the existence of hemolysis and in turn, wherever jaundice or hemolysis is clinically noted, methemoglobinemia in greater or less degree is present, because erythrocytic disintegration either within or without the body and whether induced by oxidizing or reducing substances or by indifferent agents, such as heat, cold, electricity, etc., is invariably associated with methemoglobin formation. The latter is of constant occurrence, for as Kobert (4) states "betwixt blood pigment and bile pigment occur methemoglobin and hematin." We may easily understand, therefore, that a methemoglobinemia may be undetectable because of slight degree. Beyond this, however, Lepine whom Kobert quotes, doubts the detection by spectroscopic exami-

nation of a methemoglobinemia involving less than twenty-five per cent. of total blood pigment.

Certain cases of epidemic hemoglobinuria (so called Buhl's disease) show acute fatty degeneration of internal organs, an association therefore of toxic methemoglobinemia and one type of regressive tissue metabolism. In syphilis hemorrhagica neonatorum the extensive hemorrhages noted may be subcutaneous, from mucous surfaces, and the navel. The child is deeply jaundiced, i. e., hemolysis and a methemoglobinemia exist. Syphilis in the adult sometimes manifests itself as an acute yellow atrophy of the liver, whose symptomatology comprehends jaundice, hemoglobinuria (methemoglobinuria), liver necrosis associated with hemorrhages in the skin and from mucous surfaces. In the same pathological category belong certain symptoms of the hemorrhagic type of typhoid fever, in which bleeding occurs from various parts of the body.³ Although rare, this form is clinically well recognized. Bleeding is frequent from the nose, gums, and intestines and less often from the lungs, kidneys, or uterus. There may be bleeding into the tissues and cerebral hemorrhage has occurred. McCrae (5) says it is probable that mild cases of this character are not so rare as statistics indicate. In a case of typhoid fever reported by Musser and Kelley there were hemoglobinemia and hemoglobinuria. From what has been said, the presence of methemoglobin is indicated here. Respecting an allied condition, Garrod (6) says, "where hematuria is of a smoky appearance methemoglobin is present."

Discussing morbus maculosus neonatorum, Osler says that apart from common visceral hemorrhage the result of injuries at birth, bleeding of the newborn from one or more surfaces is not an uncommon event, particularly in hospital practice. Of Townsend's fifty cases, blood came from the stomach surface in fourteen, from the mouth in fourteen, from the nose in twelve, from the navel in eighteen, and from the bowel in twenty. In this form of hemorrhage from the bowel (malena neonatorum) ulcers of the esophagus, stomach, and duodenum have been observed.

In all, these findings evidence a symptomatology comprehending infection, hemorrhage, hemolysis, jaundice, methemoglobinemia, autolytic ulceration of the digestive tract, and necrosis of other viscera of like character.⁴

Meantime, we recall that a great variety of non-infective systemic poisons, mineral, gaseous, or which exist as organized ferments of animal and vegetable life may produce a similar train of symptoms. Thus potassium chlorate in large doses, poisoning by phosphorus, toluidinamin, arsenic, snake venoms, muscarine, etc., have produced intense hemolytic jaundice, toxic methemoglobinuria, visceral and cutaneous hemorrhages, etc. Of the foregoing, the intense action of phosphorus and toluidinamin is particularly remembered in connection with acute liver necrosis (acute yellow atrophy) and associated

¹Vaughan says: "No bacterial protease is capable of digesting living protein. This seems to me of great importance. The prevailing idea among morphologic pathologists seems to be that the lesions of the infectious diseases are due to the digestive action of the bacterium on the body cell. The typhoid bacillus is supposed to feed on the walls of the intestine and cause ulceration, and the spirochetes are believed to induce the lesions of tertiary syphilis in like manner. Everything known up to the present time concerning the digestive action of bacteria is contradictory to these views." Manwaring says (3): "Infection may cause death and disintegration of certain cells of the body and the decomposition of body fluids. This is illustrated by the breaking down of the erythrocytes in malarial fever, by the destruction of the capillary endothelium in severe exanthemata, by parenchymatous degeneration, and by the circumscribed necrosis of abscesses. The effect of this destruction depends largely on whether or not the dead tissue undergoes autolysis. If not invaded, a comparatively slow autolysis occurs, due to intracellular and circulating enzymes, with the formation of albumoses and smaller quantities of peptones and other end products of tryptic digestion. If bacteria enter there is in addition a rapid putrefactive process, giving rise to decomposition products similar to those of intestinal putrefaction. Among these are histone, Bence-Jones albumose, and certain diazobodies. Certain of these products, such as hemoglobin set free in blood destruction, may appear unchanged in the urine. The other substances undergo changes similar to those in intestinal putrefaction." Quite in accordance with these views is the conception that bacterial toxins or other pathogenic ferments sensitive body tissues, i. e., cause them to elaborate special ferments to digest and thus destroy the foreign protoplasm (*Allergie*, von Pirquet). The same defense mechanism, however, tends to effect auto-digestion of essential tissue cells.

²The condition which is as yet quite generally referred to in textbooks as an hemoglobinuria is always, at least in part, a methemoglobinuria.

³Acute yellow atrophy of the liver has also been noted in connection with typhoid fever.

⁴Of collateral interest are certain cases of permanent cyanosis associated with intestinal disturbances in which methemoglobinemia has been shown to exist. Of several such patients having chronic diarrhea, two were associated with parasites, but Gibson and Douglas obtained from the blood of their patient a pure culture of a colon organism (Osler).

tracted by lipid solvents or from which lipoids are removed by absorption (kaolin) becomes toxic because of autolysis (serotoxin). Sodium soaps prepared from these unsaturated fatty acids are active as antienzymes, their degree of activity being in proportion to the degree of their unsaturation. However, antitryptic action is lost if the acids are first saturated with iodine, which oxidizes and satisfies the unsaturated bonds with this element. As soon as this occurs, the ferments which are present, or which may be brought in become active, and autolysis takes place.⁹

The well established belief that iodine, administered in tuberculosis, is harmful because spread of infection is promoted by resulting broken down tubercles, while the same element is beneficial in gummatous conditions of syphilis, favored the conclusions arrived at. Subsequently, upon actual test in thirteen cases, eleven of which were syphilitic, Jobling and Petersen observed a progressive lowering of the antiferment index of the serum by means of iodine administration, the effect being greatest when the limit of tolerance was reached.

Against the foregoing Flexner (8), in recent time, has recalled that "some bactericidal and hemolytic substances yielded alike by cells of organs and leucocytes upon autolysis and extraction have been identified as soaps of the higher unsaturated fatty acids." Experiments cited in consonance with this view were those of Lamar (9), who showed that a solution of sodium oleate utilized as a representative soap of the type named, either kills pneumococci, or in weaker percentages though the latter survive, they are rendered more subject to dissolution by autolysis than untreated pneumococci. An analogy is claimed for disease processes in that the diplococci undergo a form of autolysis in the exudate and because of the known presence of fatty acid soaps in inflammatory or degenerating tissue. Precisely, therefore, to the unsaturated fatty acids or their soaps is ascribed hemolytic and bacteriolytic action of serum instead of enzyme inhibiting effect. Inhibition by serum of hemolysis and bacterial autolysis Flexner attributes to presence of "protein matter such as exists in the serum of the blood of exudates."

In 1907, Tallquist (10), alone and in association with Faust, studied the nature of a lipid substance contained in the proglottides of *Bothriocephalus latus*. The same was extremely hemolytic, could not be dissected out, formed no antibodies, was costabile, resistant to proteolytic ferments, and showed a great affinity for red cells. By subcutaneous injections into animals a definite anemia was produced, the autopsy findings being similar to those of a progressive pernicious anemia. The substance contained phosphorus from lecithin. Cholesterol was crystallized out, but was not hemolytic. Free fatty acids obtained therefrom were found to be intensely hemolytic, but on further analysis palmitic and stearic acids (saturated) produced no hemolysis, while the unsaturated oleic acid was intensely active. When in combination with a cholesterol ester, it was most effective, although the cholesterol ester of fatty acids is present in most normal blood

serum in small amounts. We observe that these studies have evolved two diametrically opposing conclusions concerning a certain role in metabolism, the same being specifically attributed to saturated and again to unsaturated fatty acids. How far these err or whether all observations are correct in respect to varying conditions, further study must decide. However, that both tryptic and antitryptic action of serum is encompassed by lipoids, seems to be proved by numerous observations.

Of particular import to the present argument is the participation of this class of substances in body chemistry, normally and in disease. This fact and the roles assigned to lipoids in the foregoing suggest, first, that an identical mechanism underlies the process of hemolysis and autolysis of fixed tissue cells, and, second, that the same mechanism, by effecting disintegration of erythrocytes, becomes an essential factor in the production of methemoglobinemia to which symptom I now revert.

Unquestioned is the potentially sinister character of this blood change and its often associated methemoglobinuria, dual conditions so frequently noted in profound toxemias. Nevertheless, for more than a decade I have contended that the logic of facts points to a sometime conservative methemoglobinemia. The same is always slight in degree, whether the product of systemic metabolism *per se* or therapeutically induced. In accord with this conception is the observation that methemoglobin appears as a transition product between hemoglobin and bile pigments.¹⁰

Again slight methemoglobinemia is incidental to the use of innumerable serviceable drugs. These comprehend beyond the three universally used halogen salts and many coal tar products, tried vegetable remedies such as senega, digitalis, sarsaparilla, etc. The latter contain in minute quantities saponin bodies, ingestion of which in greater amounts is attended with intense hemolysis, jaundice, and toxic methemoglobinemia. Methemoglobinemia is regarded as essentially a toxemia and no distinction is recognized in respect to degree. The conception of it as a beneficent condition is opposed by medical teaching chiefly for two reasons, viz., first, because methemoglobinemia may be lethal to the organism. The tissues cannot reduce this stable oxygen compound. In response to these facts it may be stated that fatal methemoglobinemia need involve 66.66 per cent. of total blood pigment (A. Dennig).¹¹ Therapeutic methemoglobinemia and that comprehended by normal metabolism involve no extensive metamorphosis of oxyhemoglobin. Indeed it is questionable whether it may be recognized by spectroscopic analysis.¹² Second, it has been taught that methemoglobinemia in any degree is deleterious to the organism because associated with destruction of

¹⁰Alloxan may be reduced to alloxantin (C. Simon). Alloxantin + blood [oxyhemoglobin] = methemoglobin and alloxan (Kobert). These reactions bespeak for methemoglobin participation in synthetic metabolism.

¹¹For an account of recent observations recording absence of pathological changes after ingestion of potassium chlorate in amounts relatively much larger than demanded by therapeutic use, the reader is referred to experiments instituted by Bachem (11). Imbued with traditional prejudice, the author having begun his investigations solely to learn if the use of potassium chlorate tooth pastes was harmful, is himself greatly surprised at his findings.

¹²Methemoglobinemia of nonlethal yet pathological percentage exists at times as a chronic condition in disease associated with constant cyanosis (enterogenous cyanosis from parasites, etc.).

⁹Another oxidizing agent which Jobling and Petersen found effective to lessen enzyme inhibiting action, was hydrogen peroxide.

erythrocytes. Herein, of noteworthy importance is the fact that immunity processes involve, to some extent, disintegration of red cells. Flexner (8) recalls that "leucocytes contain and give up to solvents thermostable bactericidal chemicals of considerable potency" and that "the thermostable bactericidal and hemolytic substances yielded by the cells of organs are in part identical with leucocytal bactericides." Thus we note that constituent substances of leucocytes and of fixed cells induce hemolysis and autolysis of bacteria. On the other hand, substances which cause disintegration of erythrocytes (and of necessity production of methemoglobin), initiate a mechanism effecting increase of leucocytes and of antibodies of the blood. Madsen and Tallquist (12), experimenting with pyrogallol, among other hemolyzing and methemoglobin producing substances, noted that it induced hemolysis, stimulated the hemopoietic organs with resulting increase of leucocytes and antibodies, in this instance antistaphylococcal and antivibriolysin.

Throughout a lengthy chronicle which medical literature affords, hemolysis and methemoglobinemia are associated with tissue autolysis. True, where these occur in an abnormal degree, for instance in severe infections, in profound toxemias due to phosphorus, tolualendiamin, potassium chlorate, snake venoms, etc., this autolysis presents the clinical features of severe visceral necrosis and often of a lethal intoxication. In such instances we need view the intense cellular disintegration and methemoglobinemia as constituent factors in an unsuccessful overattempt to acquire immunity. The self healing mechanism is inadequate to the demands made upon it.

These considerations permit the question: What role among immunity reactions may be ascribed to methemoglobin? Certain facts are at least suggestive: First, that methemoglobinemia invariably accompanies leucocytosis stimulated by hemolysis; second, that substances which were found to inhibit the antitryptic qualities of serums and initiate autolysis (Jobling and Petersen) are hemolyzing and methemoglobin producing reagents, i. e., iodine and hydrogen peroxide; third, the occasional observation of methemoglobin in certain body fluids possessing intimate connection with immunity processes, viz., in the blood of transudates and exudates. Moreover, it has long been known that the products of systemic regressive metabolism can reduce methemoglobin, although the tissues cannot. The last is usually cited as proof of the essentially toxic character of this blood pigment. However, from the viewpoint that in certain pathological conditions an accelerated tissue autolysis and concurrent oxidation of resulting products is needful, a powerful oxidizing reagent possessing an elective affinity for the latter would meet these conditions conservingly. Of special interest in this connection is the fact that to a substance capable of reducing methemoglobin this more stable compound gives up its oxygen more readily than does oxyhemoglobin to the same reagent (13).

In view of the sum of the foregoing facts, the conception of a sometime beneficent methemoglobinemia appears reasonable. And finally it may be said that much in empiric medicine relating to abate-

ment of symptoms, with greater knowledge of the chemistry it initiates, may prove to be effort made through drug action respectively to promote or retard tissue autolysis and its attendant changes of the blood.

CONCLUSIONS.

1. A common systemic mechanism pertaining to reduction of the antitryptic index and sequent tissue autolysis underlies erythrocytal disintegration normally, peptic erosion or ulcer, and the intense jaundice, hemolysis, and extensive organ necrosis noted in profound toxemias.

2. Methemoglobinemia appears as an invariable sequence of erythrocytal autolysis (hemolysis). The greater degree which makes it a dominant feature in some pathological conditions corresponds to the more intense autolysis of fixed tissue cells under the same circumstances.

3. Certain observations suggest that the role of methemoglobin in body chemistry may proceed from the fact that it is an oxidizing substance possessing an elective affinity for the intermediate products of metabolism and hence within range of immunity reactions progressing favorably, a saving agency in respect to other oxidizing tissues. In conditions which comprehend an abnormally accelerated and therefore toxic hemolysis, the associated toxic methemoglobinemia may be viewed as one uncontrolled factor of a defense mechanism broken down.

REFERENCES.

1. OSLER: Chapters on The Peptic Ulcer, Gastric and Duodenal, Hemoglobinuria, Enterogenous Cyanosis, Hemorrhagic Diseases of the Newborn, Toxic and Hemolytic Jaundice, *Practice of Medicine*, 8th Edition.
2. VAUGHAN: Protein Digestion, *Journal A. M. A.*, Aug. 1, 1914.
3. MANWARING, quoted by HECTOEN: Osler's *Modern Medicine*, ii, 1907, p. 49.
4. ROBERT: *Lehrbuch der Intoxicationen*, ii, pp. 716, 757.
5. MCCRAE: Osler's *Modern Medicine*, ii, 1907, p. 175.
6. GARROD: *Ibidem*, vi, 1907, p. 73.
7. JOBLING and PETERSEN: Therapeutic Effect of Iodine, *Journal A. M. A.*, Nov. 28, 1914.
8. FLEXNER: Local Specific Theory of Infections, *Ibidem*, Nov. 22, 1913.
9. LAMAR: Action on the Pneumococcus and Its Experimental Infections of Combined Sodium Oleate and Antipneumococcus Serum, *Jour. Experimental Med.*, xiii, 1, 1911.
10. TALLQUIST and FAUST, quoted by HOPKINS: *Archives of Int. Medicine*, March 15, 1913.
11. BACHEM: Ist der Gebrauch Kalchloricum Zahnstapfer gefährlich? *Munch. Med. Wochenschrift*, lix, p. 2165.
12. MADSEN and TALLQUIST: *Fortschritte der Immunitäts Forschung*, 1909, p. 469.
13. HALDANE, quoted by STEWART: *A Manual of Physiology*, p. 50.

415 MARINE BANK BUILDING.

Lectures and Addresses.

TUBERCULOSIS.*

What Has Been Learned About the Disease Since the International Congress of 1908, and What Modifications, If Any, Should this Have on the Constructive Program?

BY HERMANN M. BIGGS, M. D., LL. D.,

New York State Commissioner of Health.

It is always useful at stated periods in the history of any great undertaking to review the important events of the past and to trace the development of the work. To recall the progress which has been made and to appraise precisely its value often serves as an inspiration to stimulate future effort and aids in directing effectively the lines of such effort. It is such a task as this which has been assigned to me this evening.

*An address delivered at the North Atlantic Conference on Tuberculosis, Albany, N. Y., November 4, 1915.

There are certain definite important events which stand out sharply in the history of the antituberculosis campaign in this country and in this State, which have each marked the beginning of a new advance.

First, and perhaps most significant as bearing on the history of this campaign, was the action of the New York city board of health, in 1887, in passing a resolution calling on the consulting pathologists of the department to present a report to the board on the causation and prevention of pulmonary tuberculosis. This was the first definite recognition by the sanitary authorities of a great city of the communicable and preventable character of this disease. A very small percentage of the medical profession and a still smaller proportion of the laity had at that time accepted the new conception of tuberculosis.

In 1894, the next important step was taken when the New York city board of health, by resolution, declared tuberculosis to be an infectious and communicable disease dangerous to the public health, and provided a plan for its sanitary surveillance, including partially voluntary and partially compulsory notification of cases, free examination of sputum for diagnosis, visitation of patients in their homes, disinfection or renovation of vacated apartments and their placarding where necessary, and an extensive educational propaganda.

Pressure was also then begun on the financial and hospital authorities of the city to provide separate wards in existing institutions, and additional separate institutions for the care of such cases. Three hundred beds were available at that time, which have now been increased to nearly 4,000 in the city alone.

In 1897, the board of health of New York went still further and made the notification of pulmonary tuberculosis compulsory in all cases. This action aroused intense and bitter opposition from the medical profession to the board of health and its policies, which had expression in attempts to repeal the provisions of the charter under which this action by the board was taken.

In 1901-2 the first dispensary for the care of pulmonary tuberculosis by the health authorities was established in New York, and the first definite steps were taken for the provision of a sanatorium for the care of early cases.

In 1905, the National Association for the Study and Prevention of Tuberculosis was organized, and in the spring of that year the first meeting was held in Washington. The activities of the association served as a great stimulant to the formation of antituberculosis societies and associations of various forms all over the country.

Two years later, in October, 1907, a campaign for the prevention of tuberculosis in New York State was inaugurated by the State Charities Aid Association, and in January, 1908, a great mass meeting was held in Albany in which the plan of campaign since followed out was definitely outlined.

In the autumn of 1908, the International Congress on Tuberculosis held in Washington, and the remarkable exhibit collected at this time and shown, not only there, but subsequently in New York and other large cities, gave a tremendous impetus to the antituberculosis campaign throughout the country,

and at the same time the scientific proceedings of the congress gave precision to the existing knowledge of the disease and resulted in its wide dissemination.

Very substantial progress has been made since 1908 in the growth of knowledge among the masses of the people as to the extent and communicable character of this disease and in the establishment of hospitals, sanatoriums, and dispensaries for its care. It has proved to be a far more difficult task, however, than was anticipated to arouse the rural communities of this State and many other States to an appreciation of the significance of this problem, and while many hospitals with a considerable number of beds have been provided in many of the counties of New York State by the splendid campaign carried on by the State Charities Aid Association, yet these are still generally inadequate, and it has not been possible to arouse the authorities in many counties to action. The death rate meanwhile has slowly declined.

I was somewhat interested a few days ago in re-reading the anniversary address which I had the privilege of giving before the New York Academy of Medicine, in October, 1897, to see how appropriate the comments made then are to the situation as it exists today—eighteen years later. I said then:

The great plague of modern civilization, tuberculosis, shows a steady and continuous decline in its death rate and a most gratifying improvement in the percentage of recoveries. Smallpox, in former times, with all its terrors before the discovery of vaccination, was scarcely more to be dreaded than tuberculosis is even now. Smallpox then caused a relatively smaller proportion of deaths than tuberculosis does today.

We are all familiar with pulmonary tuberculosis—it is seen everywhere, it occurs among all classes of population. It is insidious and extends slowly; it is not dramatic in the manner of its appearance or course. As it is so familiar to almost everyone we do not fear it; we neglect it and many would deny proper sanitary supervision and refuse to provide special hospitals for the care of the poor suffering from it. Therefore its ravages still continue and it causes nearly one seventh of all deaths and nearly one fourth of all the deaths among the adult population; although be it remembered no disease is better understood or more preventable, and none more amenable to simple and easily applied measures of cleanliness and disinfection. But at last we may hope that light is breaking upon the sanitary authorities, the medical profession and the people. Rational measures of prevention are taking the place of insane fear or helpless, hopeless ignorance and neglect, and before another generation has passed away the death rate from tuberculosis in cities under the best sanitary control will, I believe, be less than one third of what it is in New York today.

Although this was written eighteen years ago, it would need little modification to be absolutely appropriate today, and the prediction and prophecy which it contains seem likely to be fulfilled. Since 1887 the death rate has fallen from 406 to 184—three fifths of the prediction has been realized already in New York city and another twenty years remain for the realization of the balance, the fall in the death rate to 135.

The rural districts generally have not done so well, because the people have not been awake to their responsibilities, and their dangers.

In preparing this paper I addressed a letter to a number of active and prominent workers in tuberculosis, asking for an answer to the question, What has been learned of tuberculosis since 1908, and how

does this knowledge affect the constructive campaign for its prevention? Nearly a dozen carefully prepared and extremely interesting replies have been received. The answers contain numerous important comments and suggestions bearing on various phases of the problem, but are unanimous in the conclusion that the researches during this time have not added any essentially new and important facts in relation to this disease, and only have somewhat broadened and given scientific precision to our knowledge of certain phases. The relation of bovine tuberculosis to human tuberculosis has been more clearly defined by the work of the British and German Commissions, by the investigations of Dr. Theobald Smith and of Doctor Park and Doctor Krumweide, and of Doctor Lewis, of the Henry Phipps Institute for Tuberculosis, and other observers.

It is now generally accepted that bovine infections play practically no part in the production of pulmonary tuberculosis, but that tuberculosis of the lymph nodes in children under five years of age in a very considerable proportion of cases, probably thirty to thirty-five per cent., is due to this cause. It is therefore quite clear that pulmonary tuberculosis in human beings, which constitutes at least ninety per cent. of the fatal cases, is practically always the result of the direct transmission of the same identical tubercle bacilli from the sick to the well. The disease therefore is definitely preventable.

During the period no progress has been made toward the discovery of a specific treatment for tuberculosis, nor for producing immunity or insusceptibility. Evidence that a large percentage of all persons acquire a limited tuberculous infection in early life has been accumulated and the conviction has grown stronger that a certain limited immunity is conferred as a result of these early infections. Such authorities, however, believe that this acquired immunity is not permanent and is probably largely lost before adolescence.

Tuberculin in its various forms confers no immunity when administered in gradually increasing doses, and may even produce hypersusceptibility; and most observers have therefore felt that we must look to the use of cultures of the living tubercle bacilli, modified or attenuated by some method, if artificial immunity or a specific therapy is to be found.

The fiasco resulting from the introduction of the Friedman treatment was one result of this search, and I feel that von Ruck's method of inoculation should be placed in the same class. There have been other similar methods proposed and employed with no success.

The attempts of Webb, of Colorado, to produce immunity by inoculation with a very small number of tubercle bacilli proved a difficult task. These observations, made with great care in a thoroughly scientific spirit, I have been informed, have recently been abandoned.

Dr. Theobald Smith, our foremost authority in tuberculosis, has written me as follows:

Experiments toward finding a suitable vaccine to be used both for prevention and for treatment have not been very successful. Experiments upon cattle indicate that a culture of tubercle bacilli killed by heat has little or no immunizing power. On the other hand, a living culture used as a vaccine produces an easily demonstrable heightened

resistance. How such a vaccine may be used on human beings without causing injury and how desirable such vaccination may be is a matter for the future.

Many different attempts to utilize as vaccines various substances extracted from tubercle bacilli have been made. If the whole heated bacillus is ineffective, it is difficult to see how any part will suffice to immunize.

Experiments designed to discover some substance which by acting upon the tubercle bacilli within the tissues will inhibit their activities or even destroy them without injuring the tissues of the patient have not yet led to any promising issue.

Since 1908, the use of tuberculin has, I believe, decreased rather than increased both as a diagnostic and therapeutic agent—at least such is the case in this country. The evidence of the wide dissemination of tuberculous infections in early life renders the use of tuberculin as a diagnostic agent in most cases of comparatively little value, and less and less satisfactory results have been obtained from its therapeutic use in pulmonary disease.

It would seem, therefore, that the outlook for the discovery of a method of specific treatment or vaccination has grown less promising rather than more promising during this period.

Dr. E. R. Baldwin, of Saranac Lake, writes, in relation to the recent developments, as follows:

The educational campaign has accomplished much good, but has also produced much hardship for tuberculous patients. Too much emphasis has been placed on the dangers of infection to healthy adults. The resulting fear of infection has caused loss of positions and prevented the return to earning power of patients whose disease is arrested and even of those whose sputum has wholly disappeared and who are thus no longer a source of possible danger.

In the eagerness to make an early diagnosis of tuberculosis, injustice has been done to some persons by placing the stigma on those who at the worst have only suspected cases. A greater feeling of responsibility is needed by medical men engaged in tuberculosis work, especially by the examiners for public institutions.

Some method of supervision of suspected or closed tuberculous patients such as the pleural, peritoneal, and glandular types, should be worked out so that they will not be included with open cases in the minds of the public.

In the diagnosis of tuberculosis some progress has been made. As I have indicated already, we know more definitely the limitations in the use of tuberculin. The use of the x ray has become more general, and its value in the hands of the skilled operator in defining and confirming the presence of lesions in certain types of disease of the lungs has been established. Too much reliance, however, should not be placed upon the reading of roentgenograms, unless they are in substantial accord with the clinical history, physical signs, and laboratory findings in each case. It must not at any time be forgotten that it is not the presence of some lesion in the lung which we should seek, but the evidence of active tuberculous disease. We know that arrested or healed lesions may give physical signs during all the remainder of life, and yet may not extend or produce symptoms.

The general prognosis in tuberculosis is, I think, distinctly more hopeful today than it was in 1908; and probably in part because a larger percentage of cases is recognized at an earlier period of the disease when they are more amenable to improved hygienic conditions and environment. I remember very distinctly an earlier period when it was the almost universal belief of physicians that no case of pulmonary tuberculosis ended in recovery. And

this opinion was, from the experience of those times, nearly correct. These cases then were not diagnosed until the disease was comparatively far advanced, and practically no case which had been definitely diagnosed as pulmonary tuberculosis did terminate favorably.

As to preventive measures, we find the emphasis now, as formerly, placed along practically the same lines. Compulsory and universal notification of the disease is everywhere regarded as of the first importance, but this measure is still very incompletely carried out. Measures to bring about more complete compliance with the law are urgently demanded. Facilities for the bacteriological diagnosis of the disease through the examination of sputum have been much extended and should be still more complete. Under the efficient supervision of Doctor Wadsworth, director of the laboratories of the State Department of Health, during the last year these facilities in all the smaller cities and rural districts of the State have been vastly improved.

An increasing emphasis is being placed upon the importance of scrupulous cleanliness with reference to the disposal of the expectorations of tuberculous individuals. In the case of all of the communicable diseases, the new public health movement has diverted attention from the environment of the patient to the patient himself. Greater and greater emphasis is placed upon the infected individual as the direct source of infection in others. More emphasis is perhaps now placed than formerly on the danger from moist spray produced in coughing, laughing, sneezing, and loud talking, and somewhat less upon that which arises from dry and pulverized sputum floating as dust in the air.

The vital importance, both for the good of the individual and for the protection of the public, of early diagnosis cannot be overestimated. The need of special training for medical students in the diagnosis and natural history of this disease is strongly urged. The curriculum of the medical schools should devote more time to this phase of the subject, that the younger physicians shall be more thoroughly trained.

It is everywhere felt that the whole campaign must of necessity fail unless adequate provision is made for the institutional care of tuberculous cases. This includes municipal dispensaries, county and State hospitals, and sanatoriums; as well as other secondary institutions such as preventorium for the care of children from tuberculous families who have no open tuberculous disease, open air schools for tuberculous and anemic children, provision for the care of infants of tuberculous mothers, etc.

It is everywhere felt in this country that the institutional care of the advanced case is perhaps the most fundamentally important phase of the whole problem. Any one who had been actively interested in tuberculosis must have had his sympathies strongly aroused on many occasions by the pathetic appeals from advanced patients with tuberculosis for care, when no place for them was available. In many counties of the State this situation still exists. The State itself does not provide for them; and where there is no county hospital these advanced patients must live and die in their homes, often under the most unfavorable possible hygienic conditions, distributing infection among the members

of their families and their associates. The suffering, loss of life, and economic waste which this condition involves remain serious blots on our boasted civilization.

One agency in the campaign has gained a constantly increasing importance. I refer to the visiting public health nurse. It has seemed to me that the introduction of the trained social service worker and nurse combined is the most significant development in preventive medicine of the last fifteen years; and that the extension of the nursing service promises to improve the health conditions in both rural and urban communities more than any other agency which we have. I do not believe that there is any expenditure which the State can make which would have a more far reaching effect on the health and economic conditions of the State than the provision of adequate appropriations for a large staff of public health nurses to be used everywhere throughout the State by the State Department of Health in its various activities.

The increasing resort to pasteurization of milk supplies is destined to limit very much the possibility of milk infection. It is the aim and the hope of the State Department of Health to bring about the universal pasteurization of milk in all the larger municipalities within a reasonable time. This will result in the protection of children from this source of infection. A somewhat discouraging feature of the situation has been the slowness of the farmer and residents of the rural districts to realize the importance of the pasteurization of milk to prevent the dissemination of tuberculosis in dairy herds. Many of those most competent to judge have felt that while tuberculosis in human beings has been slowly but steadily decreasing, and especially has this been true in the larger municipalities like New York; on the other hand, tuberculosis among dairy cattle has been steadily increasing in almost all the rural districts of the State, in spite of the campaign of education that is being carried on, and in spite of the very serious losses which have come from this cause to owners of dairy cattle. The opposition of the Grange of this State to the provision of the agricultural law at the last session of the Legislature, which required the pasteurization of skimmed milk from creameries and cheese factories before it was returned to the owners was extraordinarily short sighted. We can scarcely conceive of any machinery which would be more effective in the dissemination of tuberculosis among dairy herds than that which exists in many rural districts in this State. The State is making large appropriations to stamp out tuberculosis and at the same time it permits the continuance of a practice which could be obviated at small expense and which causes probably ten times as many new cases among dairy cattle as are each year destroyed and paid for by the State.

Finally, the educational campaign must be prosecuted with ever increasing vigor. While much has been accomplished there still remains quite as much to be done. And in this campaign while circulars of information, public health literature, newspaper publicity, and various other means of reaching people may be employed, yet the most important agency of all, I believe, is the visiting nurse, who brings the message directly to the home.

Contemporary Notes.

Medical Aspects of Preparedness.—So much does the subject of preparedness occupy the mind of every one, it becomes of value for the profession to consider certain of the medical aspects of the subject, as suggested in the resolutions adopted at the last meeting of the State Society, observes the *Providence Medical Journal* for January, 1916.

It is not unnatural for the query to arise in one's mind as to why any good doctor would not make an equally good medical officer of the army. The necessity of specially trained medical men for the regular service and the reserve is imperative for many reasons. The administrative problems in the army medical corps are totally different from those of civil life. Military sanitation, including measures necessary for the care of large bodies of troops in the field where modern methods of waste disposal are not available, makes demands on its officers which are never met with in municipal sanitation. The medical officer must understand the establishment of first aid stations, dressing stations, field and base hospitals; and even more important, he must know where to place them so that they will obtain the best results and yet not interfere with the movement of troop or ammunition trains. He must have knowledge of the range and trajectory of missiles in order to insure his working in safety for himself and his charges; he must be able to read a military map in order to select sites best protected from hostile fire and to avoid terrain which would make the use of vehicles, such as ambulances, prohibitive.

The highly trained and specialized medical corps of sufficient numerical strength to conserve to the utmost the health and efficiency of the army in order that the maximum amount of destruction may be brought to bear against the armed forces of the enemy is absolutely necessary, and any plan looking toward the amplification of our armed forces will be vain and useless unless an increase be made *pari passu* in the medical staff.

The Post Mortem Problem.—There is no matter in connection with general hospital management more in need of permanent and definite settlement than the vexed question of post mortem examinations, remarks the *Medical Press and Circular* for December 1, 1915. The customary method adopted in this country (England) is to ask permission for an autopsy from the relatives of the deceased. In our experience, such a request usually meets with a refusal. The only remaining cause is to state one's inability to sign the death certificate. Such a procedure, pushed to an extreme, involves application to the coroner, who, unhappily, may fail to see any urgent necessity for investigation, with the result that the matter falls to the ground. Yet from the educative point of view, alike for the practitioner and the student, the lack of systematic autopsy is a severe handicap. The physician or surgeon, in the study of subsequent similar clinical phenomena, works from a purely arbitrary standpoint in the lack of the positive knowledge which might have been derived from a post mortem examination of foregoing cases. The student, on the other hand, even in comparatively simple cases, fails fully to appre-

ciate the underlying basis of clinical signs, unless he is in a position to see and handle such organs personally. It is entirely irrational to fill in the hospital register and the death certificate alike at a venture; such an act is essentially an untruth, yet many such untruths are perpetrated daily. We are far from desiring to imitate the unconscious humor of the notice posted in one of the largest hospitals in Vienna, that "All patients admitted to this hospital will be subjected to post mortem examination." We desire, rather, authority for such a statement as that, "In the case of death, the medical staff reserve to themselves the decision whether a post mortem examination be necessary." Certain English hospitals, we are aware, protect themselves by obtaining from patients entering the hospital a permission to make an autopsy should death occur, but no hospital in Ireland has yet ventured so far.

Cancer Work in Florida.—The Florida State Board of Health is preparing to lend its valuable and active cooperation to the spread of knowledge concerning the cancer problem. Organized health crusades, remarks the *Journal of the Florida Medical Association* for December, 1915, under the auspices of State boards of health, are doing a wonderful and far reaching amount of good toward conquering disease by prophylactic methods; and they therefore deserve, and should receive the active co-operation of every right thinking physician.

Our State Board of Health is equipping an exhibit train, presenting health problems in a clear, concise, and convincing manner, to be taken to every town in the State. Every physician in Florida should feel it his duty to act as a personal advance advertising agent for this train of exhibits, and should encourage all his clientele to attend the exhibit, and avail themselves of the valuable health lessons there taught. Exhibits and educational propaganda have done an enormous amount of good toward lessening the ravages of tuberculosis. There is no reason why we should not expect similar returns from an educational campaign directed against cancer. It is a preventable and a curable disease. Its prevention and cure are dependent upon two conditions; the early recognition of the danger signals of the disease by the afflicted patient, and the early radical removal of the source of these danger signals by the physician. We as physicians then must be prepared to do our part, and to teach our patients to do theirs, if we are to hope to attain results similar to those attained by the educational campaign against tuberculosis. There will be installed in our health train a section devoted to a cancer exhibit, containing statistical charts, photographs, and pamphlets for distribution. These charts are founded upon authentic information, gathered by the American Society for the Control of Cancer, and contain the essential things which are definitely known about the disease. They will undoubtedly be the cause of many people consulting their family physicians about suspicious growths or symptoms from which they are suffering. When we are consulted, the first of the two requisites for the control of cancer has been fulfilled. It is then our duty to fulfill the second; to be well informed concerning the early signs of the disease ourselves; and to have the courage of our convictions.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.

A Weekly Review of Medicine.

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 22, 1916.

INSURANCE AGAINST SICKNESS.

No measure that is likely to be presented to the New York legislature this year will be of wider social importance and of keener interest to the medical profession of the State than the bill which the special committee of the American Association of Labor Legislation is planning to have introduced with reference to insurance against sickness.

Following the German and British examples, it proposes to make insurance against sickness compulsory for all men and women gainfully employed, whose earnings are less than \$1,200 per annum. Two fifths of the cost of this insurance is to be borne by the workers, two fifths by their employers, and one fifth by the State. The bill provides that in case of illness the beneficiary or his dependents receive one half or two thirds of his regular wages, as well as certain specified medical, pharmaceutical, and hospital benefits.

The effect of legislation along these lines is far reaching. It has been adopted in countries of Europe, where wages are much lower than in the United States. Its value in a democratic nation is yet to be demonstrated.

Should such a measure receive the approval of our legislature, it will create a number of vital problems for the medical profession and will call for fundamental adjustments to the newly cre-

ated conditions. The British medical profession did not realize this until the bill had been passed in Parliament, and then they protested loudly. It is important that serious study be given to the measure on the part of the profession before it becomes a law in this State. Even in countries where social insurance had been in existence for a long time, as in Germany, for instance, the doctors are frequently at loggerheads with the trade insurance organizations or the *Krankenkassen*. In Great Britain the original provisions for picayune compensation have been modified, and the doctors enjoy a fairly good average income from their "panel" practice. It is asserted that although the National Insurance Act had the effect of decreasing the incomes of some of the practitioners, it considerably increased and steadied the incomes of others. The income of the physicians practising exclusively among the poorer classes has risen markedly since the act went into effect, as the patients who formerly resorted to charity are now able to engage the paid services of physicians, and the remarkable feature of the situation is that nine tenths of the British profession are at present on the insurance panel lists.

There is one glaring shortcoming in both the German and the English laws that should be improved in our practice, if we adopt social insurance here, and that is the lack of provision for the services of specialists and the lack of use of medical institutions, such as dispensaries which, like hospitals, should be made integral parts of the scheme of efficient medical work. If we ever adopt a sickness insurance law, we should try to remedy this and other shortcomings of the European State insurance schemes.

THE TREATMENT OF AMEBIC DYSENTERY.

Two papers from the Wellcome Tropical Research Laboratories invite attention to one or two important points in the management of amebic dysentery (Chalmers and Archibald, *The Cure of Amebic Dysentery*, *Jour. Trop. Med. and Hyg.*, August 16, 1915; Chalmers and Papatheodorou, *The Administration of Emetine during Pregnancy and Menstruation*, *ibidem*, July 15, 1915). In these papers especial stress is laid upon the importance of carriers and of cryptic or latent amebic infections. Such states may be accompanied by no symptoms or by signs not regarded as customary in dysentery, and not therefore likely to arouse suspicion as to its existence, such as irregular diarrhea, indigestion, attacks simulating appendicitis, mild anemia, lung abscess, cold abscess of joints, etc.

In the diagnosis of these latent conditions a dif-

ferential leucocyte count is highly recommended, the important feature being an increase of mononuclears without evidence of other condition to account for this increase, such as malaria or other protozoal blood infection. The existence of this mononuclear increase should lead to a careful examination of the feces, especially after the administration of a purgative.

In the treatment of amebic dysentery and in formulating a prognosis as to cure, the differential blood count is also of much value. A persistent mononuclear increase, especially with an eosinophilia, in the absence of malarial and similar infections, is an indication for a further search of the feces and a return to emetine. It should be noted, however, that the mononuclear cells seem to increase under emetine treatment, and the return to normal occurs only after the lapse of considerable time.

The effect of emetine on the uterine muscle is also the subject of comment. The evidence that emetine may cause contraction of the uterine muscle is sufficient to justify a warning against its too free use during pregnancy and menstruation. It seems that a maximum of half a grain daily is the safe dose in pregnancy. Given during menstruation it may create some disturbance and cause a cessation of the flow. While no serious harm may result, it is advisable, if the case permits the delay, to postpone the treatment till after menstruation has ceased.

The descriptions of the blood picture of amebic dysentery found in the literature are not entirely harmonious, and in some cases do not accord with the results here given. From their wide experience, however, the opinions expressed by Chalmers and his colleagues deserve careful consideration. The practical points brought out by their work, if approved in the experience of others, will prove of much value in the management of cases of amebic dysentery.

AUTOINTOXICATION IN THE PERNICIOUS ANEMIA OF PREGNANCY.

Gravidic autointoxication plays a large part in the pathology of pregnancy. Ptyalism, vomiting, both the mild and severe forms, are undoubted symptoms, likewise the occasional diarrhea. Autointoxication gives rise to albuminuria, the toxic nature of its cause having been demonstrated long since by the experiments of Tarnier and Chambrelent. Using Bouchard's method, they showed that in eclampsia the toxicity of the urine was diminished, while that of the blood was increased in direct ratio to the gravity of the case.

The various changes of the nervous system, such

as irritability, cephalalgia, and puerperal insanity may very likely be due to the same cause. Gravidic autointoxication also seems to explain pruriginous eruptions, even prurigo without skin lesions, as well as herpes gestationis.

The toxins are either exogenous or endogenous. The first are introduced in the food and drink, either from the surplus of potassium salts or from the splitting up of the albuminoid molecule; they arise also from fermentation and putrefaction in the digestive tract. The endogenous poisons are the organic waste products, particularly urea and the still more dangerous extractive matters, such as leucin, tyrosin, xanthin, hypoxanthine, etc. If the numerous means of defense of the organism are not interfered with, however, no intoxication will result, while to bacteria and their poisons are opposed the leucocytes and their antitoxic secretions.

The liver, in the protection of the organism, is aided by renal elimination, particularly of the albuminoids. The sweat and gastrointestinal secretions also act in the same way, while the majority of the glands of internal secretion defend the organism. Pregnancy profoundly disturbs this admirable antitoxic organization. Not only does the genital apparatus undergo changes during gestation, but other organs as well. The liver becomes fatty and enlarged, the amount of glycogen is increased, while microscopically fat droplets accumulate within the hepatic cell. The renal gland is usually enlarged and hyperemic, and the cortex in particular shows the same fatty changes as the liver. According to Launois and Mulon, the function of the pituitary body increases, and Bar has found fatty changes in the thyroid cells as well as in the parathyroids.

These and other organic disturbances, particularly the fatty degeneration of the liver and decreased oxidations, might be enough to explain the sources of gravidic autointoxication. It is to be remarked, however, that although in debilitated women pregnancy causes anemia, it has a contrary influence on the robust. Therefore, in order to destroy this equilibrium between the production of poisons and the action of the emunctories, certain hereditary or acquired predispositions must exist, which decrease the resistance of the organism to toxins. This explains why pernicious anemia preferably attacks women already weakened by physiological inadequacy. There is no longer a harmonious homogeneous symbiosis, so that the circulating poisons attack the red blood corpuscles, and the resulting anemia still further increases the quantity of toxic substances in the blood. Some German writers maintain that the hemoglobin in dissolution in the blood gives rise to a fibrous ferment from its action

on the leucocytes, which causes an autointoxication. Others put forward suprarenal insufficiency as the causative factor and thus explain the development of pernicious anemia. The theory is good, but further study is essential in order to build it upon a firm basis.

THE MEDICAL CONCEPTION OF DELINQUENCY.

The step from the former treatment of the insane as wild beasts, chained and beaten into docility, to their present treatment as afflicted persons meriting the sympathy and care of the community, is a far wider step than that from the conception of delinquency as a medical entity, and its treatment accordingly. Drawing the dead line between the morally normal and abnormal is not one whit more difficult than drawing it between the mentally normal and abnormal—and it will continue to be difficult in both instances until the brain processes that govern the intellect and the moral sense are better understood. Even those who deny the medico-physical nature of delinquency, admit an hereditary influence in crime that rivals the hereditary mode of transmission of purely mental conditions. But heredity is somatic in nature and can no more be dissociated from the body than can free will be separated from the body in which it is presumed to be present. Every deep inquiry into the study of delinquency runs counter to the question of the physical and mental composition of the delinquent. The positivist Italian school of criminology founded by Lombroso placed too much importance on the physical and physiognomic aspect of the delinquent, going so far as to predict the particular kind of crime likely to be committed. While this degree of radicalism is no longer tolerated by modern criminologists, it is to this school that the credit belongs for setting afoot intelligent inquiry into the person of the delinquent, apart from the social gravity of his crimes.

Appearance and physical defect do not by any means play a paramount part in the constitution of the delinquent any more than they do in even the most positive cases of insanity and mental deficiency. In dementia præcox, for example, there are apparent changes in personality and appearance, while in paranoia there are no such changes, and the diagnosis will not be made unless inquiry is made into the very mental cycle affected. In the same way some criminal acts betray their origin in the pathologic constitution of the delinquent, while others, paranoid in their nature, do not.

All penologists, however, recognize that even in the paranoid types there is an inherent defect, per-

haps accentuated by environment, which does not permit the delinquent to keep pace with the moral advance of the race. Many become delinquents because, being inferior mentally or physically, they are unable to assume useful occupations. The Elmira reformatory carries out, as far as is at present possible, the remedial medical indications, and carries out also, perhaps better than any other institution, the training of the delinquent in occupations to which he is by nature best suited. This institution is handicapped, however, because delinquents come unsorted as to their mental, physical, or moral defects or as to their possibilities.

In the treatment of juvenile or other offenders the advance must be particularly in the determination before commitment of the particular condition at the bottom of the delinquency. In this way only can the movement for a moral hygiene assume the proportions that the present movement for mental hygiene has assumed. The Chicago psychopathic institution in connection with the children's court is the best example of what can be done in this direction. It has been clearly demonstrated that the value of a separate children's court lies in the efficiency of the medical branch, and in the co-operation afforded by the judicial and social sides of the court. Nor need this examination be limited to juvenile offenders; adult offenders should be included. The model children's court of New York is hampered because it has not yet acquired a medical staff devoting all its time to this work.

THE FIRST FROZEN FOOT OF 1915.

De Massory gave the name of the first frozen foot of 1915 to a case of his because the so called freezing occurred when the thermometer was at 53.6° F. (12° C.). In communicating the case to the Société médicale des hôpitaux (*Paris médical*, December 25, 1915), he says the trouble was due to trophic disturbances, which are likely to follow neuritis or vascular modifications depending on the dampness and constriction caused by wet shoes worn while the soldier is standing up, often for days at a time.

ALBUMINURIA IN PRIMARY SYPHILIS.

H. Carson Smyth, in the *Dublin Journal of Medical Science* for November, 1915, in discussing his experiences with salvarsan in syphilis, notes that thirteen out of 122 patients showed albuminuria before treatment was started, although there was no history or other clinical signs of nephritis. The writer says he correctly attributed the albuminuria to the syphilitic infection, because the administration of salvarsan produced no ill effects, in three to five weeks the albuminuria disappeared, and subsequently the urine remained normal.

Obituary.

ACHILLES ROSE, M.D.,
of New York.

Dr. Achilles Rose died at a private hospital on East Seventy-eighth Street, New York, on January 10th, of pneumonia. He was born in Ruhla, Thuringia, Germany, November 4, 1839, and was educated at the universities in Zurich and Jena, leaving the latter in 1863. He graduated from the College of Physicians and Surgeons, New York, in 1872; in the meantime he had served in the Union army during the Civil War from 1864 to 1865. Doctor Rose gained some professional distinction by his advocacy of the continuous bath in fevers and of the carbonic acid bath as a tonic and stimulant, particularly in tuberculosis. He was better known, however, for his efforts to promote a more accurate onomatology in medical science; he recommended that new terms be derived exclusively from the Greek, modern Greek if no suitable classical root could be found, and advised the coiners of new words to submit them to the University at Athens for approval. He was a profound student of Greek, classical, Byzantine, and modern, and of Grecian history, and was decorated by the King of Greece and made an Honorary Member of the Academy of Medicine of Athens. He was also a student of the Napoleonic wars, and his book, *Napoleon's Campaign in Russia, Anno 1812*, is well known. His other works concerned the therapeutic use of the bath and his favorite subject, onomatology. Doctor Rose was a man of charming simplicity of character, but resolute in his work; he was engaged on a new and revolutionary medical lexicon at the time of his death, and died satisfied that he had accomplished his mission in life. A daughter, Mrs. John Scharsmith, survives him.

JOSEPH H. TOWNSEND, M.D.,
of New Haven, Connecticut.

Dr. Joseph Hendley Townsend died of bronchopneumonia, following grippe, at his residence, 62 Trumbull Street, New Haven, on Friday evening, January 7, 1916.

Doctor Townsend was born in New Haven, January 18, 1862. He graduated from the academic department of Yale University in 1885, and from the medical department in 1887. After serving two years on the house staff of the New Haven Hospital, he began practice in New Haven, where he continued to reside until his death.

He was connected with the teaching staff of the medical department of Yale University for many years, first as assistant in the department of medicine, then as demonstrator of obstetrics, and more recently as lecturer on hygiene.

He served as a private in the New Haven Grays, and on September 15, 1892, was commissioned assistant surgeon, and later was promoted to be surgeon of the Second Regiment of the Connecticut National Guard. Since March 25, 1911, he has been chief surgeon of the Connecticut National Guard. After serving several years as a member of the Board of Health of New Haven, he was ap-

pointed, by Governor McLean, a member of the State Board of Health, of which he was elected secretary and executive officer in 1906.

He was an active member of various medical organizations, having been secretary and president of both the New Haven and New Haven County Medical Associations, and since 1905 treasurer of the Connecticut State Medical Society.

He was married, April 28, 1896, to Mrs. Bertha Goodyear Bradley, daughter of General E. D. S. Goodyear, of North Haven, Connecticut.

Doctor Townsend was a man of broad and thorough scholarship, quiet but forceful in manner, who won the respect and affection of all with whom he came in contact, and who conducted public affairs with rare good judgment and tact.

News Items.

The New York Physicians' Association.—The next regular meeting of this association will be held at the Park Avenue Hotel, Thursday, January 27th, at 8 o'clock. The paper of the evening will be read by Dr. S. Solis-Cohen, of Philadelphia, on the Definite Treatment of Pneumonia.

The Death of Doctor Wicherikiewicz.—Dr. Boleslaw Wicherikiewicz, professor of ophthalmology at the University of Cracow, died of cancer of the stomach in a sanatorium in Vienna recently, aged sixty-eight years. Since the beginning of the war he was at the head of the Red Cross organizations of the Polish legions and gave to the work almost all his time.

Women Physicians on the Staff of a City Hospital.—Commissioner Kingsbury has appointed three women physicians members of the medical staff of the Cumberland Street Hospital, Brooklyn, as follows: Dr. Cornelia C. Brant, in the medical department; Dr. Mary L. Lines, in the surgical department; and Dr. Mabel C. Sisson, in the obstetrical department. It is said that this is the first time women physicians have been members of a city hospital staff.

Obstetrical Department at the Norwegian Hospital.—At the January meeting of the board of managers of the Norwegian Lutheran Deaconesses' Home and Hospital, Forty-sixth Street and Fourth Avenue, Brooklyn, it was decided to establish at the hospital a department of obstetrics in which cases of childbirth and diseases of pregnancy will be cared for. This department will be established in the new addition to the hospital, now about completed, and it is hoped that it will be ready for the reception of patients on April 1st. Dr. Robert E. Coughlin has been appointed attending obstetrician.

Personal.—Dr. S. Josephine Baker, director of the bureau of child hygiene of the Department of Health of the City of New York, will be the guest of honor at a reception and dinner to be given at the Ritz-Carlton Hotel, Philadelphia, on Wednesday evening, January 26th, by the alumnae association of the Woman's Medical College of Philadelphia.

Dr. Reid Hunt, of the Harvard Medical School, has been elected president of the American Society for Pharmacology and Experimental Therapeutics.

Dr. Ira S. Wile, of New York, has been appointed associate editor of *American Medicine*.

Endowment Fund of Woman's Medical College, Philadelphia.—A campaign to increase the endowment of the Woman's Medical College of Pennsylvania from \$400,000 to \$1,000,000 by May 1st has been opened. Increased accommodations are necessary because of the rising standard of medical education, and there is need of new courses, new professors, and new apparatus. Dr. Clara Marshall, dean of the college, is chairman of the committee having the campaign in charge. The additional endowment will be distributed upon the following basis: Income from increased salaries and equipment, \$200,000 to endow department of pharmacology, \$75,000 for use in the department of diseases of children, \$50,000 for additional scholarships, and \$50,000 for current expense.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, January 24th, North Branch of the County Medical Society, Section in General Medicine, College of Physicians; Tuesday, January 25th, West Philadelphia Medical Association, Medicolegal Society; Wednesday, January 26th, County Medical Society; Thursday, January 27th, Pathological Society, Northwest Branch of the County Medical Society; Friday, January 28th, Northern Medical Association, South Branch of the County Medical Society, Neurological Society, Medical Club (directors), Jefferson Hospital Clinical Society.

Medical Society of the County of Kings, N. Y.—At the ninety-fifth annual meeting of this society, held on December 21st, the following officers were elected: President, Dr. Ralph H. Pomeroy; vice-president, Dr. Albert M. Judd; secretary, Dr. Charles E. Schofield; associate secretary, Dr. Lewis F. Addoms; treasurer, Dr. Stephen H. Lutz; associate treasurer, Dr. Robert L. Moorhead; directing librarian, Dr. Burton Harris. Dr. John O. Polak is chairman of the board of trustees, and other members of the board are Dr. Elias H. Bartley, Dr. James M. Winfield, Dr. J. Richard Kevin, and Dr. Russell S. Fowler. The board of censors consists of the following members: Dr. John G. Williams, Dr. Frederick C. Holden, Dr. John E. Jennings, Dr. Frank H. Knight, and Dr. Nathaniel P. Rathbun.

Dr. Isaac Ott Chair in Physiology.—A chair at the University of Pennsylvania to be known as the Dr. Isaac Ott Chair in Physiology is to be established, by the terms of the will of Dr. Isaac Ott, who died in Philadelphia on January 1st. The provisions of the will do not become operative until the death of Doctor Ott's widow, to whom the income of the estate is willed for life. The death of Doctor Ott, however, renders available a fund bequeathed to the Medico-Chirurgical College by Doctor Ott's mother for the establishment of a chair in physiology in that institution, Doctor Ott receiving the income from the estate during his lifetime. This chair, which also will be called the Dr. Isaac Ott Chair in Physiology, will be established as soon as the necessary arrangements can be made.

The Tuberculosis Preventorium.—The annual meeting of the officials of the Tuberculosis Preventorium for Children was held in the New York Academy of Medicine, Tuesday evening, January 11th, under the presidency of Dr. Hermann M. Biggs. At the present time, Doctor Biggs reported, twelve infants are being cared for at the preventorium, and if sufficient funds can be obtained a special pavilion will be erected at Farmingdale for the caring of infants threatened with tuberculosis. Doctor Biggs also reported that the preventorium cared for 678 children from four to fourteen years of age last year. The average gain in weight for the child patient was seven pounds, and one little girl from Brooklyn gained twenty-two pounds. The following officers were reelected: Dr. Hermann M. Biggs, president; Dr. A. F. Hess, vice-president; Mrs. Henry Phipps, second vice-president; Isaac N. Seligman, third vice-president; Morgan M. Mann, secretary, and A. S. Webb, treasurer.

A Pneumonia Commission Appointed by the Philadelphia Health Department.—Dr. Wilmer Krusen, director of the department of health and charities of Philadelphia, has appointed a commission to investigate the causes of the present outbreak of pneumonia in that city and to make a study of the entire pneumonia problem. It is hoped that the work of the commission will materially reduce the death rate from pneumonia and finally eliminate the disease. The chairman of the commission is Dr. David Riesman, professor of clinical medicine in the University of Pennsylvania and the Philadelphia Polyclinic. The other members of the commission are: Dr. Hobart A. Hare, Professor of therapeutics at Jefferson Medical College; Dr. Judson Daland, professor of clinical medicine in the Medico-Chirurgical College; Dr. William Egbert Robertson, professor of the practice of medicine, Temple University; Dr. Randle C. Rosenberger, professor of hygiene and bacteriology in the Jefferson Medical College and the Woman's Medical College; Dr. Paul A. Lewis, director of the Ayer Clinical Laboratory of the Pennsylvania Hospital and director of the pathological department of the Henry Phipps Institute; Dr. John A. Kolmer, professor of pathology, Philadelphia Polyclinic; professor of experimental pathology at the University of Pennsylvania.

Eye Defects in School Children.—At the request of the department of health, the Public Health Committee of the New York Academy of Medicine has prepared a report on the relation of seating and lighting facilities in school rooms to the incidence of myopia in school children. The report shows that conditions in many of our public schools are unsatisfactory and conducive to the impairment of vision. The report has been submitted to the health department with a recommendation that a careful study of the question be made by the health department and the department of education.

Bronx County Medical Society.—At the annual meeting held at Ebling's Casino on Wednesday, January 12, 1916, the following officers were installed: Dr. John E. Virden, president; Dr. J. Lewis Amster, first vice-president; Dr. Edward F. Hurd, second vice-president; Dr. Philip Eichler, treasurer; Dr. Herman T. Radin, secretary. Board of censors: Dr. William G. Eynon, Dr. Maximilian Zigler, Dr. Simon M. Jacobs. Delegates: Dr. Henry A. Dodin, Dr. Edmund E. Specht. Alternate delegates: Dr. John J. Decker, Dr. William A. Randlel.

At the close of the executive session Dr. Charles H. Mayo, of Rochester, Minn., read a most interesting paper on Gallbladder Diseases, Etiology, Symptoms, and Treatment, with stereopticon views. The scientific session was attended by 600 physicians and surgeons from different parts of Greater New York and vicinity.

Symposium on Syphilis at the Academy of Medicine.—At a stated meeting of the New York Academy of Medicine, held Thursday, January 20th, the evening was devoted to a discussion of methods of precision in the diagnosis of syphilis, their application, and their value. The following papers were presented: The Serum Diagnosis of Syphilis, by Dr. Homer F. Swift; The Study of the Cerebrospinal Fluid, and Its Value to the Practitioner, by Dr. George Draper; The Value of the Colloidal Gold Test in the Diagnosis and Prognosis of Syphilis of the Central Nervous System, with a few words on the value of the microscopical diagnosis by dark field illumination, by Dr. John A. Fordyce. Doctor Fordyce's article was illustrated by lantern slides. The discussion was opened by Dr. Sidney B. Miller, of the Johns Hopkins Hospital, Baltimore, and continued by Dr. Edward L. Keyes, Jr., Dr. Edward D. Fisher, Dr. S. Pollitzer, and Dr. George F. Amsden.

Medical Society of the County of New York.—A stated meeting of the society will be held in Hosack Hall, New York Academy of Medicine, Monday evening, January 24th, at 8:15 o'clock. Addresses will be delivered by Dr. Howard Lilienthal, the retiring president, and Dr. Frederic E. Sondern, the incoming president. Military Preparedness from the Medical Standpoint will be discussed. The subject will be introduced by Lieutenant Colonel E. L. Munson, medical corps, United States army, and will be discussed as follows: For the civilian, by Karl Connell, M.D.; for the army, by Major S. H. Wadhams; for the organized militia, by Lieutenant Colonel William S. Terriberry; for the regimental sanitary detachment, by Major Edmund P. Fowler. There will be a demonstration of the efficiency of moving pictures in surgical teaching, by Dr. J. Bentley Squier, and in the reception room there will be on exhibition all the evening an exhibition and demonstration of field equipment and supplies used by the Medical Department of the United States Army.

Grippe Sends Death Rate Soaring.—The total number of deaths reported during the week was 1,880, giving a rate of 17.08 compared with 1,714 deaths reported during the corresponding week of 1915, with a rate of 16.01. The difference of 1.07 in the weekly rate is equivalent to an increase of 118 deaths.

This increase in mortality is caused by grippe and pneumonia, influenza alone showing an increase of 100 deaths. The effect of influenza is also reflected in several other causes of death which show appreciable increases, to wit: Heart disease, pulmonary tuberculosis, and Bright's disease. The acute infectious diseases show a slight decrease. The increase in the number of deaths is almost entirely among the adults of the population; the deaths of children under five years considerably lower than during the corresponding week of last year. The difference of 1.87 in the weekly death rate is equivalent to an increase of 206 deaths. The death rate for the first three weeks of 1916 is 16.64 compared with 15.31 for the corresponding period of 1915.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,
Olivet, Mich.

Department of Biology, Olivet College.

Third Communication.

ACONITE.

This is one of the drugs much favored by the older practitioners for aborting acute respiratory disorders, but whose place for such indications has been largely preempted in more recent years by the anilin derivatives in combination with quinine and sundry purgatives. It may well be doubted if the present therapy is any improvement over its predecessor, even after eliminating the various abuses of each.

The main indications for the use of aconite are definite and depend upon a curious physiological condition. With some patients, and under some conditions of acute infection, like that of acute bronchitis, the reaction of the system is almost violent. The temperature of the patient rises rapidly to 104° F. or higher, the heart beats with greatly increased vigor and frequency, there is a full pulse of high tension, a considerable rise in blood pressure, and an acceleration of respiratory activity. So sharp is the attack of the invading organism, and so vigorous the reaction of the system, that for the time being there seems actual danger of nature's overstepping herself and creating mischief through excessive activity. It is in such cases that some external regulating influence seems advisable.

In such reactions aconite is the only drug whose pharmacological provings show a true indication. Digitalis slows the heart, to be sure, but it likewise increases its force, beside producing an elevation of arterial tension. Aconite slows the heart rate by centric action, and the resulting output for each unit of time brings about a fall in vascular pressure, somewhat augmented by a probable depressant effect on the vasoconstrictor centre. Incidentally there is a centric irritant action on the vagus resulting in diminished respiration, also a coincident fall in temperature from an assumed direct action on the thermic centre. In this way the well designated "runaway" condition of the circulatory apparatus is reined in, and its force is directed more regularly and consistently to the task of expelling the invaders.

The tincture of aconite is the preparation recommended. It is administered in small doses (m. ss—j) repeated every six to eight minutes until the total maximum dose required (m. v—xv) has been given—bearing scrupulously in mind, meanwhile, that the medicinal effect of the drug will not ordinarily appear until about twenty minutes after the initial dose, but the effect of any one dose will continue for about five hours.

Aconite, however, ought not to be given in every case of fever, or even throughout selected cases. It is contraindicated in children, in all but a few of women, in sedentary males, and in all cases where the heart is not known to be strong and free from organic disease. Its particular field of usefulness is with hearty, vigorous persons who have lived much out of doors, who have sound, strong hearts and firm elastic arteries. This is the type where there is superfluous physical vigor, where there normally radiates the spirit of bounding health and vitality. The reaction of such a system to acute infection is prompt and sharp. The reflex response is immediate, and frequently excessive, because of the excess reserve power. Aconite here serves to impose the temporary check needed until the system can readjust itself to altered conditions. Here, then, cultured discrimination is essential in determining the right cases and in carefully eliminating those other cases where aconite would do harm rather than good; but such culture is one of the attributes of the true physician.

Tar in Chronic Moist Eczema.—Thederer (*Berliner klin. Wochenschrift*, July 26, 1915) holds the proper application of preparations of tar to be the most satisfactory and prompt means of drying up chronic moist eczema. He prefers a preparation of an anthracite tar in acetone, which should be applied directly to the affected surface and covered by a thin layer of gauze. No water or soap should be used. In twenty-four hours the surface will begin to dry and at the end of three or four days a dry crust will be formed, which should be softened by the application of a two per cent. salicylic acid ointment. Then, on about the seventh day, the scab can be removed with the aid of a bland soap containing an excess of fat. There is usually found beneath the scab a soft, smooth, and slightly infiltrated area of healthy skin.

Quinine Hydrochloride Solution as a Wound Dressing.—Following up earlier laboratory experiments, Kenneth Taylor (*Brit. Med. Jour.*, December 25, 1915) has made extensive clinical use of quinine hydrochloride as a dressing for infected wounds. Wet dressings of a one per cent. solution in cold boiled water and continuous irrigations of a one tenth per cent. solution were employed. In addition the former solution was used for instillations and for hypodermic injections into the tissues about infected wounds. Such treatment proved especially effective in ridding heavily infected wounds of *Bacillus aerogenes capsulatus*. The solution also acted as an antiferment and prevented the formation of a suitable medium for bacterial growth by arresting the digestion of the tissue proteins. It further exerted a desirable inhibitory action on putrefactive organisms and acted directly as an antipyretic in many cases. It has the advantages of being cheap,

nontoxic, and effective in the tissues, since it is not precipitated in combination with albumin. The one tenth per cent. solution should be prepared with one tenth per cent. of hydrochloric acid or one per cent. of alcohol.

Treatment of Traumatic Iridocyclitis.—G. E. de Schweinitz, in the *Therapeutic Gazette* for September, 1915, discusses the treatment of nonsuppurative inflammations of the uveal tissue consequent upon accidental or operative wounds of the eyeball. He recommends the use of cold compresses, not, as often advised, for ten or fifteen minutes in each hour, but constantly, the compresses being chilled on a block of ice and transferred to the affected eye every fifteen or twenty seconds, i. e., changed often enough to keep up a uniform cold impression. The compresses may be used for days at a time, both day and night. They may be rendered more agreeable to the patient by pouring extract of hamamelis over them. If edema of the lids arises during their use, or fails to subside, or if pain, such as is experienced when ice cream is rapidly eaten, develops, they should be discontinued. Substitution of hot compresses is inadvisable. Internally, mercury should be given in the form of calomel for a number of days at least, not to purge, but to produce the constitutional impression of the drug. The mercury should be followed by salicylates, or the two agents given together—the mercury by inunction. The salicylates may be given in the dose of eighty grains in the first twenty-four hours, sixty grains during the second, forty during the third, etc.; even larger amounts can be given if their use seems required. The salicylates apparently act by causing local depletion of the inflamed area. To produce a lymphagogue effect the author uses benzyl morphine hydrochloride, beginning with a 2.5 per cent. solution and increasing the strength every third or fourth day to five, seven, and ten per cent. Combined instillation of holocaine greatly increases the effect. Where irrigations are required, normal saline solution gives the best results. When mydriatics are indicated, the use of a combined solution of scopolamine, two grains to the ounce, and atropine, five grains to the ounce, is recommended. In several instances the author found violent traumatic iridocyclitis materially benefited by the production of active diuresis—preferably by means of a cabinet bath, or, with the patient wrapped in blankets heated with guarded electric bulbs.

Massage in Glaucoma.—A. A. Bradburne, in the *Medical Press and Circular* for December 8, 1915, reports a favorable experience with massage by means of the finger tip through the closed lid in glaucoma, and lays it down as an axiom that no case of chronic glaucoma should be operated in until it has been carefully watched and treated for a period with massage and miotic drugs. In many cases, massage, if properly carried out, will do almost as much toward reducing the intraocular pressure as operation, and as an adjunct to the latter it is invaluable. A patient who has learned the technique of self massage, moreover, is in a position to afford marked assistance to the physician as to the state of the intraocular tension during the intervals

between his visits; slight unsuspected rises of tension were found to occur sometimes even after apparently well performed operations, showing that the object of the latter is not always perfectly attained. Automassage was also found of assistance in perplexing cases of early quiet glaucoma in which but little in the way of objective diagnostic signs could be elicited; fleeting rises of tension noticed by the patient himself sometimes quickly led to the proper diagnosis and the institution of suitable treatment. In instructing the patient as to the technique of automassage, Bradburne tells him to look well down, next to rest the second fingers of both hands at the centre of the eyebrow, and then to pass the tips of both ring fingers into the socket just under the orbital plate of the frontal bone until they meet upon the globe of the eye. Both finger tips are to remain in firm contact with the eyeball while one finger dimples it, the other being thus slightly raised. Upon alternate pressure with the two finger tips the intraocular tension is felt to diminish. One eye is to be compared with the other or with that of a friend. Massage is to be carried out when dressing in the morning and again just before going to bed. If, between these times, a rise of pressure is perceived, the process is to be repeated during the day. The author has seen no untoward results from allowing the patients themselves to carry out the procedure, and has met with no contraindication to the use of the latter in glaucoma. In cases apparently requiring operative treatment, massage is always started within twenty-four hours, at first gently, at brief intervals, and for short sittings only.

Principles of Treatment of Foot Strain and Other Common Foot Defects.—Marshall (*Boston Medical and Surgical Journal*, December 30, 1915) urges that the routine use of any single special method should be avoided. As a starting point we should observe the kind of shoes worn; pathological signs and symptoms in the feet; the amount of use of the feet demanded; the state of health and its recent changes; the past history and treatments; and then proceed gradually to make necessary alterations and prescriptions in a careful manner. Treatments have to be ended skillfully as well as begun properly, so the use of plates, straps, medicines, etc., must be discontinued at the most opportune times. In simple relaxations and strains, or in rigid flat foot, support the feet with adhesive straps at the outset and simultaneously prescribe suitable tonic and eliminative drugs. Later, from responses to these two measures, and after taking into consideration all circumstances and social conditions of the patients, continue with strapping, make changes in shoes, fit plates, prescribe special foot exercises, or suggest other manipulations, plaster casts, etc., as seems best in each case. Avoid unnecessary surgery and too much treatment with orthopedic appliances, taking into account, first, the severity and duration of abnormal symptoms, and remembering that pronounced anatomical peculiarities are often compatible with continued normal physiological activities. Treat special foot diseases in appropriate special ways. Recurrences in underlying causes and in symptoms are common at irregular intervals, and sometimes are to be expected, and we may have to

decide between repeating a formerly successful method and trying a novelty of uncertain merit; much can be said in favor of the former.

Respiratory Conditions.—The *Journal of the Medical Society of New Jersey* for December, 1915, publishes the following prescriptions:

For Dry Bronchitis.

R Potassi iodidi, grs. v to x;
Elixir cinchonæ, ℥xx;
Vinî picis liquidi, ad, 3ss.

M. Sig.: Three times a day.

For Chronic Bronchitis.

R Ammonii carbonatis, gr. xvi;
Fluidextracti scillæ, 3ss;
Fluidextracti senegæ, 3ss.

M. Sig.: Teaspoonful every few hours, diluted.

For Influenza.

R Quininz sulphatis, gr. xxxvi;
Extracti aconiti, gr. iiss;
Phenacetini, 3i;
Pulveris ipecacuanhæ et opii, gr. xii.

M. Fiat capsulæ No. xxiv. Sig.: Take two every three hours.

Treatment of Frostbite.—H. E. Munroe (*Brit. Med. Jour.*, December 25, 1915) says that every means should be adopted to prevent excessive reaction. Circulation should be slowly restored by friction with snow or in ice water. The part should then be covered with gauze wet often with an evaporating lotion composed of one dram of solution of lead subacetate, three drams of alcohol, and water to make one ounce. This solution should be continued for twenty-four to thirty-six hours, or until the swelling begins to decline or cyanosis appears in the shrunken parts. Hot boric acid fomentations should then be used to overcome vasomotor reaction and anemia. This should be continued, either until gangrene shows definitely, or until the cyanosis and shrunken look disappear.

Treatment of Eclampsia.—G. Winter (*Medizinische Klinik*, December 5, 1915) discusses this problem extensively as it concerns the general practitioner. If delivery can be secured by operative or other means within four to six hours after the first symptoms of eclampsia, this should be the method of choice. If, however, the case is seen later than this the results of immediate delivery are little if any better than those secured by proper medical treatment. The most satisfactory method of treatment in this group of cases, which is the common one, is that devised by Stroganoff. This consists in placing the patient in a darkened, quiet room and removing all possible sources of external stimuli; in reducing the irritability and the convulsive attacks by the administration of morphine and chloral; in supportive general measures; and in the artificial induction of labor. To this plan of treatment there should be added a preliminary venesection with the removal of about a pint of blood. The administration of morphine and chloral yields the best results when an initial dose of fifteen mg. (one quarter grain) of morphine is injected at the beginning and followed in one hour by two grams (thirty grains) of hydrated chloral. Two hours after this the dose of morphine should be repeated, at the seventh hour the dose of chloral, and then 0.3 gram (about eight grains) of chloral should be given at the thir-

teenth and twenty-first hours, respectively. For the induction of labor the deep lateral incision of the cervix followed by the extraction of the child gives the best results, while the use of combined version and extraction alone gives the poorest. Cervical dilatation with hydrostatic bags gives only slightly better results than version and extraction. Puerperal eclampsia should be treated along similar general lines.

Open Air Treatment of Pneumonia and Anemia in Children.—Freeman (*American Journal of the Medical Sciences*, January, 1916) gives the method of treating cases of pneumonia in children at the Roosevelt Hospital. He gives them a dose of castor oil, puts them in beds on the roof, keeps their extremities warm and their bowels open. Very few cases received any stimulant or expectorant. In some cases when the cough was troublesome, a dilute solution of tincture of the chloride of iron in glycerin or water has been used. The results show that under such conditions pneumonias run a short course and have a very low mortality. This open air treatment also seemed to produce remarkable improvement in anemic and leucocythemic conditions with little or no drugs, and the writer concludes that treatment of children in an open air shed in winter increases their vitality and resistance to disease more powerfully than medicines.

Action of Autolysin on Mouse Tumors.—In order to gain some idea of the probable effects of this preparation on tumor tissue, Francis Carter Wood (*Journal A. M. A.*, January 8, 1916) studied its actions in a series of twenty-one mice bearing spontaneous cancers which were known not to regress under normal conditions. Careful measurements of the sizes of the tumors were made from time to time during the observations by a trained assistant who did not know the nature of the work. In no animal was there any clinical evidence of improvement in condition, and all animals showed the usual progressive growth of the tumors with ultimate death. The doses of the preparation used were enormous compared with those advocated for man, but such doses were proved by experiment to be harmless to mice, even when given by vein. The experiments showed that autolysin had no effect on malignant tumors in mice, whether given in large or small doses.

Fresh Air in Respiratory Diseases in Infancy and Childhood.—Fresh air is defined by John Lovett Morse as air which is cool, dry, and in motion (*Journal A. M. A.*, January 8, 1916). This is the air in which we feel best, whether sick or well, and, if also free from dust, is the most suitable for patients with respiratory diseases. The air should not be cold when the mucosa of the upper respiratory tract is acutely inflamed, since it acts as an irritant under these conditions and increases the symptoms of heat and tightness in the chest. When the acute stage has passed, cold air will relieve the congestion and diminish the discomfort. The application of cold air to the body surface is also a vasomotor stimulant, but it does not seem to be beneficial in pneumonia through this effect. Cold air also

predisposes to involvement of the ears. When suffering from acute nasopharyngitis, children should be kept in the house in cold weather in a well ventilated room with the temperature at about 60° F. if in bed, or at 65° to 68° F., if up. Cold air does harm and should be avoided in acute laryngitis and acute bronchitis. In bronchopneumonia the acute stage of bronchitis has usually passed and cold air may be beneficial, as it is in lobar pneumonia, but it should be remembered that injury may be produced by undue chilling, which should, therefore, be avoided.

Steam in the Treatment of Superficial Cancer.

—William J. Gillette, in the *Medical Record* for January 8, 1916, reports that he has used superheated steam seventeen times in sixteen cases with remarkable success. It is of great value in large fungating carcinomatous and sarcomatous masses, but does not readily permeate fascia or fat, which should be pierced by multiple punctures before employing this method. It seems to have a selective action on malignant tissues and also greatly to alleviate pain. Small metal shells are used with a wooden handle, and the steam pressure is from fifty to fifty-five pounds.

Cough Mixture for Children.—In the *Medical Fortnightly* for December 15, 1915, we find:

R Tincturæ opii camphoratae,	℥i.
Spiritus ammonii aromatici,	℥i.
Syrupi pruni virginiani,	℥i.
Extracti ipecacuanhæ fluidi,	℥30.
Aque, q. s. ad,	℥iii.

M. Sig.: One teaspoonful as required.

For whooping cough, the same journal advises:

R Codeinæ sulphatis,	gr. i.
Acidi phosphorici diluti,	℥xxx.
Acidi hydrocyanici diluti,	℥viii.
Syrupi toluani,	℥i.
Aque, q. s. ad,	℥iv.

M. Sig.: Teaspoonful every four hours.

Active Immunization with Diphtheria Toxin-Antitoxin.

—The late results obtained in a large series of children by the use of this combination lead William H. Park and Abraham Zingher (*Journal A. M. A.*, December 25, 1915) to conclude that the method affords a suitable and effective means of prophylaxis against diphtheria in susceptible persons. Owing to the slow development of immunity the injections are not suitable in the face of direct exposure or during an epidemic. The preparation is wholly unsuited for treatment of the disease itself, and is only a prophylactic agent.

Bromides in Epilepsy.—In a letter to the *British Medical Journal* (December 11, 1915), Charles A. Mercier states it as his belief that the discreet use of the bromides greatly diminishes the frequency of fits without demonstrable harm in certain cases of recurrent convulsions. He is equally certain, however, that in the majority of cases of epilepsy the bromides either do not appreciably diminish the number of fits, or else the diminution of their frequency is associated with a mental deterioration which more than outweighs the effect on the attacks. It has been contended that the simultaneous administration of arsenic will

prevent bromide acne, but Mercier does not agree with this. He has found that in some cases it will delay the appearance of acne, but it also apparently delays and lessens the other effects of the bromides.

Treatment of Addison's Disease.—Ralph A. Goodwin, in *Providence Medical Journal* for January, 1916, states that symptomatic treatment is essential in every case. Adrenal preparations are useful early. Doses should be regulated by the blood pressure and the muscular weakness; adrenaline, five to thirty minims, three times daily, gradually increasing the dose; or adrenal extract, five to twenty grains, three times daily. The dose should be smaller as the treatment progresses.

Excision of Injected Areas as a Cure for Mercurial Pityalism.—Serallach, in the *Revista de Medicina y Cirugia Practicas* for December 7, 1915, as a curative procedure in grave cases of pityalism resulting from subcutaneous injection of mercurial preparations, advocates the excision of the injected areas, especially where the gray oil has been used. He also advises the marking out of the affected areas by radiocopy and fluoroscopy, as the ordinary tactile method of examination is unsatisfactory and also because encysting may prevent local reaction or manifestation.

Newer Methods of Treating Typhus.—B. Coglievina (*Med. Klinik*, December 5, 1915) says that Wertheimer's plan of exposing the patients to the direct rays of the sun is followed by good results, which include the rapid disappearance of the rash, a primary rise in temperature followed by a fall, and a marked subjective improvement in the patient's condition. Roubitschek's plan of giving subcutaneous injections of one to three c. c. of normal fresh horse serum also produced great subjective improvement and reduced the mortality of the disease from thirty to about six per cent. The action of this serum rests largely on its property of inducing hyperleucocytosis, increased phagocytosis, and increased bacteriolysis. Good results have also been secured from the injection of Besredka's sensitized typhoid vaccine. The administration of hexamethylenamine in ascending doses up to five grams daily proved successful in reducing the respiratory and meningeal symptoms and in combating the diarrhea. The fever should be controlled during such treatment by the use of cool packs. Quinine and salvarsan have proved ineffective in typhus fever.

Iodine and Sodium Hypochlorite as Wound Disinfectants.—Harry Schuetze, in the *British Medical Journal* for December 25, 1915, tells how he carried out studies *in vitro* to determine the relative disinfectant powers of iodine, Dakin's hypochlorite solution, and phenol on *Staphylococcus* and *Bacillus edematis maligni* in distilled water and sheep serum. The experiments were accurately quantitative, both as regards the disinfectants and the cultures. Equal volumes of the disinfectants and the bacterial emulsions were employed. A 0.0015 per cent. iodine solution killed all staphylococci in distilled water in two minutes, while it required a 0.125 per cent. solution to accomplish the same purpose in thirty-two minutes in sheep serum.

One per cent. phenol was effective in thirty-two minutes in distilled water and 1.5 per cent. in sixteen minutes in serum. All malignant edema spores in water were killed by 0.1685 per cent. of sodium hypochlorite in fifteen minutes and by five per cent. iodine in two hours, but five per cent. phenol was ineffective in eight days. In serum, iodine was reduced in effectiveness and Dakin's solution was even more impaired in action, so that of the latter a full strength solution (0.24 per cent.) was required.

Internal Secretions in the Treatment of Chronic Disease.—Henry R. Harrower, in the *Southern California Practitioner* for December, 1915, considers that the dose of thyroid extract, which is given as five grains in the pharmacopoeia, is preposterous. From one fourth to one grain is a sufficiently large dose in most conditions. Anterior pituitary extract, two and a half grains, four times daily over a period of several weeks, has a beneficial effect upon bronchial asthma.

Emetine in Purpura.—Cole and Quereus (*New Orleans Medical and Surgical Journal*, January, 1916) report a case of purpura hemorrhagica in which various remedies, including the intramuscular injection of emetine hydrochloride, were without effect. Intravenous administration of emetine was then begun, grain one half, undiluted, injected into the median basilic vein. Only a small ecchymotic spot formed at the site of puncture. Six hours later, the injection was repeated and improvement was noted on the following day. The same dose of the drug was repeated twice daily until ten doses had been given, injected alternately in the right and the left arm, when it was discontinued because of the absolute disappearance of symptoms.

Treatment of Dysentery.—Ronald Ross (*Brit. Med. Jour.*, December 25, 1915) believes that emetine is no more effective than powdered ipecac, but that it comes into more intimate contact with the amebæ at the bases of the ulcers. It seems best to combine oral doses of powdered ipecac with hypodermic administrations of emetine. When such treatment is begun early, most cases of amebic dysentery can be cured, although a small proportion always remains refractory. Treatment may fail altogether when first started late in the disease, owing to extensive destruction of the intestinal mucosa. It is a good practice, therefore, to give all cases of dysentery the benefit of doubt and use ipecac or emetine even if amebæ have not been demonstrated. Emetine seems perfectly safe in doses not exceeding one grain a day, but there is some question as to the safety of continuing such doses for more than a week, as toxic effects may arise from cumulation. In bacillary dysentery the sulphates of sodium and magnesium have proved of value and may be helpful even in the amebic form of the disease by sweeping out the parasites and injurious bacteria. In severe acute bacillary dysentery, "rumming dysentery" three or four heaping teaspoonfuls of bismuth subnitrate daily with ten grains of tannic acid in each dose give fairly good results. The use of medicated enemas in either form of dysentery is of

problematic value, although weak warm solutions of protargol, quinine, or potassium permanganate are sometimes beneficial.

Dysentery.—The *Journal of the Medical Society of New Jersey* for January, 1916, gives the following prescriptions:

For Dysentery in the Young and Strong.

R Magnesium sulphatis,	3i;
Acidi sulphurici diluti,	℥x;
Tinctura opii deodorati,	℥x;
Aque chloroformi, q. s., ad.....	3ii.

M. Sig.: To be given every two or three hours until feces appear, when small doses of opium and quinine sulphate may be used.

For Dysentery in Children.

R Pulvis ipecacuanhæ,	gr. ¼;
Bismuthi subnitratitis,	grs. v to x;
Cretæ preparatæ,	grs. iii.

M. Sig.: Every two hours.

For Chronic Dysentery.

R Cupri sulphatis,	gr. ½;
Extracti opii,	gr. ¼;
Extracti nucis vomicæ,	gr. ½.

M. Fiat Pilula No. 1. Sig.: To be taken four times daily.

Pneumosan in Pulmonary Tuberculosis.—Using this preparation in conjunction with the usual general hygienic and dietetic treatment, A. E. A. Carver (*Lancet*, December 11, 1915) has secured very satisfactory results in a series of 103 cases. Thirty-one per cent. of the patients lost the bacilli from the sputum under treatment. Seventy-one per cent. of the patients in the first or second stages of the disease showed marked improvement or had the disease arrested after treatment for about a year and a half. The results seem to warrant further use of the drug, particularly in view of the fact that no untoward effects have followed its administration.

Fuller's Earth in Intestinal Disorders of Infants.—Prompted by reports of the beneficial effects of kaolin in enteritis, Alfred F. Hess (*Journal A. M. A.*, January 8, 1916) tried it in a series of cases, but was not able to secure favorable effects. Even in normal infants he found it to cause only slight constipation. Using Fuller's earth, however, he found that daily doses of one ounce, given either in the milk or suspended in a small amount of water and sweetened with saccharin in the proportion of two fifths of a grain to each ounce of the earth, invariably produced marked constipation in normal infants without other disturbance. In infants it usually promptly checked diarrhea and often also relieved vomiting. Its action in these respects was greater than that of bismuth, chalk, or other commonly used preparations. In severe cases no food was allowed, and doses of one teaspoonful of the earth in water were given every hour or half hour. No harmful effects were observed. The U. S. Dispensatory gives Fuller's earth as synonymous with kaolin, but the pharmaceutical product is not the same chemically or in physiological action as the Fuller's earth of commerce, and it is the latter which is an effective remedy in enteritis. The precise action of such insoluble materials as this is not understood, but is believed to be associated with their pronounced properties of adsorption.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

July 26, 1915.

New Reaction in the Spinal Fluid, by Gustav Emanuel.—Following up Lange's gold test it was found that normal spinal fluid would prevent the precipitation of a solution of mastic by strong solutions of salt, while spinal fluid which gave a strong Lange's reaction would not prevent such precipitation, even when not greatly diluted. Between these two extremes all grades of reaction were found. The conclusion was reached that in pathological fluids there was some substance which precipitated the mastic and which was present in excess of the substance normally found which protected the mastic against precipitation by salt. This precipitating substance seemed to be in the nature of a globulin or a nucleoprotein. It was found in small amounts in several nonsyphilitic conditions, but was present in great excess in all cases of cerebral lues or general paralysis.

MEDIZINISCHE KLINIK.

December 5, 1915.

Grippe, by Stepp.—Emphasis is laid on the common confusion among medical men of the terms grippe and influenza. Contrary to the prevalent idea, these conditions are not the same. Influenza is a specific infectious disease, typically epidemic and now but little seen. Grippe, on the other hand, is seldom truly epidemic, though its incidence often increases at times to a marked extent in a given locality. It is due to a mixed infection and not to a single specific organism. Grippe usually begins in the late spring or early summer and its onset is marked by the symptoms of coryza and rhinitis. Soon there is an extension to the lower respiratory passages, with the development of bronchitis and laryngeal catarrh. In severe cases there is often some circumscribed involvement of the lungs. Recovery from the pulmonary affection is usually prompt, but the nasopharyngeal mucosa remains affected for a considerable time. The condition is seldom associated with high fever, and the pulse is relatively slow and of good quality. The prognosis of grippe is usually favorable.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

November 9, 1915.

Localized Tetanus with Short Incubation Period, by S. Pozzi.—Most, if not all, cases of localized tetanus hitherto reported have been of the cephalic type. Pozzi's case is that of a soldier who sustained a shell wound in the left tarsus. A preventive injection of antitetanic serum was administered three days later. Two days after this marked convulsions of the left lower limb took place at intervals of a few minutes. These increased in violence, and six days later slight convulsive movements of the right lower limb appeared. Two days later the pain was so great, in spite of the use of morphine and other drugs, that, at the patient's request, supramalleolar amputation was performed; moderate fever had persisted up to this time. The convulsions continued, becoming as marked on the

right side as on the left and remaining for two days. The right side convulsions then disappeared, but contracture in the flexed position appeared in the left extremity. The diagnosis of localized tetanus having finally been decided upon, large doses of serum were given. Convulsive movements almost disappeared, and healing of the stump progressed satisfactorily, but contracture in the left extremity was still marked at the time of writing.

Acute Cryptogenetic Nephritis in Military Practice, by J. Parisot and P. Ameuille.—A manifestly unusual number of cases of obscure renal disease were met with in military hospitals and ambulances, these patients constituting over one per cent. of the men referred for treatment. The symptoms were rather variable, the cases exhibiting a uniform likeness only as regards rapidity of course, intensity of albuminuria, and the constant absence of hematuria. In one group of cases the condition began with anasarca; some patients died, but others recovered in a week or two under rest and appropriate dieting. In another group confusion arose at the outset from the presence of symptoms suggesting meningeal or digestive disease; edema was uniformly absent, and the renal symptoms began with uremia, generally fatal in a few days. In the third group of cases albuminuria was discovered only through systematic examination, symptoms such as fever with e. g., headache and slight jaundice, alone preceding. Autopsy in cases of the second group showed large kidneys with chiefly tubular lesions. Blood cultures and agglutination tests were uniformly negative, and careful study revealed no special etiological factor. The suggestion is made that the prolonged physical overexertion of the troops, with lack of sleep, special diet, and continuous exposure to the inclemencies of the weather, may render the kidneys more fragile and susceptible to a multiplicity of baneful agencies individually so inconsequential as to pass unnoticed.

Alcoholism as a Cause of High Blood Pressure, by Camille Lian.—Blood pressure estimations were made in a series of 150 militiamen all aged forty-two or forty-three years. Independently the men were questioned as to their consumption of alcoholic beverages in peace times. Those who took less than a litre of wine or two litres of beer or cider a day, without whiskey or other strong liquors, were classed as sober. Three other groups, based upon increasing grades of liquor consumption, were also established. Among the sixteen sober subjects, only 6.25 per cent. showed high blood pressure; of fifty-three moderate drinkers, 7.54 per cent. showed high pressure; of fifty-seven heavy drinkers, 17.54 per cent., and of twenty-four very heavy drinkers, 25 per cent. Elimination of the subjects in whom other pathological conditions might have been the cause of high pressure failed materially to alter these percentages. The conclusion is reached, therefore, that alcoholism is an important factor in the etiology of arterial hypertension.

SEMANA MEDICA.

October 7, 1915.

Aneurysm of the Aorta in a Boy of Twelve Years, by M. Acuna.—Aortic aneurysm is rare in childhood, and although the Wassermann was negative in this young patient, it was strongly positive

in the mother, thus confirming the hereditary syphilitic nature of the lesion.

Oct. 14, 1915.

Fibrochondroosteosarcoma of the Vagina, by A. Chueco.—A mass of ten years' standing in a woman of sixty-four years, extending upward in the abdomen as far as the umbilicus, proved at operation to be of this nature. Several sittings were required for its complete removal, and the patient recovered.

BOSTON MEDICAL AND SURGICAL JOURNAL

December 30, 1915.

Prognosis of Incipient Senile Cataract, by David W. Wells.—Most incipient senile cataracts never advance far enough to need operation; therefore we should avoid using the term, cataract, and speak of it rather as an opacity in the lens, and give the most hopeful prognosis until it is evident that it is progressive. Then, if it does mature, operation offers a good prognosis. The statistics given by Knapp were: "In all cases as they come, failures five per cent., moderate results ten per cent., good results eighty-five per cent." If the sight of the better eye is insufficient for reading, the immature cataract of the more advanced eye may be removed safely, so there need be no years of partial blindness waiting for ripening. The patient is entitled to the most optimistic opinion which clinical history and experience warrant.

Significance of Changes in Cellular Content of Cerebrospinal Fluid in Neurosyphilis, by Harry C. Solomon and Hilmar O. Koefod.—The number of cells found in the fluid of untreated cases offers no definite information of prognostic value. No conclusions are justified from the cell count as to whether the case is one of cerebrospinal syphilis or general paresis, the time the process has been active, or the severity. The cell count may vary greatly from month to month, or when the interval is but several days, while at other times it may remain very nearly the same after an interval of months. Cases showing natural remissions may show no reduction in the cell count or other spinal fluid findings. Cases treated with salvarsan tend to show a more or less rapid fall in the cell count, which will, as a rule, remain low during treatment, but is likely to rise when treatment has been discontinued, and may rise during treatment after first falling. Cases may show remissions during treatment and still have a pleocytosis. Treated cases having the cell count fall to normal may at the same time become much worse and acquire paralytic symptoms. In general paresis the cell count in no way parallels the other spinal fluid findings. The cell count offers nothing of prognostic importance in syphilis of the nervous system, unless accompanied by improvement of the other laboratory signs, and is not an index to the predominance of irritative or degenerative changes.

Insanity by Contagion, by B. Henry Mason.—Insanity by contagion is more infrequent in its manifestation than it was a century or more ago. It is probable that it occurs only in correlation with some underlying mental disorder. A mild contagion may be met with when a presumably normal individual adopts a delusive attitude, but in whom a

diagnosis of communicated insanity would not be justified. One mentally deranged may impose his delusional conceptions upon one whose mental calibre is below the normal. A person hereditarily predisposed to insanity may be the subject of contagion when intimately associated with an insane person. The manifestations of mental disease may be simultaneous in two or more persons with an insane family taint.

Latent Neurosyphilis and the Question of General Paresis—sine paresi, by E. E. Southard and H. C. Solomon.—There is a group of cases that exhibit positive Wassermann reaction in the serum, or in the spinal fluid, pleocytosis, excess of globulin and of albumin in the spinal fluid, gold sol. reaction of central nervous system syphilis, and yet show no sign or symptom of neural syphilis. The writers believe that these cases represent a form of chronic cerebrospinal syphilis, probably parietic in type.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

January 8, 1916.

The Urochromogen Reaction as an Aid to Prognosis, by Alexander M. Burgess.—One hundred and seventy-one cases of advanced pulmonary tuberculosis and 650 nontuberculous cases were studied. Only twenty-six positive reactions were obtained in 1,030 tests in the latter group, while there were ninety positive reactions in 469 tests in the tuberculous group. Fifty-five tuberculous patients gave at least one positive reaction, and of these patients over half died within three months and only three have lived more than six months from the time of first observation. A positive reaction seemed to indicate a rapidly progressive lesion with a probable fatal outcome in a short time. It was remarkable that in this group of fatal cases the urine often failed to give positive reactions after the first, or gave such reactions only at intervals. A negative reaction was, therefore, of no prognostic value. In nontuberculous conditions, such as scarlet fever, diphtheria, and measles, the reaction was of no prognostic value.

The Syndrome of Toxemia, by Francis M. Pottinger.—The symptoms and physical signs in pulmonary tuberculosis can all be grouped under three heads etiologically: 1. Those due to toxemia, such as malaise, weakness, anorexia, digestive disturbances, loss of weight, rapid pulse, night sweats, fever, and anemia. 2. Those due to reflex action: Hoarseness, cough, circulatory disturbances, digestive disorders, loss of weight, chest and shoulder pains, flushing of face, and apparent anemia. 3. Those due to tuberculous process *per se*: Frequent and protracted colds, hemoptysis, pleurisy, expectoration and fever. The first group are in no way distinctive of tuberculosis and the same symptoms could be due to almost any other infection. The symptoms of the second group all point to organs other than the lungs, and are all associated with organs innervated by the sympathetic nervous system; further analysis of the first group showed that these, too, are all similar in effect and distribution to those produced by a general disturbance of the sympathetic nervous system through toxemia. All symptoms in the first two groups, therefore, may be

considered together as constituting a syndrome indicative of toxemia.

MEDICAL RECORD.

January 8, 1916.

Mercury Elimination in Bichloride Poisoning, by Karl M. Vogel and O. Ivan Lee.—A review of sixteen cases of bichloride poisoning in St. Luke's Hospital with two deaths, shows that the elimination of mercury may last from one week to several months; treatment should continue until elimination has ceased. Excretion continues longest from the bowel, but the gastric mucosa and skin are important and should be utilized to spare the kidneys. Leucocytosis is practically always present.

Unilateral Hydrocephalus, by E. Livingston Hunt.—This case in a woman seventy-eight years old is of interest from its unilateral nature, although the etiology could not be determined even at autopsy.

High Frequency Current in General Practice, by Louis Cohn.—This current has a sedative and anodyne effect on the nervous system, relieves pruritus and sciatica, and lowers blood pressure in arteriosclerosis; while the diathermic method is of great service in acute and chronic prostatitis.

AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

January, 1916.

Effect of Water Intake on Nitrogen Retention in Nephritis, by Nellis B. Foster and Helen B. Davis.—The retention of nitrogen is one of the common phenomena associated with a large percentage of the cases of nephritis observed in hospitals. At periods of nephritis when patients are forced to seek hospital aid, the retention of nitrogen outside of convalescence appears to precede and lead up to either frank uremic manifestations or the graver complications of renal disease. A careful study of a large number of cases discloses many where the metabolic disturbances seem to be confined to the protein economy, i. e., the notable failure in elimination is in respect to the nitrogen, and this retained nitrogen is found, not only in the blood, but also in the tissues. The diseased kidney cannot excrete a concentrated urine, so if the nitrogen of the diet is reduced and the intake of fluid increased, the retained nitrogen is swept out and there is later an approximation toward equilibrium. Reduction of nitrogen intake does not suffice alone, neither does the ingestion of large quantities of water if the diet nitrogen is not curtailed.

Relation between Functional Tests and Pathological Anatomy of the Kidney in Chronic Nephritis, by Channing Frothingham.—The writer is inclined to answer in the negative the question whether it is possible to tell during life what type of chronic nephritis from the pathologist's viewpoint is present in the individual case. No assistance is given by the age of the patient, the presence or absence of edema or pulse pressure, changes in the eye grounds, or the previous history. It is suggested that possibly by the more complicated dietary tests for renal function which may be carried out on patients, a better grouping of the cases according to the pathological lesions may be accomplished.

SURGERY, GYNECOLOGY, AND OBSTETRICS.

October, 1915.

Errors in Diagnosis of Renal and Ureteral Calculus, by Hugh Cabot.—In all cases of abdominal pain of a chronic or recurring type, in cases of backache, lumbar or sacroiliac joint strain, and lumbago, careful repeated examinations of the urine, including a microscopic examination of the sediment in all cases where albumin is present or not, should precede positive diagnosis. In most cases in which the symptoms warrant the consideration of operation, x ray plates are essential. The evidence presented by the x ray alone is insufficient to warrant operation in most cases of stone in the kidney or ureter. Possibility of error by mistaking other foreign bodies should be excluded by the use of the ureter catheter, stereoscopic plates, injected radiograph, or the wax tipped catheter. In any case in which the symptoms suggest ureteral calculus and a doubtful shadow appears in the x ray plate, if the ureter cannot be catheterized, or the catheter is arrested, the decision for or against operation must be made upon the apparent gravity of the symptoms. In cases suggesting stone in the kidney with a normal urine, a negative x ray, and an unobstructed ureter, the wax tipped catheter will not infrequently lead to a correct diagnosis unless the stone lies in a dilated calyx.

Postoperative Renal Infection, by G. G. Ward.—Postoperative renal infection is more frequent than has been formerly appreciated owing to the fact that in many cases it is overlooked because of the mild character of the infection, the severe types being comparatively rare. Vesical irritability occurring after operation may be an important precursory sign of renal infection, and therefore should not necessarily be attributed to a cystitis caused by carelessness. A study of the urine will show the probable type of the disease, and thus be a guide to treatment. A careful study of the pathological condition of the kidney should be made at the operation in order that nephrectomy may be avoided, if possible.

Proceedings of Societies.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Twenty-eighth Annual Meeting, Held at Cincinnati, December 13, 14, and 15, 1915.

The President, DR. BAYON SAUNDERS, of Fort Worth, Texas, in the Chair.

High versus Low Degrees of Heat as Palliative Treatment for Advanced Cases of Cancer of the Uterus.—Dr. HERMAN J. BOLDT, of New York, asserted for the galvanocautery treatment, first brought to his notice by the late Doctor Byrne, of Brooklyn, that it gave more satisfactory results in such cases than any other method of treatment with which he was acquainted. Radium and x ray, even with the newer methods, had not been so satisfactory. The intravenous injections, or the intramuscular injections of various medicaments recommended for experimentation from time to time, and from which improvement or even cures

had been reported, in his hands had not had discernible good effects. Although the results that they saw reported from the use of radium were little short of miraculous, unfortunately he had not been able to verify such miracles.

Galvanocautery treatment had stood the test of time and it had been proved by clinical experience that patients properly trained thereby lived longer and were free from distressing symptoms. It was a comparatively safe therapeutic agent when used in suitable cases; i. e., for such patients in whom the disease had not already advanced too far, so that the bladder and rectum would probably not be injured by a thorough application. The statement of Doctor Percy that the application of lower degrees of heat, so low that a carbonization of the tissues was not caused, and applied for a much longer time, had a deeper destructive influence, appealed to the profession, and he had given it a thorough test for two years, although he did not see in any case a superior clinical advantage. Recently he had shown it to be a fallacy by an autopsy and a careful study of the tissues from a woman who had died eight days after the heat application for two and a half hours, according to the rules laid down by Doctor Percy. Here it was illustrated that directly beyond the cauterized zone there were actively proliferating cancer cells. Doctor Percy's experimentation was done on dead tissues, and the destructive action did not penetrate beyond the superficial structure. He had proved beyond a doubt that the application of heat so low as not to char the tissues, although the desiccation method was used precisely according to the directions of Doctor Percy, was of no more value in hindering cell growth in the depth of the tissues than high degrees of heat, as were formerly and were now again used. The technic had, moreover, the advantage of being able to do the cauterizing in from twenty to thirty minutes, and the destruction of tissues was carried deeper, leaving only a shell of the cervicouterine structures. The degree of heat employed was much higher than that which was advocated by Doctor Byrne. While the electrode was at a cherry red heat when applied to the tissue by Byrne, this heat soon diminished; but he turned on more current and kept it at that degree while it remained in contact with the tissue, and when a fairly thick layer of carbonized structure had been produced, more current was turned on to raise the heat of the dome electrode to a light red. The electrode must be taken off to make frequent examinations during the process of burning, to determine how much tissue had been burnt out, and to burn off the layer of carbon accumulated upon the electrode. It required from one to two weeks for the carbonization eschar to be thrown off, and then there was a slight sanguineous oozing, which might be controlled by the use of acetone, or a strip of styptic gauze might be packed into the cavity. But what was still better was to resort to the desiccation process by the slow heat method. It was not necessary to use the heat for more than twenty to thirty minutes, and no carbonization must be caused; but they must be careful not to use too much pressure with the electrode, since, if the first treatment had been properly done, only a shell of cervicouterine structure was left. Opening of the

abdomen was not necessary for the second cauterization or rather desiccation.

For additional aftertreatment the use of radium was desirable since there was no doubt that it was of benefit in some cases of cancer. A capsule containing seventy-five mg. might be placed in the cavity and held by a gauze tampon for from twenty-four to forty-eight hours. This was to be repeated once a week for several weeks. No patient, after the cautery operation had been done, should be permitted to be out of constant observation until the carbonized eschar had been completely thrown off and the danger of a possible secondary hemorrhage dismissed.

Ligating the internal iliac arteries, as originally advised by Doctor Pryor, and oophorectomy as a preliminary step, were good procedures. He had been able to verify the assertions made for the ligation of arteries, in that it lessened the bleeding and the discharge in patients with so called carcinoma of the uterus.

Moschcowitz's Operation; Inguinal Route for Femoral Hernia.—Dr. J. D. S. DAVIS, of Birmingham, Alabama, stated that if the same surgical factors were used in femoral hernia as in inguinal hernia, relapse would be rare. There were certain erroneous impressions regarding the crural route for femoral hernia that gave rise to disaster. The opinion was prevalent that the repair of femoral hernia by the thigh route was a simple operation; that the technic did not require anatomical exposure of the field of operation and that recurrence was rare. The statement that femoral hernia did not tend to recur after high ligation of the sac was without foundation, even with closure of the ring by the operation of Bassini or Fabricius with high ligation of the sac, a funnel shaped projection of the peritoneum was always left, which constantly tended to recurrence. If the same precautions were resorted to in femoral hernia as in inguinal hernia (high ligation of sac, secure closure of the internal ring above, and aseptic wound healing), relapse would be as rare as in inguinal hernia. The inguinal route or approach rendered resection and anastomosis an easy procedure compared to a resection by the crural route. The supplementary abdominal incisions so often necessary in resection when the crural operation was made, need not for a moment even be considered when this operation was done. When femoral hernia was attacked by a high incision (inguinal route), anatomical exposure of the femoral ring could be made from above, bringing into view Cooper's ligament, which was used in the closure of the ring. In the operation for the cure of femoral hernia by the inguinal route, the skin incision was not unlike that made for the Bassini operation, except when the sac was found adherent; the incision then might be extended down into the thigh so as to give room for extirpation of the sac.

The next step in the operation was that of dividing the aponeurosis of the external oblique. The upper flap of the external oblique aponeurosis, the internal oblique, and transversalis were held up by a retractor, while a second retractor was placed under the lower flap of the external oblique aponeurosis which retracted downward, bringing Poupart's ligament into view. A tape or piece of gauze was

passed beneath the round ligament or spermatic cord and used to retract the round ligament inward, and in case of a male, the spermatic cord was to be retracted outward, which gave a good exposure of the field of operation, with its floor covered by the transversalis, a thin layer of fascia just over or next to the peritoneum. The transversalis was bluntly divided along the line of the border of Poupart's ligament, then picked up by the retractors and held with the other tissues, upward and inward, and outward and downward. This retraction brought the peritoneum with the constricted neck of the sac into view. The retractor was removed from the lower and outer flap to show the lower cut surface of the transversalis fascia attached to Poupart's ligament and its relationship to the peritoneum. If the deep epigastric artery should run an anomalous course, it would at this stage come into view, and might be retracted or cut between ligatures.

The sac was retracted with its contents, or if this was impossible, Gimbernat's ligament, which formed the sharp margin of the constricting ring, might be cut with a blunt pointed herniotomy knife. The ligament was in full view, which made it practically impossible to encounter an anomalous obturator artery. If it was in view, hemorrhage could be promptly controlled; but, in an operation by the crural route or by the thigh, Gimbernat's ligament must be cut blindly, endangering the obturator artery, from which a hemorrhage might occur that was hard to control, or the sac might be opened just where it converged from the neck, through which opening the hernia contents might be retracted and placed in the peritoneal cavity, and held by a sponge or pack. If the hernial contents were adherent to the sac loose in its bed, the sac and contents could be pulled out of the hernial bed, converting a femoral hernia into an inguinal hernia, which made it convenient and easy to deal with both sac and contents.

If the sac was adherent to its bed, a pair of artery clamps should be introduced down to the lowest point in the sac, then closed and withdrawn. If the sac did not evert on account of adhesions to the bed in which it lay, the lower skin flap might be retracted down over the thigh, or the inguinal incision might be extended downward on the thigh over the hernial protrusion, thus enabling the operator to dissect the sac free of adhesions.

The sac was tied off and transfixated beneath the transversalis and internal oblique. It was tied off sufficiently high, and drawn up under the transversalis and internal oblique, so as to provide against leaving a protrusion or dimple or funnel shaped projection of the peritoneum, and thus safeguard against relapse. The inner and upper flap was retracted inward and upward, and the outer and lower flap outward and downward, which exposed to full view the femoral ring bounded externally by the external iliac vein, femoral and internal epigastric arteries; anteriorly by Poupart's ligament; internally by Gimbernat's ligament covered by a reflection of the transversalis fascia, and posteriorly by Cooper's ligament.

With a small curved blunt pointed needle, threaded with catgut suture No. 2, Cooper's ligament, which could be seen—a dense, tough, white, glisten-

ing, fascial membrane—covering the horizontal ramus of the pubis, was pierced just internally to the iliac vein, and then the needle was carried through the lower flap of the transversalis fascia and the edge of Poupart's ligament. Two or three sutures were now similarly placed internally to the first. The last one and the most internal suture picked up Gimbernat's ligament. Tying all these sutures approximated Cooper's ligament and Poupart's ligament, which procedure effectually closed the hernial orifice.

The operation was now to be completed like an inguinal hernia by the Bassini method. The internal oblique and transversalis and the flap of the transversalis fascia were sutured *en masse* to the overhanging portion of Poupart's ligament, making a bed for the spermatic cord in the male. The round ligament in the female was never transplanted. The external oblique was next closed over the cord—lapped or imbricated—and the skin was closed with buried catgut No. 1 suture, or with a silk or horsehair buttonhole suture.

Clinical and Experimental Study of Post-operative Ventral Hernia.—Dr. WILLARD BARTLETT, of St. Louis, thought that the causes of post-operative ventral hernia were incisions in defiance of anatomical and physiological principles, improper wound closure, needless drainage and tamponade, postoperative increased intraabdominal pressure, and wound infection. Experiments on dogs produced no sign of hernia where one layer was preserved. Hernia resulted where a defect was produced in all layers, except skin, or skin and peritoneum, successful repair of those being made by inversion of the opposite sheath, overlapping of both sheaths, or fascia lata transplantation.

Complete defects were immediately repaired with transplants of fascia, sheath transplants, or the reflection of opposite sheaths. To restore the abdominal wall in such hernias, only one to three fibrous layers were depended upon. The experiments proved that postoperative hernia depended upon two factors, namely, a weak wall and hernial tendency. In the human subject the hernial tendency was corrected preoperatively by reducing intraabdominal fat and intestinal contents, with rest in bed, liquid diet, and free catharsis. The best postoperative procedure left the sac intact, using the sac wall and scar tissue, but, if necessary, the abdominal contents might be reduced. If there was undue tension on the reconstructed wall, or interference with the movements of the lower ribs, failure was sure.

Choice of operation depended upon the site of the lesion, the size of opening and hernia, the condition of surrounding tissue, and the general condition of the patient. The varieties of operation were overlapping, reconstruction, flap inversion, fligree, and free transplantation. Kirschner preferred fascia lata because of its easy accessibility and quantity, its strength, inelasticity, adaptability, and tendency to heal in. One reinforcing suture line outside or one inside and outside a complete defect, practically insured success.

The aftertreatment was of vital importance, dealing chiefly with meteorism or straining of any kind. In the clinical series of seventy-eight operations, seven results were not known, two treated with

filigree were failures, four recurred after the overlapping method, while the others were all complete cures.

Adenomyoma of the Round Ligament and Incarcerated Omentum in an Inguinal Hernia Forming One Tumor.—Dr. THOMAS S. CULLEN, of Baltimore, reported his first case of adenomyoma of the uterus in March, 1895, and since then he had been much interested in adenomyomata. In 1896, he reported his first case of adenomyoma of the round ligament. Since that time a number of adenomyomata of the round ligament had been detected. When analyzing the umbilical tumors recorded in the literature, he encountered a number that had been variously diagnosed. Those tumors were found only in women, tended to swell at the menstrual period, and occasionally discharged a little blood at the period. On section, some of them were found to contain small spaces filled with old blood. Those tumors proved to be adenomyomata of the umbilicus. More recently adenomyomata of the rectovaginal septum had been noticed. Cuthbert Lockyer and Jessup had each reported two cases, and the author had had four. In 1889, Dr. William W. Russell reported a most interesting case, where a large amount of uterine mucosa was found in the hilus of the ovary.

They might find adenomyoma of the uterus, of the round ligament, of the rectovaginal septum, or in small umbilical tumors. Nearly three years ago he operated on another adenomyoma of the round ligament. The patient was forty-three years of age, and complained of a lump in her groin for several years. This was firm and appeared to be cystic. It was about four cm. long and two cm. broad, and somewhat lobulated. The woman also complained of pain in the appendix region. He first made an incision and found the rectum firmly adherent to the left ovary over a considerable area. The adhesions were gradually loosened, and the raw area on the bowel was closed. He then examined the omentum and found that it passed down through the hernial opening near the right internal inguinal ring and then directly out into the adipose tissue of the anterior abdominal wall. The omentum was cut off at the internal ring, tied, and pushed out of the way. The extraperitoneal portion of the omentum was left *in situ*. The peritoneum over the appendix, which showed evidence of old inflammation, had adhesions passing off from it in various directions. After closing the abdomen, he made an incision over the tumor in the right inguinal region. The tumor was adherent to the skin. The skin was dissected back, and the mass cut away from the fascia. There were numerous cysts, some filled with clear colored contents, others with slightly turbid fluid, and a number with chocolate colored fluid, strongly suggesting adenomyoma. After dissecting away the lower portion of the tumor, which was also adherent to the fascia, he lifted up the omentum from the hernia opening. The hole left near the internal ring was slitlike in form and about one cm. long and four cm. broad. It was closed with kangaroo tendon. To dissect back the fascia and do an orthodox operation was out of the question, because of the large defect that would have been left. At most points good firm scar tissue existed. He closed the wound

with through and through silkworm gut sutures. Accurate skin approximation was made with fine, black silk. The lower angle of the wound was drained and covered with protective. The patient made a good recovery.

Early Tuberculosis of the Cervix.—Doctor CULLEN also reported this case, that of a colored woman, twenty-five years of age, who complained that fecal matter had been discharging through the vagina for two years. She had been married six years, but had never been pregnant. Her menses began at the age of nineteen years, but for the last five years she had had no periods. At operation the resident gynecologist, Dr. J. C. Neel, found the uterus in retroposition and the bladder adherent to it above the internal os. The sigmoid was adherent to the vesicouterine flexion, just above the level of the internal os. The right tube and ovary had become twisted over the anterior surface of the uterus. The bladder and tube were freed, and the fistula between the vagina and rectum was cut across. The small opening in the sigmoid was closed. The uterus, which contained several myomata, was removed, a complete hysterectomy being done. The laboratory diagnosis was bilateral follicular salpingitis, uterine myomata, tuberculosis of the endometrium, and tuberculosis of the cervix. Tuberculosis of the cervix was rare, and such an early stage as here depicted he had never seen before.

President's Address: The Great Professional Problem of the Present Decade.—Dr. BACON SAUNDERS, of Fort Worth, Texas, said that many private sanatoriums were conducted on the highest scientific plane in the most healthy, efficient, and ethical manner, and were, therefore, beyond the pale of criticism. But, unfortunately, it was also true, be it said to the everlasting shame of men and women boasting of the insignia and parading in the habiliments of medicine, that probably somewhere from thirty to fifty per cent. of the privately owned and secretly operated pseudosanatoriums were hotbeds of dishonesty and veritable culture fields of immorality; in short, fit hibernating places for his satanic majesty and all his devilish hosts. He wondered if those in power realized what a travesty on public beneficence it was when in almost every State of this glorious Union of theirs, anybody, no matter who, so long as he went by the sobriquet of "doctor," could get a charter under the great seal of the State for anything, and no questions asked, provided that the bantling was called by the name of "sanatorium." In the fullness of time, when the great heart of medical men really and sincerely beat for human welfare and happiness, there would come some power whose duty it would be to see that that disgraceful state of affairs was made impossible.

Operations for Exophthalmic Goitre.—Dr. E. S. JARVIS (Judd and Dr. J. D. PEMBERSON, of Rochester, Minnesota, selected for study cases that had been operated in more than five years ago (1890) for exophthalmic goitre, because it was difficult to say when a case of exophthalmic goitre had been cured. Their report embraced 121 cases which they had been able to trace by repeated examinations or correspondence. This study revealed the fact that about forty-six per cent. of the cases operated in more than five years ago, had remained cured and showed

no evidence of the old symptoms; about twenty-three per cent. were practically cured, although a slight trace of their old trouble persisted or returned temporarily under severe nervous strains, etc.; between four and five per cent. were somewhat improved by operative interference, while of about five per cent. it was reported that they had received no benefit. The series did not include merely selected cases, but embraced all the cases operated in during 1909, with which they had been able to keep in contact, by either subsequent examination or correspondence. They ligated the superior thyroid vessels in some patients simply as a preliminary measure and advised them to return in three weeks for thyroidectomy, and in some instances so much improvement had followed this procedure that they did not come back; however, they observed that late recurrence of symptoms was more frequent among patients whose arteries had simply been ligated than among those who had had resections of the thyroid gland. Frequently in mild cases, ligation of the superior thyroid vessels was all that was necessary. Several patients who had resection of the gland, had since reported the birth of normal children; one woman had borne three normal children. Seven of the twenty-one patients who died were never able to leave the hospital and were extremely toxic at the time of operation. The remaining fourteen patients lived an average of 14.1 months after operation, and death ensued probably on account of the irreparable damage to the heart, liver, and kidneys, due to continued intoxication. A more general education of the public, resulting in earlier interference in those cases, would greatly increase the percentage of cures.

Pancreatic Cyst with Hematuria: Unique Case.—Dr. JOSEPH RANSOHOFF, of Cincinnati, presented the history of a case of pancreatic cyst with hematuria, which he believed to be a unique symptom. The tumor was situated in the left upper quadrant, projecting into the loin, was distinctly fluctuating, and of slow growth. When first seen, it was nearly as large as an adult's head. Cystoscopic examination showed a bloody stream of urine issuing from the left ureteral orifice. Indigo-carmin injection demonstrated equal function on the part of the kidneys. Ureteral catheterization and radiographing of the renal pelvis were not done on account of the weakened condition of the patient at the time of examination. The barium bovilac injection per rectum showed the colon to be normal. A diagnosis was made of cystic sarcoma of the left kidney. Lumbar exposure of the kidney showed it to be normal. Median incision then displayed the cyst of the pancreas projecting between colon and stomach, with the spleen six or eight times its normal size. The hematuria disappeared after the operation. The pressure of the pancreatic cyst on the renal and splenic vein had produced the hematuria and the enlargement of the spleen. The pancreatic matter of the cyst was demonstrated by the presence of the three pancreatic ferments, alkaline proteinase, amylase, and lipase. There were also little masses of saponified fat. So far as he knew, the case was unique, since search of the relevant literature had failed to show a similar case.

Dr. FRANCIS R. HAGNER, of Washington, D. C., said there was one point they ought to consider, and

that was, in splitting a kidney from pole to pole many of them did not realize that they were doing a partial nephrectomy on that patient. He had two or three patients who had had that done some ten years previously, and the destruction of the kidney from that incision was really remarkable. Possibly one fourth or even more of the kidney was destroyed by the incision.

As to Doctor Ransohoff's case, he believed the hemorrhage to be due to pressure on the renal vein. Recently he had a patient upon whom a prostatectomy was done three years ago, and he came back with hemorrhage from the left ureter. The speaker catheterized the ureter and found a stricture just at the entrance of the ureteral orifice, while on the other side the urine was clear. This stricture was dilated and a catheter passed up to the kidney. The urine was still clear, and the next day hemorrhage stopped. This patient had had three recurrent hemorrhages in that way, but after dilating the ureter the hemorrhage ceased.

Dr. BRANSFORD LEWIS, of St. Louis, stated that later studies indicated that focal infections from various parts of the body, in spite of there being an ascending infection from an infected bladder, gave rise to infection of the kidneys and hematuria. He recalled one case in which an infected tonsil was removed with benefit to the kidney condition.

Cholecystostomy versus Cholecystectomy.—Dr. CHARLES H. MAYO, of Rochester, Minnesota, stated that great progress had been made in surgery of the gallbladder during the past twenty-five years. Diagnosis, instead of gallstones as in the past, were now as descriptive of the condition as cholecystitis, cholecystitis with stones, cholecystitis without stones (the inflammatory condition which produced them having subsided), or with duct and pancreatic complications. That there was still an opportunity for improvement in the treatment was shown by the fact that in 370 patients with gallbladder and gall-duct disease seen at their clinic during July, August, September, and October, 1915, forty-eight had been previously operated on, some of them twice, for the same disease. The mode of infection was still under discussion. The role of the portal circulation, permitting bacteria to make a frontal attack on the mucous membrane, if such vulnerability could be considered, was probably more common than ascending infection through the ducts. The experimental researches of Rosenow, however, had proved that the more common method of invasion was the rear attack at the base of the mucous epithelium of the gallbladder, by bacteria conveyed through the general circulation.

Cholecystostomy and the removal of stones cured symptoms of mechanical obstruction. Cholecystostomy did not cure chronic cholecystitis and could not restore the destroyed walls of the gallbladder, nor free it from adhesions. For these and for all cases in which infection was the major feature, either with or without stones, cholecystectomy was the better method of treatment. In large groups of cases the mortality would be lower than that which followed cholecystostomy. Chronic pancreatitis with gastric symptoms might persist after cholecystectomy.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Incompatibility in Prescriptions and How to Avoid It. By THOMAS STEPHENSON, Ph.C., F.C.S., F.R.S. Edin. Editor of *The Prescriber*, Examiner to the Pharmaceutical Society of Great Britain, Author of *The Prescriber's Pharmacopæia*. Edinburgh: The Prescriber, 1915. Pp. 32.

This relatively simple subject has long proved itself a stumbling block to many a practitioner and has perhaps been one of the greatest causes of the growth of the prescribing of proprietary mixtures. A pamphlet such as the one in hand should prove of considerable aid to anyone who has been subjected to the difficulties associated with the prescribing of suitable preparations. It is highly practical and is the result of accumulated experience on the part of the author. Most of the statements made are based upon experimental observations and can be trusted to be correct. The presentation should appeal to readers particularly by reason of its simplicity.

Diseases of the Skin. By HENRY H. HAZEN, A.B., M.D., Professor of Dermatology in the Medical Department of Georgetown University. Cloth. With 233 Illustrations. St. Louis: C. V. Mosby Company, 1915. Pp. 539. (Price, \$4.)

This book has been written with special insight into the difficulties which dermatology presents to the practitioner and the student. The first chapters take up anatomy, physiology, etiology, symptomatology, pathology, and diagnosis. The subject of hygiene is then carefully treated, after which the various diseases are taken care of.

The chapter on syphilis is well written as a whole but the summary of treatment for the various stages of the disease is incomplete. It occurs to us that more might be said regarding the skin manifestations during treatment of the disease.

The halftone illustrations are indeed good, but it seems that some of them represent only the worst types of disease and not photographs of average cases. They might, to a student, be misleading.

The design of the book is good and it is not too bulky. On the whole the author has successfully performed a difficult task.

Cerebrospinal Fever. By THOMAS J. HORDER, M.D., Assistant Physician, St. Bartholomew's Hospital. Major (Temp.) R. A. M. C., Serving with the British Expeditionary Force. With Seventeen Illustrations. Oxford Medical Publication. London: Henry Frowde (Oxford University Press); Hodder & Stoughton, 1915. Pp. 179. (Price, \$1.25.)

This little volume enters most thoroughly into every practical detail of a rather common though little understood condition. No detail, practical or theoretical, of aid in mastering the disease is too trivial for lengthy exposition. This manual is the product of specialization in a single disease. Narrating its history in Europe and elsewhere, the author points out that cerebrospinal fever has been a troop carried and troop spread disease. A winter and spring infection, catarrhal in origin, the usual habitat of the meningococcus is in the upper nasopharynx; and as in diphtheria cultures can be obtained early in the disease or from the carrier population. The author goes to some length to point out the cultural characteristics of this diplococcus. The details of lumbar puncture, the examination of the spinal fluid, and the serum treatment of the disease form a very prominent part of the book. It is pointed out that early diagnosis and immediate serum treatment have reduced the mortality from eighty per cent. and over to 18.1 per cent. The protean character of this disease, and the disease with which it is likely to be confounded, receive appropriate treatment. Particular attention is given the fact that not all infections with the meningococcus produce the serious complex of symptoms and grave sequelæ usually associated with it, but that much of the infection,

especially in epidemics, passes off with little more than slight indisposition; and that during an epidemic all acute catarrhal conditions should be suspected of being meningococci in origin. Finally, the author dwells on the many sequelæ, and on their increase in number and severity in proportion as this disease is late in recognition and treatment.

Eleven Mental Tests Standardized. Eugenics and Social Welfare Bulletin, No. V. State of New York, State Board of Charities, Department of State and Alien Poor. The Bureau of Analysis and Investigation. Albany, N. Y., 1915. Pp. 87.

Ever since the introduction of the Binet-Simon mental tests for the determination of the mental age of defectives, there have been discussions as to their applicability and value. It has come to be accepted that by such means the investigator is capable of securing a fairly accurate idea of the mental capacity of a person, but these newer tests have not been standardized by comparative observations. The present brochure from the Bureau of Analysis and Investigation seeks to accomplish this end and seems to have been successful. The eleven tests studied include the form board, two construction tests, the drinking cup test, tests of motor coordination, cancellation, memory, recognition, *Assuage*, pictorial completion, telling of time, and antonyms. The study covered observations made upon nearly 1,400 persons in seven different institutions. The subjects ranged in age from five to forty-seven years and included foreigners. There are descriptions of each of the tests, suggestions as to their interpretation, the modes of scoring, and remarks on values. As a whole, the study should prove a valuable one for those who are interested in this type of work and should not be less interesting for general reading by the physician who keeps himself abreast of the times.

Report Relating to the Registration of Births, Marriages, and Deaths in the Province of Ontario for the Year Ending December 31, 1914. (Being the Forty-fifth Annual Report.) Toronto: L. K. Cameron, 1915. Pp. 156-clxxxv.

The forty-fifth annual report of the registrar general of the Province of Ontario for 1914 is most comprehensive, covering the vital statistics of the Province in general as well as that of the cities, towns, and rural communities. The part of the report dealing with the deaths and their causes is, however, of chief interest to the medical profession. The causes of death are divided into fifteen grand divisions, each cause of death being listed under its appropriate division. An official nomenclature is adhered to throughout the report, each cause of death, wherever found, maintaining a uniform number.

The death rate for the whole Province shows a ratio of 11.8 per 1,000 population, which is a decrease of 0.9 over the preceding year. Organic heart disease, tuberculosis, and pneumonia show the highest proportion of deaths, being 9.1, 7.2, and 6.1 per cent. respectively. Organic heart disease and cancer show an increase, the former probably in line with the increase of the degenerative diseases. The mortality of tuberculosis is highest in towns, less in cities, and least in rural communities. In towns less attention is paid to sanitation than in cities; whereas the outdoor life and the immediate food supply of rural communities make for a lower mortality.

Interclinical Notes.

"I see," observed Dr. Ben Trovato, of Brooklyn, "that there are this year in my beloved borough 150 fewer saloons than there were last year. The effect on the general health is sure to be good; think of the increased amount of outdoor exercise necessary in getting about among the drinking places that are left."

An extraordinary and amusing error occurs on page 71 of the *Scientific Monthly* for January, 1916. The legend for Fig. 29 contains the phrase "decapitated head." A decapitated trunk, we know, likewise a detrunated head; but a decapitated or headless head is difficult of comprehension.

Several absurd young men have lately been criticising Oscar Wilde and Mark Twain as old fashioned and otherwise to be discredited writers; the former was one of our greatest masters of English, and his plays and fairy tales are scarcely surpassed by any author, English or other. Dear old Mark will live through Huck Finn, Tom Sawyer, the Prince and the Pauper, and some other characters, long after our bright young critics have been buried deep in history's ash heap. Sometimes he descended to his audience; the temptation to clown before a gathering of clowns is occasionally irresistible. Let us remember, however, that he was loved and his books were admired by that impeccable master of good taste, William Dean Howells.

* * *

Our friends will like The Doctor's Story, told to R. I. Fraser, of the Hydrographic Survey, Canada, and retold by him in the *Wide World Magazine* for January, 1916. It is a thrilling tale of the disappearance of food, wrongfully attributed to ghosts, Indians, and wolves, and finally traced to the huskies or sled dogs used for traveling. We learn that a bite from a husky must be carefully cauterized, as his teeth are more poisonous than those of the rat. One arm was lost in the fight with the dogs and the doctor barely saved his own.

* * *

The gorgeous January *Century*, with a cover by Will Bradley, has burst upon our vision. It contains among much strong and entertaining matter, a poem by Stephen Vincent Benet, The Hemp, a Virginia Legend, which will please all lovers of justice; a weird story of the kind Elizabeth Stuart Phelps was fond of writing, The Sixth Canvasser, by Inez Haynes Gillmore; several other good bits of fiction; several other good bits of verse; many beautiful pictures of the sort that has made the *Century* famous; an essay on Trees, by Walter Prichard Eaton; The Nation on Trial, a paper to make Americans sit up and take notice, by Eric Fisher Wood; current comment of a scholarly kind; refined humor in lighter vein; and much more that we should like to mention, but prefer to leave altogether to the intelligent reader.

* * *

Richard Spillane, in *Commerce and Finance* for December 22, 1915, writes of our wretched methods of disposing of refuse, our rivers and bays being an open sewer for a population of over 7,000,000 in this city and in near by New Jersey. The harbor of New York is in actual danger of being blocked; unless the scow people are carefully watched they dump so close in that the stuff is carried into the channel by the tides. Yet all this stuff could be made a source of revenue, as fertilizer or as fuel for some municipal plant.

* * *

War, horrid war, naturally continues to occupy considerable space in *Leslie's*, the issue for December 30, 1915, containing numerous excellent pictures by the staff photographer. One shows a Greek army encamped in a Moslem cemetery, which gives an idea of the extent of a struggle that is no longer confined to one continent. The interesting reproductions of pictures from the issues of fifty years ago are continued, one showing a reception at the White House under President Johnson, another a fight with Indians, of the kind that started so many adventurous boys for the west, although few got beyond the boundaries of their own village.

* * *

The *Survey* for January 1, 1916, has an article by Winthrop D. Lane on the farm colonies of Indiana, where not only epileptics and the insane are cared for, but various misdemeanants are confined. Indiana hopes some day to replace her jails and workhouses with similar colonies, in which industry takes the place of soul destroying idleness. A key to the spirit of these colonies may be read in a sign to be found at various points, "Positively No Loafing." The account of the farm colony for the insane is particularly interesting.

* * *

Race Suicide is a powerful little sketch in the *Survey* for January 1st by Edith Houghton Hooker; it tells of the grief of a young married woman who loses her ovaries from a disease contracted from her husband. This gentleman subsequently divorced her on account of her childless condition. We understand that he also called her a "bar-

ren fig tree." What Shall We Do with Patriotism? is a powerfully written essay by Max Eastman. We wonder how many of the sedate readers of the *Survey* know that he is the editor of that dreadful paper, *The Masses*?

* * *

Dr. Alice Hamilton discusses in the *Survey* for January 1st, race suicide among the Germans, French, and English. She says that "the grave consequences for the coming generation are faced without question by British writers; but a more optimistic note is found in German publications. It is rare that one finds a German scientific writer admitting that war is in any respect altogether evil and sometimes very ingenious reasoning is resorted to in the attempt to show gains compensating for the losses. For instance, the economist Fehlinger says that history shows wars to be invariably followed by a great increase in births. This is partly due to natural selection. Families naturally infertile may be quite wiped out by war, while those with a high degree of fertility have children scattered throughout the age groups, some of whom, too young to fight, survive and propagate. Also, the great scarcity of food, the hardships of poverty following war, tend to weed out the physically weak, so that again natural selection works in favor of the strong. To be sure there is the undoubted fact that many marriagable women will be left unmarried and also that the proportion of weaker men left alive will inevitably be higher than in peace times, but then a higher capacity for reproduction does not necessarily go with a strong physique. On the whole, therefore, Fehlinger seems to regard the results of war on population as not very unfavorable.

Less confident is Hugo Ribbert, the pathologist of Bonn University, to whom the high proportion of defective and semidefective fathers in the coming population after the war seems a serious menace."

* * *

In South America are thousands of physicians and surgeons of the first rank; they find themselves in the ridiculous position of being unable to communicate with professional men here, and vice versa. Spanish should be taught in American schools, as the editor of *Commerce and Finance* for January 12th says from another viewpoint, and English in South American educational establishments. An educated European physician speaks three languages—frequently four, viz., English, French, German, and Italian. A Russian will often have six languages, adding his own tongue and Spanish to the foregoing list. From some points of view, our curriculums are absurdly provincial and narrow. Educated South Americans know French, a deplorable omission from our schools; they should also know English.

Meetings of Local Medical Societies.

MONDAY, January 24th.—Medical Society of the County of New York.

TUESDAY, January 25th.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society; New York City Riverside Practitioners' Society (annual); Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York (annual); Therapeutic Club (annual).

WEDNESDAY, January 26th.—New York Academy of Medicine (Section in Laryngology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, January 27th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo (annual); Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, January 28th.—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

Official News.

Births, Marriages, and Deaths.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending January 12, 1916:

Clark, T., Surgeon. Bureau orders dated December 21, 1915, amended by substituting New Castle County for Kent County, Delaware, in which to make studies of school hygiene. **Ebersole, R. E.**, Surgeon. Granted one month's additional leave of absence from January 9, 1916. **Frost, W. H.**, Passed Assistant Surgeon. Granted two days' leave of absence on account of sickness, December 27 and 28, 1915. **Magruder, G. M.**, Surgeon. Granted one day's leave of absence, January 8, 1916. **Michel, Carl**, Assistant Surgeon. Granted three days' leave of absence on account of sickness, from December 21, 1915. **Motter, Murray Galt**, Technical Assistant. Authorized to attend conference on medical missions at New York, January 8-15, 1916. **Mullan, E. H.**, Passed Assistant Surgeon. Bureau orders dated December 20, 1915, amended by substituting New Castle County for Kent County, Delaware, in which to make studies of school hygiene. **Nydegger, J. A.**, Surgeon. Granted twenty-one days' leave of absence on account of sickness, from January 12, 1916. **Pierce, C. C.**, Senior Surgeon. Directed to proceed to Laredo, Eagle Pass, and San Antonio, Texas, to investigate typhus fever conditions. **Rucker, W. C.**, Assistant Surgeon General. Directed to proceed to Philadelphia, January 12, 1916, to deliver an address before the Jefferson Medical College, on matters relating to the public health. **White, J. H.**, Senior Surgeon. Granted four days' leave of absence from January 7, 1916, under paragraph 193, Service Regulations.

Board Convened.

Board of commissioned medical officers convenes at the Bureau, Monday, January 24, 1916, at 10 o'clock a. m., for the examination of candidates for appointment as assistant surgeon. Detail for the board: Assistant Surgeon General W. C. Rucker, chairman; Surgeon A. M. Stimson, member; Passed Assistant Surgeon E. A. Sweet, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending January 15, 1916:

Billingslea, C. C., Major, Medical Corps. Relieved from further temporary duty in the Southern Department, and will remain on duty at Fort Leavenworth, Kansas, until such time as it will be necessary for him to proceed to the Philippine Islands. **Darnall, Carl R.**, Major, Medical Corps. Granted two months' leave of absence, on his relief from duty in the Philippines, with permission to visit China and Japan. **Flynn, James O.**, First Lieutenant, Medical Reserve Corps. Relieved from active duty in the medical reserve corps. **Kean, Jefferson R.**, Colonel, Medical Corps. Directed to proceed to Washington, D. C., and report in person to the Surgeon General of the Army, for temporary duty for four months, and then to return to his proper station, Fort Leavenworth, Kansas. **Miller, Edgar W.**, Captain, Medical Corps. Relieved from station at Fort Caswell, North Carolina, and assigned to duty at Fort Clark, Texas, on completion of his present tour of duty in Southern Department. **Rukke, Guy V.**, Captain, Medical Corps. Directed to report to the commanding officer, Fort Bliss, Texas, for duty. **Tefft, Lloyd E.**, First Lieutenant, Medical Corps. Left the United States en route to Canal Zone, for duty, taking passage on the *Alliance*. **Thornburgh, Robert M.**, Major, Medical Corps. Directed to report to the commanding officer, Walter Reed General Hospital, for temporary duty during the absence of Captain William H. Moncrief, on leave, and then to revert to a status of leave of absence. **Warren, Stanley S.**, First Lieutenant, Medical Reserve Corps. Directed to proceed to Sierra Blanca, for temporary duty on his relief from Infantry Examining Board to meet at Fort Bliss, Texas.

Died.

Am Ende.—In New York, on Saturday, January 15th, Dr. Charles G. Am Ende, aged seventy-six years. **Barkley.**—In Cincinnati, Ohio, on Thursday, January 6th, Dr. John Marshall Barkley, aged seventy-three years. **Blair.**—In Princeton, Ind., on Sunday, January 2d, Dr. William W. Blair, aged eighty-eight years. **Collins.**—In Enfield, N. C., on Thursday, December 23d, Dr. John A. Collins, aged seventy-nine years. **Crane.**—In Addison, N. Y., on Sunday, January 9th, Dr. George Crane, aged seventy-six years. **Deck.**—In Salamanca, N. Y., on Monday, January 3d, Dr. Lyman Louis Deck, aged sixty-five years. **Dougherty.**—In San Francisco, Cal., on Tuesday, January 4th, Dr. James G. Dougherty. **Drein.**—In Philadelphia, on Wednesday, January 5th, Dr. William Clifton Drein, aged thirty-nine years. **Eastman.**—In Pittsburgh, on Friday, January 7th, Dr. Henry Eastman, aged forty-seven years. **Edwards.**—In Boston, Mass., on Friday, January 7th, Dr. Sumner Edwards, of Bethel, Maine. **Ernst.**—In New York, on Sunday, January 9th, Dr. Peter H. Ernst, aged fifty-three years. **Farnham.**—In Baltimore, Md., on Monday, January 3d, Dr. Leroy D. Farnham, of Binghamton, N. Y. **Flowers.**—In Fairmount, W. Va., on Wednesday, January 5th, Dr. A. J. Flowers, aged fifty-nine years. **Francois.**—In Chelsea, Mass., on Sunday, January 9th, Dr. Edward A. L. Francois, of Saugus, Mass., aged sixty-nine years. **Green.**—In Merchantville, N. J., on Tuesday, January 4th, Dr. James B. Green, aged eighty-four years. **Jacobs.**—In Mt. Lebanon, Pa., on Tuesday, January 4th, Dr. John A. Jacobs, aged seventy years. **Kelleher.**—In Des Moines, Iowa, on Monday, January 3d, Dr. Thomas F. Kelleher, aged sixty-one years. **Lowrie.**—In Plainfield, N. J., on Monday, January 3d, Dr. Henry Lowrie, aged seventy-five years. **McCauley.**—In Ellenburg, Wash., on Tuesday, January 4th, Dr. William J. McCauley, aged twenty-eight years. **McQueen.**—In Weatherford, Texas, on Monday, January 3d, Dr. Archibald A. McQueen, aged seventy-nine years. **Milke.**—In Stamford, Conn., on Monday, January 10th, Dr. Edward E. Milke, aged sixty-five years. **Moncure.**—In Fairfax, Va., on Sunday, January 2d, Dr. W. P. Moncure, aged seventy-three years. **Nathan.**—In New York, on Monday, January 10th, Dr. Leo R. Nathan, aged sixty-one years. **Person.**—In Fremont, N. C., on Wednesday, January 5th, Dr. Tom Person, aged eighty-three years. **Plattfauf.**—In Dayton, Ohio, on Saturday, January 1st, Dr. William Plattfauf, aged sixty-one years. **Rose.**—In New York, on Monday, January 10th, Dr. Achilles Rose, aged seventy-six years. **Teahan.**—In Holyoke, Mass., on Tuesday, January 11th, Dr. William J. Teahan, aged thirty-seven years. **Vacilli.**—In Rome, Italy, on Tuesday, January 11th, Dr. Guido Vacilli, aged eighty-four years. **Vaught.**—In Aspinwall, Pa., on Wednesday, January 5th, Dr. Harry C. Vaught, aged thirty-four years. **White.**—In Boston, Mass., on Saturday, January 15th, Dr. James Clarke White, aged eighty-two years.

Married.

Adams—Trainor.—In San Jose, Cal., on Sunday, December 12th, Dr. N. L. Adams, of Burlingame, Cal., and Miss J. Elizabeth Trainor. **Barding—Braastat.**—In Ishpeming, Mich., on Monday, December 27th, Dr. Louis D. Barding, of East Moline, Ill., and Miss Lillian Braastat. **Chabot—Binnel.**—In Ottawa, Ont., on Friday, January 7th, Dr. J. L. Chabot and Miss Hope Binnel. **Fritz—McIlroy.**—In Dubuque, Iowa, on Wednesday, December 29th, Dr. Lute H. Fritz and Miss Jeanette McIlroy. **Hanley—Donahue.**—In Scranton, Pa., on Saturday, January 1st, Dr. Clare H. Hanley and Miss Bessie Donahue. **Jones—Rowell.**—In Groton, Mass., on Wednesday, December 29th, Dr. Guy W. S. Jones and Miss Florence Esther Rowell. **Knauber—Woolridge.**—In Pottsville, Pa., on Tuesday, December 28th, Dr. Leo Knauber and Miss Clara Woolridge. **Norris—Cone.**—In Taunton, Mass., on Wednesday, December 29th, Dr. Lester F. Norris, of Bangor, Maine, and Miss Myranda Shipley Cone.

Original Communications.

INFANTILE PARALYSIS.*

Its Treatment, with Special Reference to an Original Method of Tendon Transplantation,

By R. TUNSTALL TAYLOR, B. A., M. D., F. A. C. S.,
Baltimore,

Orthopedic Surgeon, Kernan Hospital for Crippled Children, St. Agnes's, St. Joseph's, the Woman's, and University Hospitals;
Professor of Orthopedic Surgery, University of Maryland.

With the increasing number of sporadic cases of anterior poliomyelitis, the reports of epidemics in various localities, and the generally accepted discovery by Flexner of the virus and ultramicroscopic bacterial cause, our duty must be to prevent the spread of the infection, so far as lies in our power.

PREVENTIVE MEASURES.

As children are more prone to have this disease than adults, physicians should be on the *qui vive* and at once isolate a case of sudden onset presenting vomiting, constipation, Kernig's sign, retention of urine, rigidity of the neck and spine, and moderate fever, plus the pathognomonic data obtained by lumbar puncture. A slight feverishness, drowsiness, irritability, and restlessness at night may precede the attack and add to our suspicions. Further, as there seem to be undoubted clinical and experimental data at hand, according to Flexner (1), Anderson and Frost (2), Rosenau (3), Howard and Clark (4), and others that *Stomoxys calcitrans*, the stable fly, *Musca domestica* or common house fly, and the bedbug may carry the infective agent, the patient's bed should be screened and scrutinized.

Langhorst (5) has presented evidence showing the danger of domestic animals, notably dogs, acting as carriers or even being subject to the disease, and such pets should be excluded from the sick room. Flexner, Clark, and Fraser (6) demonstrated the virus from the healthy mucous membrane of the upper respiratory tract in an adult, who had been exposed in the care of a case. Several physicians have brought their own children to me for treatment, feeling that they had carried home the infection.

These facts should teach us that those coming in immediate contact with an acute case of poliomyelitis should protect their hands, clothing, and respiratory tract in a proper manner, lest they become unwilling and unwitting carriers of the disease. Thus also the number of attendants should be minimized.

Lucas and Osgood (7) have found the virus in the nasal secretions four months after the attack. This should point to frequent spraying and douching of the nasopharynx with proper antiseptic solutions, even after the physician deems rigid isolation no longer necessary.

When a diagnosis is definitely established the case should be at once reported to the State Board of Health.

TREATMENT PROPER.

The treatment should naturally be separated into three periods: *a*, the febrile stage, with the development of the paralytic distribution and hyperesthesia; *b*, the stage of repair and recovery in part or whole of the motor paralysis; and, *c*, the stage where the restoration of power in certain regions is as complete as it is going to be, and deformities, flail joints, etc., require surgical intervention.

a, Febrile stage. In a previous paper the author (8) places elimination in the first place, as the nasopharynx, bowels, and kidneys serve chiefly to free the system of the virus.

Alkaline and antiseptic sprays should be used in the nose and pharynx every two hours and the patient should expectorate into carbolic solution. Handkerchiefs should be similarly cared for.

Elimination by the bowels, a difficult thing to accomplish on account of the atony, must be gained by broken doses of calomel and soda followed by one or more doses of castor oil, if the first doses of oil are vomited. Enemata, first of cotton seed or olive oil, followed, if necessary, by soap suds, then by glycerin and epsom salts, of each two ounces, and water, a pint, will be effectual; or turpentine, hydrogen peroxide, oil, and soap suds may be used. When the bowels are moved, usually by the second or third enema, the bladder will be emptied at the same time voluntarily. Catheterization is rarely necessary. Hot wet packs will stimulate the skin to action as well as relieve hyperesthesia. The same may be said of hot baths. Drinking freely of water is to be encouraged to promote elimination by skin and kidneys. Proctoclysis (Murphy's) is helpful with the same end in view.

Cold compresses or ice caps should be kept on the head. Some gain may be experienced from counter-irritation over the spine by tincture of iodine or mustard, short of blistering, in the acute stage of paraplegia, but as the patient must needs lie on the back, care should be taken that this is not carried too far.

Hexamethylenamine, given by mouth, which rapidly appears in the cerebrospinal fluid, may be used to advantage in doses of one to two grains

*Read by invitation before the Philadelphia County Medical Society, Philadelphia, December 22, 1915.

every two hours for the first three days. It was first recommended by Cushing and Crowe (14), of Baltimore. Adams and McClanahan, of Nebraska, speak well of it. Anderson, however, says in his 279 cases it was given with uncertain results. Fraser (9), in a study of twenty-two acute cases at the Rockefeller Institute, gave 0.3 gram of hexamethylenamine three or four times a day. In two instances after five and six days respectively and the administration of five and six grams, hematuria appeared, but cleared up immediately on discontinuing the drug. One child, aged three years, received 16.8 grams in a period of four weeks. Fraser says: "In no instance did this treatment appear to cut short the acute stage and in no instance was there any evidence of more satisfactory or more rapid recovery in the paralyzed parts." However, Fraser feels that a larger number of cases should be critically analyzed before a decision is reached in regard to hexamethylenamine.

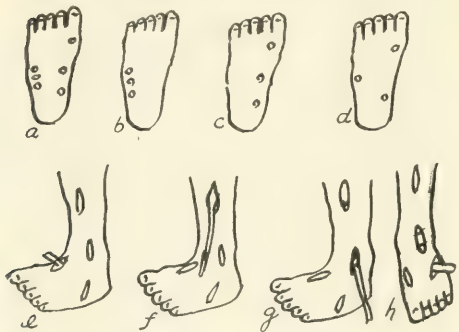


FIG. 1.—*a*, Shows diagrammatically the efficient points of traction of the tendons in the normal foot. *b*, In paralysis of the tibialis anticus and posticus and extensor longus hallucis, the unopposed action of the intact peronei pull the foot into valgus. *c*, In paralysis of the peronei the reverse takes place and the inner muscles pull the foot into varus or club foot. *d*, Shows a restoration of balance in paralytic club foot by the transplantation of the tibialis anticus to the outer side of the foot to take the place of the paralyzed peronei. *e*, Shows the four incisions in the author's method of correcting paralytic club foot and the freeing of the tibialis anticus at its insertion. *f*, The tendon of the tibialis anticus pulled out of its sheath through incision *z*. *g*, The tendon of the tibialis anticus passed through the subcutaneous fat and under the annular ligament on the outer anterior aspect of the ankle. *h*, The incision over the base of the fifth metatarsal bone where the tibialis tendon is to be sutured.

In 1912, epinephrine or adrenaline was used intraspinally in doses of one to three c. c. of a one in 1,000 solution by Clark (10) with equal parts of salt solution in a study of experimental poliomyelitis in eight monkeys. He reached no definite conclusion as to its value.

Nütter (11) reported the use subdurally of an injection of the serum from recovered cases. Although no conclusions were drawn, this or similar work will eventually be of value in leading up to a remedy or a means of ameliorating the infection and aborting the disease.

High fever is best treated by cold sponging and not by coal tar products. Lumbar puncture is often of value, not only for diagnosis, but for relief of pressure symptoms, especially in bulbar symptoms of respiratory failure, such as cyanosis, shortness of breath, pallor, and anxious facies. Lumbar puncture should be done with the most scrupulous asepsis between the third and fourth lumbar vertebrae, with

the child on the side and the spine well flexed. The knees should be flexed and a bandage passed under them and around the neck to prevent sudden extension of the spine, which might break the needle. Oxygen inhalation may be of some slight transient help in cyanosis. In very severe respiratory distress, the lungmotor or artificial respiration may give temporary relief. The warm bath and gentle passive

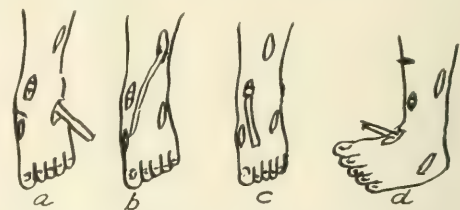


FIG. 2.—*a*, Incisions for paralytic flat foot or valgus and the tendon of the peroneus longus cut free. *b*, Incision over musculotendinous portion of peroneus longus and the tendon pulled out of the sheath. *c*, The tendon passed under the annular ligament on the anteromedial aspect of the ankle. *d*, The incision of the base of the first metatarsal where the peroneus longus tendon is to be inserted and sutured.

movements while in the bath have helped the neuritic pain.

Too great stress cannot be laid upon the importance of rest in the acute stage of poliomyelitis. In quite a percentage of the more severe cases, there is marked hyperesthesia, tenderness to touch and motion, which, however, is to be distinguished later on from the stiffness of the joints due to prolonged immobility or fixation. This hyperesthesia is best met by a comfortable mattress, even an air mattress, or large superimposed pillows. Each arm should be supported on a pillow in such a way as to prevent dragging down of the deltoid and capsule of the shoulder, as this region is affected in nearly one third of the cases (Fraser) and the outcome depends largely on adequate support and the avoidance of drag on the deltoid, which would further impair its power as well as overaction of the pectoralis major,



FIG. 8.—The peroneus longus tendon exposed and a black silk suture put in to secure control and second handling of tendon itself. Also to be used in case of need as suggested by longer fast extension of tendon should it prove too short.

which usually escapes paralysis. This support and abduction in convalescence must also be cared for by a sling, axillary pad, or light abduction wire splint to keep the humeral head and glenoid cavity in as close apposition as possible when the child is able to get up. The legs are preferably to be kept straight in the line of the body, but discomfort is frequently complained of in this position, and the knees must

be supported semiflexed by a pillow and at times rotated outward in paralysis of the inward rotators and adductors. Such positions should not be continued for any length of time and must be frequently changed, as contractures and malpositions will become fixed.

Toe drop, not only from paralysis of the anterior group of leg muscles, but even from the weight of the foot or of the bed clothes, will produce an equinus deformity in a few days unless we are most



FIG. 4.—Exposure of the musculotendinous portion of peroneus longus.

careful to prevent such a position. A wire or frame cradle should support the bed clothes, and a right angled wood, wire, or plaster of Paris shell should support the foot at right angles with the leg or even slightly dorsally flexed.

Many advocate fixation of the spine in a light plaster of Paris jacket and similarly the extremities in casts. These hamper gentle massage which is soothing, especially in conjunction with the warm bath. I prefer a plaster jacket and plaster casts, from which the anterior portions have been cut away, so that the patient lies in what might be called shells. Lange (12) recommends the light celluloid braces for the extremities and concurs with Oppenheim in the solid plaster jacket, which he advocated in 1909. Sever (23) calls attention to the frequency of hip dislocation from overaction of the adductors with paralysis of the abductors. This must be provided against. Hot packs and applications, baths of hot air or water, aspirin, and opiates may all be required, in addition to rest and fixation for the relief of the hyperesthesia.

b. Convalescent stage. To yield to the anxiety of both the physician and distressed parents to get the paralyzed child on its feet again, is a mistake in the early stages of impaired muscle function, and it is safer to prolong the rest and freedom from joint strain for a month or six weeks rather than get the child up at the end of the fever, which only in unusual cases lasts more than a week. Judson (16) goes to the extreme of advocating bed treatment, including massage, passive exercises, etc., as long as eighteen months.

As there is no known remedy to hasten repair in the cord, our efforts must be addressed to improvement of the power remaining in muscles or parts of muscles that still have central connection and some control, and of the circulation.

Overzeal may do harm, however, by too prolonged or too deep massage or excessive manipulation to start with. Lange (12), Lovett (13), and others

counsel against this. Lange warns against "rough, hard, and deep stroking massage." The best routine to follow is, perhaps, a warm air bath by a baker of electric or gas heat at a temperature not to exceed 250° F., or warm bath, gentle massage for twenty minutes to loosen contractures in muscles or stiffness around joints, then electricity, and finally such guarded and graded exercises as are deemed safe. This course of treatment may be given twice daily, or only three times a week, depending on the degree of fatigue.

The slowly interrupted Faradic current effected by the pendulum attachment should be applied over the origin or nodal points and insertion of the weakened muscles not only to stimulate circulation and nutrition, but to retain any slight remaining power of contraction. Children tolerate this better than the buzzing variety of Faradic, and this is an important consideration with babies and timid young children. In the long run it has been more useful to me than the galvanic or sinusoidal. With the galvanic current in paralyzed muscles we obtain the reaction of degeneration, or a stronger contraction with anodal closure than with cathodal, the reverse of the normal behavior; but this is of diagnostic rather than therapeutic value.

These paralyzed limbs are cyanotic and cold in winter, and children find great comfort from the gas or electric baking ovens which we usually employ before the massage and electricity, for the skin is moistened thereby and the electricity is more efficient in producing muscular contraction when any vestige of life is left, than when the skin is dry.

Frauenthal (15) advocated high frequency currents, even in the earliest stages, in the belief that it causes a diminution of the edema in the spinal cord, but satisfactory demonstration of its efficiency is lacking. Electricity is simply to be regarded as an adjunct to the massage and exercises, and should we have to do without one, electricity is certainly the least important. The desideratum is active exer-



FIG. 5.—The tendon of the peroneus longus cut as far as possible and pulled out of sheath.

cise or voluntary effort to use any given muscle or group of muscles and is of the greatest importance, no matter how slight, as it stimulates central control. The more the child tries, the more successful the treatment. Rarely can active motions be accomplished at first, and passive motions of every affected group are of importance at each treatment. Then come assisted active motions and finally resisted active motions. Even if a limb seems powerless, every possible active motion must be tried actively,

assisted if need be, by the masseuse, as Wright says (38), and guided by the physician or surgeon.

The masseuse must be especially taught what muscles are paralyzed, or partially paralyzed and what *antagonistic muscles still possess normal power and must be well stretched to prevent contracture*, and thereby give the weakened muscles a chance to regain their tone. If this is done at the start and persisted in, no contractures should occur which will require tenotomy or myotomy later.



FIG. 6.—Annular ligament exposed on anterointernal aspect of ankle.

As far as possible the exercises should be made a game or source of play to the child, to avoid irksomeness and tedium so that each day he can "play longer." With this idea in view, floating toys to be pushed around in the bath, or balloons, marbles, and suspended balls help.

It must be borne in mind that the muscles do not all regain power or tone with equal rapidity, depending, of course, on the situation and extent of the central lesion or edema, and one group may still be very weak while its antagonist has materially recovered, so that in this state we must watch for contractures and anticipate them by treatment.

Systematic treatment, intelligently carried out, shows by comparison with neglected, ignorantly handled cases.

As soon as all acute symptoms subside, if the child cannot bear weight on either one or both limbs without producing distortion, proper braces and shoes must be designed and prescribed by the surgeon to meet the requirements of the individual case. No ready-made brace or haphazard application at a brace shop should be considered any more than ready-made eyeglasses for the visually defective.

Get the child on its feet as soon as is safely possible, as no stimulus is so good as an effort at assisted physiological use. Further, we orthopedic surgeons are all agreed that nothing stimulates growth, power, and development of both bone and sinew more than physiological functional use, and yet we meet those—in the profession, too—who aver that braces produce only atrophy, and that it is much better to let the child get along, as best it can without them, in vicious positions. This many do, with resulting distorted members showing the most extreme grade of atrophy, and in which, later, we are expected to obtain satisfactory results by operative measures. A case of my series illustrates this well: R. E., a boy, first seen when three years old, had contracture of the sartorius, tensor vaginae femoris, and gluteus medius, so that the thigh was held ab-

ducted at right angles with the body. Operation was declined by the parents at the time, but they returned for operation when he was eleven years old, and it was then found that there was a bone shortening of three inches. Normal epiphyseal stimulation had been lacking for some eight years.

It is unquestionably true that braces and shoes for paralytics should be as light in weight and construction as is commensurate with durability. Before speaking of operative procedures I wish, therefore, to go on record as advocating the early use of braces, and in fact the use of braces in all cases in which the lost balance of power or the effect of gravity may lead to distortion, with or without surgical intervention.

c, Chronic stage. Despite efforts to lessen the result of the damage to the motor area in the cord, hundreds of patients seek surgical aid to overcome contractures, overactivity of certain muscles, and flail joints.

The operative procedures of which we avail ourselves for the correction of the deformities and disabilities of infantile paralysis may be chiefly divided into:

1. Tenotomy.
2. Myotomy.
3. Tendon shortening.
4. Tendon lengthening.
5. Tenodesis.
6. Extraarticular silk ligaments.
7. Intraarticular silk ligaments.
8. Arthrodesis.
9. Articular transposition.
10. Astragalectomy, skeletal remodeling, and osteotomy.
11. Nerve anastomosis.
12. Tendon transplantation.

1 and 2. Of the first two named, nothing need be said, as the procedures have been of such common performance since 1831, in the days of Delpech and Stromeyer, and orthopedists daily now employ them, the world over, in correcting deformities by severing the overactive muscles and lengthening them thereby; this overactivity is due to a paretic



FIG. 7.—Hysterectomy forceps passed from the arm for the scapular region, through the scapular region, to the chest, to enter the axilla of the opposite arm.

condition in the antagonist or antagonistic group as explained by Seligmüller's theories. These operations are of distinct benefit, in that they not only restore the normal alignment in the members, but relieve the remaining weakened living muscular fibres in the paretic muscle from overstrain, which in itself is a detriment. As a rule, some mechanical device to prevent recontracture of the overstrong muscle is required in the aftertreatment of all cases. Frequently tenotomy, myotomy, or even osteotomy

is required as a preliminary operation to correct distortion some months prior to a secondary operation of tendon or muscle transference, the latter aiming chiefly to restore the balance of power and physiological function.

In April, 1891, Dr. De Forest Willard reported and called attention to the great value of these procedures in a series of these cases before the Tenth International Congress at Berlin.

3. Tendon shortening by taking a tuck in it by

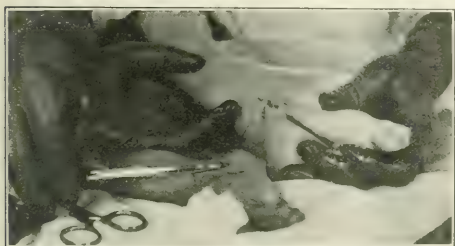


FIG. 8.—The stay suture and tendon pulled through to the annular ligament by the hysterectomy forceps.

suture, tying, or removal of a section has been done by various surgeons in the past.

4. Tendon lengthening has been accomplished more often by tenotomy subcutaneously within the sheath, and lengthening has occurred by organization of the plastic exudate between the severed ends. Some few authorities prefer lengthening the tendon by oblique section and suture through an open incision. Again others prefer to lengthen by the Bayer Z section and then stretching. Again we find some instead of cutting the tendon transversely, cut it from below upward and forward through the width of the tendon to get a broader surface for sewing.

5. Tenodesis was a procedure advocated by Hoffa and extensively used by him, of converting the tendons around a joint into ligaments by sewing them above and below a joint, to increase its stability when flail-like and to restore proper alignment and balance when distorted.

Gallie's (17) recently presented operation is akin to Hoffa's tenodesis in that he endeavors to secure more thorough joint fixation by using a whole or a part of a tendon near the ankle to produce a tendon fixation into the bone, which he has grooved with a gouge to sufficient depth to suture and bury the tendon and to cover it with the incised and elevated periosteum. He uses his method in conjunction with tendon transplantation when overaction in one or more directions produces a disabling deformity, and also alone for flail joints. It promises to be a most useful procedure when tendon transplantation will not correct and produce an approximate restoration of function and balance. For paralytic talipes varus, Gallie recommends burying the tendon of the peroneus longus in the fibula under tension on the anterior surface of the fibula and the peroneus brevis similarly on the posterior surface of that bone near the epiphysis, so that the varus position cannot be resumed. This procedure obviously cannot restore functional motion in abduction. In total par-

alysis of the triceps suræ, he has the foot held in equinus and buries the tendo Achillis in the posterior surface of the tibia and the peronei are transplanted peripherally into the os calcis. In partial paralysis of the triceps suræ he splits the tendo Achillis into an anterior and posterior half, passing the anterior half near its insertion in the os calcis through a slit in the anterior portion of its capsule and buries this in the tibia, while the foot is held overcorrected in the desired position.

In addition to Hoffa and Gallie, Tilanus (18), of Amsterdam; Sangiorgi (19), of Bologna; and Reiner (20), of Vienna, have endeavored to do practically the same thing of making tendons into ligaments.

For our accurate methods in determining the relations of the foot to the leg and the anterior to the posterior portion of the foot, or what is normal functional weight bearing, we have Whitman and Young to thank for their thorough exposition in their textbooks on orthopedic surgery.

Young's method after Roberts of determining the angle of deflection is extremely useful to students and practitioners in understanding the degree of deformity in the lower extremities.

6. Extraarticular silk ligaments, chiefly to support a flail ankle, knee, or shoulder have been advocated by Lange (12) and Allison (25). The former has preferred silk ligaments to arthrodesis since 1903 and introduces from six to eight strong silk threads sutured to the periosteum of the scaphoid and tibia and cuboid and fibula, having been passed through the adipose tissue from point to point. The upper point of attachment is five cm. above the ankle joint.

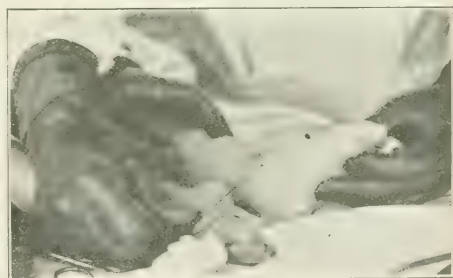


FIG. 9.—The tendon pulled under the annular ligament by mosquito forceps shown in Fig. 8.

Allison uses the silk as a stirrup. With a drill having an eyelet which he threads, he passes the silk through the anterior tarsal bones from side to side of the foot, then threads a probe, which he passes under the annular ligament up to the crest of the tibia, where he makes an incision and sutures the two ends to the periosteum. Similarly, he threads the os calcis and passes the ends up for suture in the posterior aspect of the tibial periosteum.

Lange (24) recommends fixation after the introduction of silk ligaments or tendons for one year and the use of braces for two years.

7. Bartow and Plummer (26) describe artificial ligaments of silk which are both intraosseous and

intraarticular, passed into and through joints in the desired direction to restrict or limit motion, to be used exclusively in flail joints. It is especially adapted for use at the knee, ankle, and shoulder, using 14-20 Corticelli silk. Allied somewhat, only so far as the effect obtained is concerned, is the operation of Robert Jones (27) for flail elbow, where we have a useful band which is valueless when the arm hangs at the side. He removes a diamond shaped flap of skin from the front of the



FIG. 10.—After subcutaneous tenotomy of the tendo achillis and an incision over the base of the metatarsal bone of the great toe from which a wedge of bone is removed shown on the child's instep the tendon is pulled by forceps through the subcutaneous fat.

elbow, of sufficient size so that the two equal triangles which go to make up the diamond when approximated and sutured, will hold the forearm at 40° with the arm, the most useful angle.

8. Arthrodesis for flail joints was described at length by Townsend (28) and Goldthwait (29) in excellent articles which will be found in the *Transactions* of the American Orthopaedic Association. This procedure, especially for the ankle, has many warm advocates, as it enables the paralytic in many cases to do without a brace. It is employed also at the shoulder in deltoid paralysis and at the hip and knee rarely; never at the hip, knee, and ankle of the same subject. Augustus Wilson (30) strongly advocates this procedure.

Lange, like many of us, objects to what may be called mutilating operations, that is abolishing a function, but agrees that at times, to give a patient the ability to walk, such a procedure is justified. He prefers the extraarticular silk ligaments to arthrodesis, however, because the stiff ankle patient is handicapped on rough ground and is fatigued more easily despite the fact that he walks better on a level floor.

Townsend puts the minimum age when this operation should be done at six or eight and Lange at fourteen years on account of the cartilaginous nature of the joint and difficulty in obtaining true osseous union.

9. Gwilym Davis has devised, but, so far as I am aware, has not published an ingenious and efficient operation for paralytic talipes calcaneus in which he makes a transverse horizontal section through the os calcis just below the articular surface adjacent to the astragalus. He then slides the heel back and the tibia, fibula, and astragalus forward, so that the weight comes upon the anterior portion of the os calcis, and calcaneus is impossible. This procedure

I have classified as "articular transposition." His results are excellent.

10. Whitman (31) has been the author and chief advocate of astragalectomy for talipes calcaneus. After removal he slides the tibia and fibula forward, and the recurrence of calcaneus is practically prevented as in Davis's operation. The mutilation, prevention of other motions, and shortening of the limb are its chief objections, but the gait secured is excellent and the deformity is corrected.

Skeletal remodeling of the tarsus has been advocated by Hoke (32), so that the bones are so shaped by curetting, that the foot can be moulded to bear the weight upon any given part, thus correcting many static deformities. Many of us do the same thing after other procedures, provided that we find the bones so distorted that by fixation an unreasonable time would be required for a physiological bone transformation, according to Wolff's law, to take place. Such a contingency is rare in paralytic deformities. Other writers have advocated osteotomy of the neck of the astragalus for paralytic valgus and varus deformities and osteotomy of the posterior portion of the os calcis for calcaneus.

11. New hope was raised by Spitzzy (33), of Gratz, Austria, when he presented his paper, in 1904, on nerve anastomosis for the cure of infantile paralysis. This procedure had been successful in secondary suture after traumatic section of nerves, and in facial paralysis. Spitzzy was successful experimentally in dogs' legs, in anastomosing nerves both centrally and peripherally, and Howell (39) anastomosed flexor nerves into extensor and vice versa in dogs' legs, but neuroplasty has failed to meet expectations in anterior poliomyelitis, when the peripheral end of a paralyzed nerve was sutured into a functioning nerve or a slip from a functioning nerve was attached to a paralyzed nerve.

There is evidently a general impairment in all the nerves in a partially paralyzed extremity, and a nerve anastomosis is like taxing an already weak and



FIG. 11.—And sutured to the bone and periosteum, while tension is such as to pull the foot and the leg in an overcorrected position. The leg is held in a neutral position, not adducted.

run down battery with more work. The writer has reported results and bibliography of neuroplasty in a previous paper (40). Recently, experimental work on animals, with a few clinical cases, have been reported upon what is called the "neurotization" of muscles, by Erlacher (41), Steindler (42), Heineke (43), and others, whereby *a*, functioning motor nerves are sewed directly into paralyzed muscles, *b*, underactive muscles are supplied with an additional motor nerve from an overactive source and

"hyperneurotization" is produced, *c*, intermuscular septa or sheaths are removed between paralyzed and nonparalyzed muscles, and the two sutured together, resulting in new nerve fibres and end plates forming in the dead from the living ("muscular neurotization"), and *d*, flaps from a living muscle are sewed into a paralyzed muscle with the same result. Improvement is reported in a few weeks, but sufficient time and more cases are needed to determine the real worth of these procedures.

12. We now come to the most important and useful surgical procedure for the relief of infantile paralysis, namely, tendon transplantation.

Tendon transplantation on tendon. Tendon transplantation or transference, first popularized in 1880 by Nicoladoni abroad, and in this country by Goldthwaite (34), in 1895, gave us hope that the attachment of the distal tendon of the weakened muscle to one still alive and functionally active, would help restore support and use to the paralyzed tendon, but only in rare instances have these cases yielded results which enabled the patient to do without artificial support. Dane's statistics of fifty cases from the Children's Hospital, Boston, were discouraging, as were reports from elsewhere in this country and abroad.

Tendon transplantation to periosteum. Since 1899, by means of the new method of Lange, as it is called, in contradistinction to the older method of Nicoladoni, we suture the tendon to the periosteum or a silk prolongation of the tendon to the periosteum, or actually pass the tendon through a bony canal, or sew it to the bone, or reduplicate it on and suture it by Ryerson's method (35) to itself. This seems to have maintained the desired muscular tension much better and to have accomplished the aim we have in view more satisfactorily in the writer's hands, and, as reported, by Hoffa, Augustus Wilson, Dane, Le Breton, and others. Lange's (36) method of elongating short tendons by means of silk sutures—preferably white sublimated—coated with paraffin, and giving these a periosteal attachment, has also yielded good results in my experience. Auger first used silk to lengthen tendons in 1875, to which Lange calls our attention, but Lange popularized its use. Distinctly disappointing to the writer, however, have been the results of the operation for the relief of paralytic flat foot in cases in which the tibialis anticus and posticus are paralyzed and the extensor longus hallucis has retained its vitality and tonicity. This is used and advocated by Mutel and others by means of a tunnel, and transplantation has been made through the scaphoid, internal cuneiform, or first metatarsal.

In these cases infinitely better results are to be obtained as we should naturally expect from a logical, mechanical study of the problem, by taking either the peroneus longus or brevis tendon, preferably the former, and suturing it into the scaphoid, for thereby we create a balance of power from the active tonicity of the two peronei, one on the outer side of the foot and one on the inner side, whereas, with extensor hallucis transplantation, one small muscle is pulling against the two strong peronei muscles and failure results.

In the operation of using the extensor longus hallucis we shall almost invariably find that it is, even though it possesses normal contractility, unequal to the task of holding up the arch and restoring the normal adduction of the foot when opposed to the combined overactivity of the two peronei. It is needless to say how ridiculous—mechanically and anatomically—it is to take slips from the tendo Achillis for the correction of valgus or varus, as advanced by some tyros. Equally foolish is it to take slips from any muscle or expect one part to perform one function and another a different function.

By all surgeons who have done a large amount of tendon transplantation the one great essential to be borne in mind—as pointed out by Schantz—is that the transplanted tendon and muscle must pull in a straight line and not around a corner, so to speak, from origin to insertion, in order to get the best mechanical and functional results. We cannot agree with Lange that only the lower third or half need pull in a straight line; thus he acknowledges he cannot make a peroneus muscle into an adductor and we can by improved mechanics and technic.

Importance of the annular ligaments. An additional point of value the writer wishes to call to the attention of the profession in this work on the extremities, is the utilization of the annular ligament at the ankle. If the muscle and tendon is transferred from the origin to the new insertion through the subcutaneous fat, the normal tension can by no means be maintained, and, furthermore, there is an unsightly ridge under the skin, whereas both of these objections are obviated by passing the tendon under one of the thecal compartments of the annular ligament in line with the new and desired direction of traction. Rugh (37) has drawn attention to the important "snatch block" function of the annular ligament in preventing flat foot.

THE WRITER'S OPERATION.

The following operation has been constantly employed by me since 1909 and in some 300 cases of leg and foot paralysis, having been first reported before the Washington County Medical Society at Hagerstown, Md., November 10, 1910.

After the circulation has been cut off by the Es-march bloodless bandage and tourniquet in the usual manner, four small incisions are made as follows: First, at the insertion of the overactive muscle, which is severed as low down as possible; second, over that portion of the same muscle where the muscular fibres first become tendinous; through this wound the freed tendon is withdrawn and the whole covered with a wet, normal salt solution sponge to prevent drying the tissues; third, at the proposed insertion down through the periosteum; and fourth, over the annular ligament.

Curved hysterectomy forceps or a hemostat is passed from the annular ligament wound, through the subcutaneous fat, to the belly of the muscle, where the freed distal end of the tendon is passed and this is drawn down to the annular ligament. A very small hemostat or mosquito forceps, after the exact direction desired is determined, is passed un-

der the annular ligament through an appropriate compartment and the end grasped and drawn through. If the tendon will not reach to the desired insertion, which is rare, one or more strands of black braided silk are quilted into the tendon and it is pulled from the bottom of the annular ligament subcutaneously to the desired point of insertion, where it is firmly sewed to the periosteum, or preferably into a notch in the bone. Lange first pointed out that silk strands offered a framework for the tendinous tissue to grow about and between. If the transferred tendon is long enough, it may be sewed directly to the periosteum and bone. For the past four years I have cut out a wedge of the bone at the point of insertion. The deformity must be thoroughly overcorrected and the tendon sutured under tension.

Withdrawing the tendon from its sheath, i. e., from incision 1 to incision 2, and ultimately disregarding the old sheath, does not appear to affect the nutrition nor ultimate function of the transferred tendon in the slightest degree. It is possible to imagine a new sheath is regenerated from the subcutaneous and adipose tissues.

I have used repeatedly Lange's heavy braided white silk imbedded in paraffin, after boiling in one to 5,000 mercury bichloride solution, but find in practice that the ordinary black No. 5 braided silk, or even fine intestinal silk, boiled five minutes in a sterilizer, is all that is necessary. The wounds are closed tightly with the subcuticular continuous silver wire suture and then covered with silver foil, the usual dressing, and plaster cast. The stitches are removed on the eighth day, but the cast is continued for sixteen weeks. For two months the patient must bear no weight on the casts, and then for two months sandals are worn over the casts for walking. At the end of this period, bracing or supports are often not required.

Time will not permit further report of the endless varieties of muscle and tendon transplantation that have been recorded by writers for the relief of various forms of paralysis. No tendon transference or similar operation should be done for at least two years after the paralysis occurs.

It is needless to say that the foot or part is put up in overcorrection to overcome the deformity and secure tension of the transplanted tendon. Massage, passive and then active, then resistive movements, together with slowly interrupted Faradic stimulation, form important adjuncts to the aftertreatment of these cases.

CONCLUSION.

In conclusion, the following points should be emphasized. We should be more careful in the early recognition of infantile paralysis and use appropriate means to prevent its spread.

Elimination of the toxin should be facilitated in every possible way. As hexamethylenamine has apparently helped some and can do no harm, it should be employed in the earlier stages. Rest is most important in order to give the muscles a chance and freedom from strain. Warmth helps the hyperesthesia and nerve pain. No matter whether a part is apparently paralyzed or not, efforts at assisted

active movements should be tried and passive movements and massage given, possibly aided by Faradic electricity, slowly interrupted by a pendulum to produce muscular contractures, no matter how slight. Braces must be used, as light as possible, to compensate for muscular deficiency, prevent contractures, and promote normal physiological balance.

In regard to operative procedures, tenotomy and myotomy must be employed later when moderate stretching will not affect the desired lengthening of overactive muscles. Tendon transplantation must be resorted to two years after the attack, based upon careful scientific and mechanical study to produce a proper distribution and balance of power and support. Some form of tenodesis by tendon or preferably by silk can be used to supplement the tendon transplantation, if the alignment is not perfect and relaxation of a joint exists.

As in the writer's method, the tendon must be carried straight from the origin to the new insertion to gain the greatest mechanical efficiency, and the annular ligament must be employed when possible to take up any slack in the new order of things. The tendon is more securely fixed if sutured to a notch in the bone, retained in a fixed dressing for four months, and without weight bearing for two months.

Mutilating operations should be avoided as far as possible and used *en dernier ressort*. Thus tenodesis is preferable at the ankle by silk, then tendon transplantation, if necessary as a second procedure, before arthrodesis is used.

REFERENCES:

1. FLEXNER: Mode of Infection in Epidemic Poliomyelitis, *Journal A. M. A.*, 118, 18, Oct. 12, 1912.
2. Transmission of Poliomyelitis by Means of the Stable Fly (*Stomoxys calcitrans*), *Public Health Reports*, October 25, 1912, p. 1733.
3. ROSENAU and BRUES: Some Experimental Observations upon Monkeys Concerning the Transmission of Poliomyelitis through the Agency of *Stomoxys calcitrans*, *Monthly Bulletin*, Mass. State Board of Health, vii, 9, September, 1912.
4. HOWARD and CLARK: Experiments on Insect Transmission of the Virus of Poliomyelitis, *Jour. Exper. Med.*, xvii, 6, Dec., 1912.
5. LANGHORST: Possible Transmission of Poliomyelitis through the Dog, *Journal A. M. A.*, lix, 26, Dec. 28, 1912.
6. FLEXNER, CLARK, and FRASER: Epidemic Poliomyelitis. Passive Human Carriage of the Virus of Poliomyelitis, *Ibidem*, lx, 3, Jan. 18, 1913.
7. LUCAS and OSGOOD: Transmission Experiments with the Virus of Poliomyelitis, *Ibidem*, lx, May 24, 1913.
8. TAYLOR: Our Present Knowledge in Regard to Infantile Paralysis, *Amer. Jour. of Surg.*, Nov., 1911.
9. FRASER: Clinical Observations on Ninety Cases of Acute Epidemic Poliomyelitis, Rockefeller Institute Reprints, xii, 1915, p. 514, and *Amer. Jour. Med. Sc.*, July, 1914, cxlviii, 1, pp. 1-22.
10. CLARK: *Journal A. M. A.*, lxi, 3, p. 57.
11. NETTEP: *Comp. rendus Soc. méd. de Paris*, lxx, 1912, p. 25.
12. LANGE: *Amer. Jour. Orthopedic Surg.*, viii, p. 8.
13. LOVETT: *Trans. Med. and Chir. Faculty of Maryland*, 1915.
14. CROWE: *Johns Hopkins Hosp. Bull.*, xx, 1009, p. 102.
15. FRANKELHAL: *Lancet*, A. M. A., lxi, 1913, p. 2219.
16. JUDSON: *Annals of Gyn. and Ped.*, Oct., 1912, p. 101.
17. TITLANS: *Nad. Tijdschrift Geneesk.*, li, 23, 1908.
18. SANGIORGI: *Revista de Ortopedia*, 1, 1901.
19. REINER: *Zeitsch. f. Orthoped. Chir.*, 2, 1903.
20. WHITMAN: *Orthopedic Surgery*, 22, YOUNG, *Ibidem*.
21. SEEVER: The Causes and Treatment of Paralytic Dislocations and Subluxations of the Hip Joint, *Boston Med. and Surg. Jour.*, clxv, 9, August 31, 1911.
22. LANGE: *Munch. med. Woch.*, 17, 1907.
23. ALLISON: *Amer. Jour. Orth. Surg.*, 1913.
24. BRADLEY and THURMAN: *Medical Journal*, N. Y. State Soc. of Med., Sept., 1915.
25. JONES: *Trans. Amer. Orth. Assoc.*, xv, p. 93.
26. TOWNSEND: *Ibidem*.
27. GOLDTHWAIT: *Ibidem*.
28. WILSON: *Annals Med.*, April 8, 1915.
29. HOOKE: *Southern Med. Jour.*, Orthop. Surg., viii, p. 137.
30. SPITZ: *Trans. Amer. Orth. Assoc.*, xvii, p. 14.
31. GOLDTHWAIT: *Ibidem*, viii, p. 20.
32. RYERSON: *Journal A. M. A.*, lx, 1912, p. 101.
33. LANGE: *Orthopedic Surgery*, 22, YOUNG, *Ibidem*.
34. DEBART: *Annals of Gyn. and Ped.*, Oct., 1912, p. 101.
35. HOWE: *Annals of Gyn. and Ped.*, Oct., 1912, p. 101.
36. TAYLOR: *New York Medical Journal*, lvi, 6, 1906.
37. FRANKELHAL: *Lancet*, A. M. A., lxi, 1913, p. 2219.
38. SHINDLER: *Ibidem*.
39. HEBNER: *Zeitsch. f. Chir.*, xl, 1914.
40. *f. klin. Chir.*, cv, 1914.

IRRITATION AS A FACTOR IN MALIGNANT TUMOR DEVELOPMENT.

By G. L. ROHDENBURG, M. D.,
New York,

Attending Pathologist, Lincoln Hospital.

The cases collected in this paper possess certain interesting features which make them worthy of publication. The site of origin and the histological appearance of the tumors are somewhat unusual, while the conditions which inaugurated the tumor growth are of frequent occurrence. Some of them demonstrate how forms of irritation which, in the large majority of patients, result in benign processes or healing, may, in other patients, be followed by malignant development, and furnish further evidence of the importance of tissue predisposition in the etiology of cancer.

CASE I. The patient, a girl, aged fifteen years, came to the hospital complaining of pain in the right pelvic region. Physical examination revealed a mass in the right pelvis, which on operation proved to be a simple ovarian cyst of the retention type. At the time of operation the left ovary also was inspected, and a small cyst, the size of a pea, was opened with the point of a scalpel. The patient made an uneventful recovery and was discharged fourteen days after operation. She returned, two weeks later, complaining of pain in the left pelvic region, and on physical examination an irregularly lobulated mass extending from the left pelvic wall to the median line, reaching almost to the umbilicus was found. Free fluid was also demonstrated in the abdomen. At the second laparotomy the entire abdomen was found to be filled with many small and large nodules of neoplastic tissue, apparently arising from a large mass occupying the region of the left ovary. The condition was inoperable and death occurred five weeks later.

The cyst removed at the first operation was ovoid in shape and measured fourteen by seventeen cm. It was smooth on one surface and rough on the other, where the wall was composed of ovarian tissue. Section through the cyst showed it to be filled with a gelatinous yellowish fluid. The inner wall was smooth; one side measured one cm. in thickness; the other three cm. The thicker wall appeared in the gross as if it was of compressed and atrophic ovarian tissue. Microscopically, the cyst wall was composed of a dense noncellular connective tissue, very slightly infiltrated with round cells. The wall was lined by a single layer of low cuboidal epithelium. Partially surrounding the cyst wall was a layer of atrophic ovarian tissue. Masses of omentum, as well as a portion of the ovary removed at the second operation, showed a typical small spindle cell sarcoma.

The maximum time of tumor development in this case could not have been over four weeks, at which time it was already inoperable. Whether the involved ovary was originally sarcomatous cannot be definitely stated. If it were not, and such seems to have been the case, the only inciting cause discoverable was the pricking of a small retention cyst with a knife. The rapid growth might be due to the blood effusion and adhesive inflammation following the first laparotomy, these conditions furnishing admirable culture media for cell growth.

CASE II (indoor service, Dr. F. Oastler; outpatient department, Dr. B. McG. Dear; Lincoln Hospital Pathological No. 672, 1915). The patient, married Russian woman, aged twenty-nine years, was admitted with a Bartholinian abscess (gonococcus infection). The abscess had formed several sinuses, one of which led down to the perineum midway between the fourchette and the anus. The abscess proper was freely opened, and after a few days the patient was discharged to the out patient department. At the time of her discharge, it was noted that a small mass, apparently an exuberant granulation, was still present at the mouth

of the perineal sinus. Two weeks after her discharge and four weeks after the abscess had been opened, the mass was removed in the outpatient department. In the gross, the specimen was round in shape, measuring 1.5 cm. in diameter and about 0.5 cm. in thickness. It was covered on all surfaces, except for a small zone about two mm. square (probably the pedicle), with skin. In the centre of the upper surface was a small depression apparently with a minute central opening.

Microscopical examination showed a growth (Fig. 1) consisting of two distinct types of gland alveoli mixed freely together; the one type was composed of alveoli and elongated tubules lined by cylindrical or cuboidal cells one to several layers thick, whose oval or vesicular nuclei were situated near the base of the cell; the other was made up of small and large spaces, lined by a simple layer of high cylindrical or columnar cells, the protoplasm of which took a deep eosin stain. The round nuclei were situated nearer the centre of the cell. Flat or cuboidal cells furnished the lining membrane for some of the alveolar spaces. The cells of the first gland type showed by far the greatest degree of proliferative activity and lawless growth. They



FIG. 1. Alveoloma of perineum following gonococcus abscess.

were arranged in places in parallel tubules; in other areas the glandular structure was almost lost by the partial obliteration of the lumen of the tubules. Mitoses were observed in many of these cells, but were seldom seen in the cells of the second gland type. Some of the alveoli showed cystic dilatation with solid or papillary intracystic growths. Many of them contained products of secretion.

The connective tissue stroma was relatively poor in bloodvessels and cells, although in certain fields the tumor was fairly vascular and cellular, and showed round cell infiltration. Throughout the stroma were scattered foci of hyaline degeneration. In the substance of the tumor, situated eccentrically, was a long, narrow, irregular, slitlike space (sinus), lined partly on one side by stratified squamous epithelium, showing a distinct cornified layer. The discovery of a hair follicle beneath the epithelium proved it to be of epidermal origin. The opposite wall of the sinus was composed in greater part of cancer tissue. In this region growth was active.

The tumor probably originated from the sweat and sebaceous glands, but whether it was derived from these

glands of the surface epithelium or those accompanying the skin lining the sinus, cannot be positively determined. The position of these glands of the surface epithelium is almost entirely occupied by cancer tissue.

CASE III (Lincoln Hospital Pathological No. 722, 1915). This specimen, received from sources outside of the hospital, was accompanied by the following history of the patient: Three months before removal of the tumor, the patient, a female, aged forty-five years, had the third molar on the right side of the inferior maxilla removed because of extensive caries of a tooth. At the time of extraction,

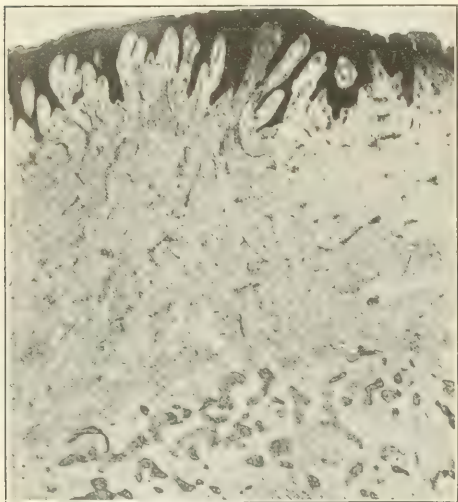


FIG. 2.—Fibrous osteitis of jaw with recurrence.

the alveolar process about the tooth was somewhat splintered. Most of the loose fragments were removed by the operator; a few were not completely loosened and were allowed to separate spontaneously. All but one of these remaining fragments did as was expected. This last one did not come away for a period of four weeks. At that time there developed at the site of injury a growth which gradually increased and attained after two months a size of three by two cm. This growth was removed, but apparently not radically, since at the end of another six weeks it recurred. The recurring tumor was not obtainable.

Macroscopically, the mass was roughly ovoid in shape and was covered on all but one surface with mucous membrane. On section through the mass, a gritty substance of bone-like consistence was encountered.

Microscopically (Fig. 2) the growth consisted of a number of spicules of bone imbedded in a tissue rich in small spindle shaped cells and connective tissue fibrils. The cells, generally uniform in size, were arranged in waves and whorls about the bone spicules, and merged into the osteoblasts along the border of the bone. Mitotic figures were infrequent. Bloodvessels were fairly abundant.

A few of the fragments of bone showed degenerative changes, while the others were newly formed and actively proliferating.

The growth was situated a short distance beneath the hypertrophied epithelium of the gum. Adjoining it on another side was a large area of tissue showing an extreme inflammatory reaction, beyond which was a deep and extensive area of ulceration.

Histologically the tissue was benign and must be considered simply as a fibrous osteitis. The recurrence of the growth is suggestive of malignant transformation of a benign process.

CASE IV. This specimen was also received from outside sources, with a brief history. (Lincoln Hospital Pathological No. 764, 1915.) The patient, a Russian, aged sixty-

nine years, had for years a corn on the outer aspect of the little toe of the right foot. This had been treated for several months by a chiropodist and had repeatedly been removed (?) by various kinds of local medication. It continued to return and the consequent pain caused the patient to have the corn surgically removed. The invasive nature of the growth aroused the suspicion of the operator, who requested a pathological report on the tumor.

The gross specimen was irregularly ovoid in shape, measuring 0.5 by one cm. The convex upper surface was covered with what appeared to be cornified skin, while the under surface showed the usual appearance of freshly cut tissue.

Microscopically (Fig. 3) the parenchyma of the growth was composed of bundles of parallel strands of cells, which spread out in all directions through the connective tissue, and frequently interlaced with other bundles. Interspersed among the bundles were cell nests or solid alveoli of varying shapes and sizes. The cells of the strands were large, spindle, or oval in shape, with tapering ends possessing rather long fibrillar processes. The nuclei were of an oval or elliptical shape, and in their size and arrangement of the chromatin resembled rather the nuclei of epithelial than connective tissue cells. Mitotic figures were frequently observed. Giant cells containing many nuclei were fairly numerous. Cells showing vacuolization were noted throughout the parenchyma. The cells of the alveoli were rounded or polygonal in shape, had a poorly defined outline, and showed more extensive degenerative changes than did the strand cells. Many of them had been converted

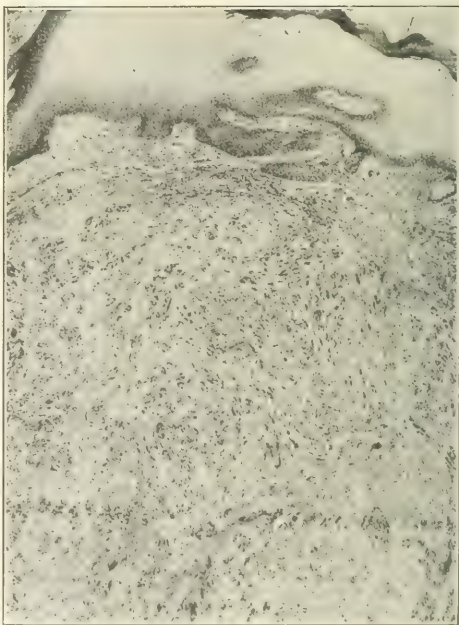


FIG. 3.—Carcinoma following corn.

into large multinucleated cells. The tumor possessed an abundant stroma, rich in collagenous fibrils and relatively poor in connective tissue cells. In certain areas there was a preponderance of stroma over parenchyma, with the production of a picture of a scirrhous tumor. The blood supply of the tumor was poor, and hyaline degeneration of the tumor had resulted in certain areas. There was a moderate grade of leucocytic infiltration. The skin overlying the tumor showed papillomatous hypertrophy, and where the growth reached the surface there was extensive ulceration.

Although in many respects the neoplasm resembled a

sarcoma, the size and structure of the cell nuclei, and the knowledge that epithelial cells may assume the shape and arrangement of connective tissue cells, incline us to classify it as an epithelioma, probably derived from the basal cells of the epidermis or from similar cells about the sebaceous glands or hair follicles.

All of the cases show the close relationship between regeneration, as seen in healing, and tumor development. Cases II and IV are out of the ordinary in the site of tumor formation and emphasize that apparently harmless forms of irritation can in predisposed persons give rise to malignancy.

222 WEST 136TH STREET.

THE POSTOPERATIVE COMPLICATIONS OF APPENDICITIS.*

Diagnosis and Treatment,

BY JOSEPH WIENER, M. D.,

New York,

Associate Surgeon, Mount Sinai Hospital.

The postoperative complications of appendicitis are so many and so varied that it is impossible in one paper to do justice to them all. I shall take up some of the more common and some of the less well known without making any attempt to cover the entire field.

I. PERITONITIS.

Dr. A. G. Gerster, in 1910, reported on 3,144 cases of appendicitis operated in at Mt. Sinai Hospital from 1899 to 1909. Of these 461 had some free peritonitis. Since these statistics were compiled the proportion of cases of peritonitis to appendicitis has been steadily declining, and today we see only a small fraction of the cases of peritonitis that we saw fifteen or ten or even five years ago. Earlier diagnosis, often by the intelligent patient himself, earlier consent to operation, and prophylactic treatment all have played a role in bringing this about. Under prophylactic treatment may be mentioned improvement in technic at the operation for the removal of the appendix, and above all the early and continued use of the Fowler position. Avoidance of cathartics and opiates before operation and the use of salines by rectum postoperatively have also served to reduce the number of cases of peritonitis. That many of the complications of appendicitis are in reality complications of the peritonitis is shown by the following list from Doctor Gerster's paper covering 461 cases of peritonitis:

Complications of peritonitis: Mechanical ileus, 24; pelvic abscess, 25; subphrenic abscess, 10; mesocolic abscess, 8; pylephlebitis, one; fecal fistula, 8; gangrene of cecum, 2; pneumonia, 4; mesenteric thrombosis, one; femoral phlebitis, 3.

II. INTESTINAL OBSTRUCTION.

As cases of peritonitis are less common than formerly, so we find fewer cases of intestinal obstruction. But unfortunately we do find them and when we consider that one third of the cases of obstruction end fatally, we can readily understand how important it is to avoid this complication, if possible. That it is often possible to avoid it, the ever de-

creasing number of cases in the hands of skilled surgeons bear splendid evidence. The introduction of a minimum amount of gauze to wall off the intestines, small incisions, rapid work, little or no drainage except in abscess cases, frequent stomach washings, all these contribute to keep the number of cases of intestinal obstruction at a minimum. The early loosening and removal of the cigarette drain and the avoidance of gauze packings are also important. But, in spite of all precautions, in certain cases obstruction will develop, in some immediately after operation, in others weeks or months or years later. The obstruction from sepsis causing intestinal paralysis is the common form and is usually unavoidable. The treatment consists of repeated lavage, rectal irrigations and enemata, eserine and pituitrin subcutaneously, and nothing by mouth. We have seen cases in which one c. c. of pituitrin by hypodermic injection, followed in an hour by a high ox gall enema, was succeeded by marked and permanent improvement. Purulent collections of fluid in any part of the abdomen should be promptly opened, and can often be felt and opened through the rectum or vagina. In severe cases it will be necessary to reopen the abdomen rapidly and puncture the distended gut in several places. This is at times a life saving procedure. Enterostomy was formerly advocated, but it is a dangerous procedure, is rarely indicated, and has justly fallen into disuse. Another form of obstruction is due to mechanical causes, to angulation or constriction by adhesions, or to the matting together of the intestines by plastic exudates. The diagnosis of this form of obstruction, especially in cases coming on insidiously, may present some difficulty. The characteristic symptoms are intermittent colicky pain which may be in any part of the abdomen, accompanied by borborygmi and hyperperistalsis, often visible through the abdominal wall, gradually increasing distention, with inability to pass much if any flatus or stool. It is not well to delay the diagnosis until nausea and vomiting set in, as they are late symptoms. The prognosis depends in large measure on how long the obstruction has persisted before it has been overcome. In doubtful cases the leucocyte count is of value. Not too much importance should be attached to the pulse and temperature; they are often but little above the normal and may lull us into a false feeling of security. The diagnosis can and should be made before temperature and pulse go up. The treatment consists in a prompt secondary operation that has for its object the dividing of bands or adhesions and preventing their reforming. We are of the firm opinion, after trial in numerous cases, that the sewing of chromicized Cargile membrane over the loops of intestine that had been adherent to one another, is of distinct value in preventing the recurrence of adhesions. The treatment will naturally vary with the cause of the obstruction, which may be a single band, the division of which may be a simple matter. In other cases we find many adhesions in various parts of the abdomen, and it then requires nice judgment to decide which of these adhesions is causing the obstruction. As soon as we feel sure that we have divided the offending band or the adhesions, we should go no further, as these patients do not stand prolonged operations. The aftertreatment is

*Read before the New York County Medical Society.

very important; we should regulate the diet with the object of preventing the formation of gas in the intestines and give articles of food that will promote peristalsis. The bowels should move at least once daily, and enemata and cathartics should be given when necessary.

III. FECAL FISTULA.

This is a fairly common complication and was present in one hundred cases out of 4,400, about 2.25 per cent. More than eighty per cent. of the fistula heal spontaneously, about fifteen per cent. require secondary suturing, and less than five per cent. require intestinal resection. The internal fistula, in which an abscess has perforated into the bladder or intestines, usually requires no treatment. Some years ago, I operated on a gentleman from New Haven for gallstones. For five or six years he had had from time to time the passage of a little feces into his bladder. This had originated from an appendicular abscess, yet it caused the man very little discomfort. The external fistula originates either from the remains of the lumen of the appendix or from the ileum or cecum. In all persistent cases we make a careful search for a foreign body, sponge, gauze, or drainage tube. The removal of such a foreign body is often followed by prompt closure of the fistula. The fistula usually develops in the second week after operation. If I am in doubt as to the existence of a true fistula, I give the patient a capsule of methylene blue by mouth. Within twenty-four hours the wound discharge should be distinctly colored. Many cases will be cured by diet, opium, tannin compounds, and the removal or shortening of the drainage tube. If the fistula is high up in the intestine there is danger of starvation. In one such case the patient was actually starving to death when it occurred to me that we could collect the partly digested food as it left the proximal loop at the site of the perforation of the intestine and inject this into the distal loop. There had been extensive necrosis of the abdominal wall and we had been able to verify that there were two fistulous openings in the bowel, or rather that a large piece of the anterior wall of the gut had sloughed away. I passed a long rubber tube into each of these two openings and connected the end of each tube with a bottle. The patient was fed freely and a few hours after each feeding large quantities of chylous fluid flowed into bottle No. 1. This fluid was slowly injected into tube No. 2 and the tube was clamped off for an hour or longer. There was very little leakage from either tube, and the patient's general condition immediately improved, she gained considerable weight, the extensive inflammation in the skin around the wound cleared up, and a month later she was able to survive a resection of the intestine at the site of the fistula and made a complete recovery. Usually it is only necessary to excise the fistulous tract and close the opening in the intestine with sutures, and it is well to suture the omentum over the intestinal sutures. As little drainage as possible should be used, and no drain should go to the suture line. It is only in cases where the suturing would narrow the lumen of the intestine too much that an intestinal resection must be done.

IV. PELVIC COMPLICATIONS.

These may be divided into two classes: The first would include the ordinary secondary pelvic abscess and the second would include tuboovarian and broad ligament infections. Pelvic abscess usually develops at the end of the first or the beginning of the second week. The usual symptoms are increase in temperature, tenderness, pain, rigidity, obstinate constipation, sometimes vomiting, and increase in the leucocyte count. This form of abscess is most common in peritonitis with exudate in the pelvis. Where there is much distention, the condition may be mistaken for a peritonitis. A mass can almost always be felt by rectal or vaginal examination; occasionally it can be felt through the abdominal wall. The treatment is incision through the rectum or vagina. The interrelation of appendicitis and tuboovarian disease is a complicated one. In some cases the infection starts in the tube and later affects the appendix; but more often the reverse is true and there are many cases in which the primary infection comes from the appendix. To quote Deaver, "from rather extensive observation it has seemed to me that this is not at all uncommon, first, because widespread pelvic lesions are not likely to be encountered in young women and girls, in whom no history or sign of external infection can be detected; secondly, because of the excessive virulence of appendicular pus and the special faculty it possesses of inaugurating purulent processes in other portions of the body; thirdly, because the right tube may be markedly involved and adherent to the appendix while the left tube is normal; and, fourthly, because the initial symptoms point rather to disease of the appendix than to disease of the genitalia." The appendiculo-ovarian ligament is the tract along which the infection spreads from the appendix to the broad ligament and to the annexa. We have for years made it a rule to examine the right tube and ovary when removing an appendix, either in the acute or the interval stage; conversely, we should, when removing the right tube or ovary, always examine the appendix, and in many cases we shall find conditions that warrant its removal. Hernes, quoted by Battle and Conner, has given his experience of the condition of the appendix in seventy-five consecutive gynecological operations and found that organ diseased in fifty-three per cent. A second observation of his is that the disease is much more common in multiparae than in primiparae.

V. THROMBOSIS.

This is one of the most important complications of appendicitis and in its broadest interpretation would include iliac, femoral, mesenteric, and portal phlebitis with all the complicating lesions caused by emboli from the inflamed veins, viz., pulmonary emboli, empyema, subphrenic and liver abscesses, gangrene of the intestine, and pyemic abscesses in any part of the body.

With any inflammation of the appendix the veins in its mesentery may become inflamed and go on to thrombosis. This danger from thrombosis does not cease with the subsidence of an attack of appendicitis; neither does it cease with the removal of the appendix. We have but to remember the unfortunate sudden deaths a week or ten days after the re-

removal of an appendix in the interval stage, to prove the truth of this assertion. I was very much shocked by an experience of this kind a few years ago. A young man of twenty-two years, who had always been well with the exception of two rather mild attacks of appendicitis, was referred to me after the second attack had completely subsided. I removed a slightly inflamed appendix in a few minutes. The wound healed by primary union; there was no fever at any time. He was to leave the hospital on the morning of the eleventh day. Late on the evening of the tenth day, while his nurse was out of the room for a few minutes, he suddenly expired. He had no cardiac lesion and his death was undoubtedly due to an embolus.

The pulmonary emboli do not come from the portal system, but originate in veins that communicate directly with the vena cava. These are the large venous plexuses in the pelvis, the spermatic veins, the veins on the outside of the peritoneum, and the veins of the lower extremity. Pulmonary emboli usually lodge in the lower right lobe. There is usually bloody expectoration, but it may be slight and present only for a short time. It usually starts in after twenty-four hours and often resembles the rusty sputum of pneumonia. In some cases the bloody sputum persists for weeks. I have seen a few cases in which there were repeated attacks of bloody expectoration at intervals of several days, with slight elevations of temperature. These patients have recovered and I have looked upon them as being cases of multiple very small pulmonary emboli. Large and repeated emboli cause convulsions and death. With the ordinary embolus the patient looks pale and anxious, sometimes cyanotic; if a large area of lung is involved, there is dyspnea. There are often chilly sensations and fever. At first we find rales and slight dullness, later signs of local consolidation; sometimes there is a slight pleural exudate. The treatment is entirely symptomatic.

Thrombosis may follow operations for appendicitis by the direct extension of a thrombus from the deep epigastric to the external iliac and femoral veins. The thrombosis of the right external or internal iliac vein may result by direct extension from an inflamed appendix that lies in contact with the vein. When we consider how often we find a gangrenous appendix lying directly over the external iliac vein, it is really surprising that we do not find a phlebitis of the iliac vein even more frequently. This phlebitis leads to thrombosis which may readily extend to the femoral veins. The left iliac and femoral veins are also often affected. In some cases the thrombosis may be due to anemia and poor circulation following protracted suppuration and the consequent long confinement of the patient to bed. Femoral phlebitis gives the well known picture of the old fashioned "milk leg," with its tender thickening of the vein, edema of the leg, and sometimes dilatation of the superficial veins which are attempting to take up the anastomotic circulation. There is usually pain in the leg and sometimes fever. The treatment consists of rest in bed and elevation of the lower extremity.

Thrombosis of the veins of the mesentery may result in gangrene of the cecum or the adjacent portion of the ileum. Small gangrenous areas of this nature

are fairly common. There is another form of gangrene of the ileum, however, at some distance from the ileocecal valve, with normal ileum intervening between the gangrenous portion and the cecum, and with the cecum normal. As this pathological condition must have been preceded by changes in the bloodvessels, it may be well to point out the distribution of these vessels, especially as I wish to report a case of my own.

The superior mesenteric vein returns blood from the small intestines and from the colon as far down as the splenic flexure. It corresponds with the distribution of the superior mesenteric artery, and unites behind the pancreas with the splenic vein to form the portal vein. The branches of the superior mesenteric artery which supply the ileum and cecum are the vasa intestini tenuis and the ileocolic artery. As the portion of the ileum which became gangrenous in our case was eight inches from the cecum, the lower branches of the vasa intestini tenuis and the inferior branch of the ileocolic artery must have been thrombosed. It is only fair to assume that the primary thrombosis was in the veins, and affected the arteries secondarily. The history of our case of gangrene of the ileum is so unusual and cases of this kind are so rare that I may be pardoned for once more referring briefly to this case which I have published at length elsewhere.

CASE I. Mrs. R. N., aged fifty-seven years, was first seen by me in October, 1910. She had been married thirty years and had never been pregnant. She had suffered from constipation for many years and had taken cathartics almost daily. In 1900, she had her first attack of abdominal pain. It started suddenly at night, with vomiting and pain in the right iliac fossa. After a few days in bed the pain subsided. Four weeks later, there was a similar but milder attack. In June, 1909, after an attack of influenza, there was a third attack of right iliac pain, associated with vomiting. In March, 1910, there was a fourth attack of right iliac pain with fever. Following this attack there was almost continuous pain and discomfort in the right iliac fossa until June, 1910. At that time the abdominal symptoms disappeared and the general condition improved very much. On October 15th, the patient awoke at night with severe right iliac pain, and vomited several times. On the following day, she had severe abdominal pain and a morphine injection was given. On the day of operation she had severe pain all day and vomited everything she took. The bowels had moved daily with cathartics. There had been no blood nor mucus in the stools. At the time of operation the abdomen was moderately distended, liver dullness was not obliterated, and there was no evidence of free fluid in the abdomen. The temperature was 101° F., and the pulse 106. There was a little free fluid in the abdomen and some injection of the peritoneum. The appendix was found below and to the inner side of the cecum, from which it had almost completely sloughed away; it was surrounded by a small amount of pus. A loop of small intestine, which had formed part of the wall of this potential abscess cavity, was found to be completely denuded of its mesentery. The vessels in this portion of the mesentery were completely thrombosed, and there was no bleeding throughout the entire operation. The loop of intestine affected was in the ileum, about ten inches from the cecum, and was about eight inches long. In view of the fact that there was a peritonitis, it was not deemed wise to resect the affected intestine. The appendix was removed and the affected loop of ileum was surrounded by gauze packings. The abdominal wound was strapped with plaster, no sutures being used. The patient reacted very well, and from the third to the eighth day there was a daily movement from the rectum. On the eighth day, there was a foul discharge from the wound and on examination I found that the loop of ileum in the wound had become completely gangrenous. It was cut away and thereafter all stool came from the wound. Three weeks after operation, the wound was granulating

rapidly. The finger in the wound could feel two openings into the intestine which, as the wound contracted, came closer and closer together. Six weeks after operation, some stool began to be passed by rectum. Thereafter the wound granulated rapidly, and soon almost all stool was coming from the rectum; there was a small fecal fistula at the site of the wound. It was hard to understand how the two loops of intestine could have united without forming a stricture at the site of union. We subsequently found that such a stricture had indeed been formed and that it was only the patency of the fecal fistula that prevented its giving symptoms. On January 18, 1911, there was so little discharge from the fistula that the patient was allowed to go home. But in a very few days there were symptoms of a partial obstruction of the bowels, abdominal cramps, and nausea. The fistula, which had apparently closed, broke open again, and the symptoms of obstruction promptly subsided. During the following two months this phenomenon repeated itself several times. On March 6, 1911, I did a side to side ileocolostomy with sutures uniting the ileum twelve inches from the ileocecal valve to the middle of the transverse colon. There were very extensive intestinal adhesions which made the procedure difficult. There was no improvement from this, and accordingly on April 24, 1911, I again opened the abdomen. The ileum distal to the anastomosis, together with the cecum and ascending colon, were excised in one piece. The open end of the ileum and of the colon were closed with three layers of sutures. There was some wound infection and for a time a little fecal discharge. However, on July 18th, the patient left the hospital with a healed wound. She has since remained well and her bowels move without cathartics.

VI. PNEUMONIA.

In 4,500 cases pneumonia occurred forty-five times. The mortality is thirty-three per cent. The lesion is almost always a bronchopneumonia. True lobar pneumonia is very rare and usually develops only in patients who have an acute infection of the upper air passages at the time of anesthesia. The consolidation is usually at the bases of the lungs. Prophylaxis is of great importance. This includes short anesthesia, raising the head and shoulders soon after operation, frequent changes of position, and encouraging the patient to take a number of deep breaths every hour.

VII. EMPYEMA.

The infection is either hematogenous, in which case either side may be affected; or it is due to direct extension from the subphrenic space and then is always right sided. According to some writers, the infection is also carried directly by the lymph channels along the parietocolic sinus, starting from a retrocecal abscess. From this focus there may be uninterrupted continuation of the lesion up to the subphrenic space. The writer had a fatal case of this kind, in which at the operations subsequent to the removal of the appendix, pus was found in the right iliac fossa, behind the ascending colon, in the right subphrenic space and in the pleural cavity. This patient, a young man of twenty years, lived for three months after the appendectomy which was done during an acute attack. He left the hospital after three weeks with a small sinus and with normal temperature. He was up and about for several weeks, during which his temperature was normal, and yet at subsequent operations we found the most extensive suppuration, the principal focus being in the subphrenic space. This abscess perforated the diaphragm and pleura and, in spite of free drainage, he succumbed to his infection. In most cases the empyema forms subacutely, but at times infection takes place suddenly. It is usually due to the colon

bacillus. In some cases the empyema is associated with pneumothorax from development of gas in the pus. The physical signs due to the presence of this gas may so overshadow those due to the fluid that a serious error in diagnosis occurs. This formation of gas in the pus is also seen in cases of subphrenic abscess, to which we will refer below. In a few cases the empyema is complicated by a lung abscess.

VIII. PYLEPHLEBITIS AND LIVER ABSCESS.

At first sight we might assume that only grave lesions in the appendix give rise to hepatic infections. Such, however, is not the case. Even the mild forms may give rise to serious liver infection. If we bear in mind Sonnenburg's dictum, that every patient that has had an attack of appendicitis is a possible thrombus carrier, we can readily see how, even after operations done in the interval stage, emboli may be dislodged from the veins around the appendix and be carried to the portal vein and thus infect the liver. This is by far the commonest method of infection. In some cases the infection takes place through the lymphatics. The lymphatic channels extend along the retroperitoneal space to the liver, subphrenic space, and thorax. Another channel of infection is through the arteries, as part of a systemic infection; and last, as Körte has pointed out, we may have direct extension of the suppurative process from the appendix through the retroperitoneal tissue. To judge from the cases we have seen and from many reports, these last two named methods of infection are very rare.

All cases of liver infection, however, do not go on to the formation of serious lesions, and spontaneous recovery in not a few mild cases does occur. J. C. Munro, in his excellent paper on Lymphatic and Hepatic Infections, refers to the experiments of Lemaire, which show that the liver offers protection up to a certain point against a general infection. He shows that the work is done mainly by the endothelial cells of the hepatic capillaries. If the infection is not too virulent, purification of the infection takes place in a few hours. Hepatic infections are limited mostly to young adults; in children under fifteen years of age they are almost unknown. The infection may take place in either the right or the left lobe; but owing to the anatomical relation of the portal branches the right lobe is usually affected. The time of formation of the pus varies considerably, depending on the virulence and amount of the infection and the resistance of the patient. In some cases there are evidences of liver infection within a few days of the onset of the appendicitis; in other cases weeks or even months may elapse before we have definite signs of liver involvement. It is possible that the rapid infections take place through the portal system and the slow ones through the lymphatics. The symptoms vary with the mode of onset. In the acute onset we find sudden pain in the lower right chest, chills, fever, sweats, a dry cough, marked prostration, strikingly rapid emaciation, and a large tender liver. In the subacute onset we find a dry cough with a feeling of weight or discomfort in the lower chest and a gradual increase of temperature, together with a slow increase in the size of the liver. In some cases we find a little fluid in the pleural cavity. The cardinal symptoms in all cases are fever, en-

largement of the liver, pain, and emaciation. In some cases we find tenderness and rigidity in the right hypochondrium. Most cases show some icterus, although it may be so slight as to be seen only in the sclera. Diarrhea is often present and adds to the emaciation. In one of the writer's cases it persisted for many weeks during the convalescence and was hard to control. At times there is enlargement of the spleen. The sensorium is usually clear and the comfortable mental attitude may lull us into a false feeling of security. In some cases we can hear a friction rub over the dome of the liver. The emaciation is a striking symptom and is progressive in spite of sufficient feeding. Whereas the diagnosis in typical cases is easy, in atypical cases it may be very difficult. The leucocyte count is often a help. Malaria should be excluded by a blood examination. The diagnosis may be obscured by a complicating pleurisy, empyema, or subphrenic abscess. We must first diagnose the presence of pus and then ascertain whether it is above or below the diaphragm or both. Where the pneumonia or empyema is ushered in with tenderness and rigidity in the right hypochondrium, the differential diagnosis may be very difficult; here a good radiographic picture may be of great value. In many cases the positive diagnosis cannot be made until the aspirating needle finds the pus. The prognosis is grave in all cases that go on to the formation of an abscess. Those due to infection through the portal system are more apt to produce multiple lesions and give a very bad prognosis. Those due to direct extension from the subphrenic space or from the retroperitoneal space are more likely to cause single lesions in the liver and give a much better prognosis. The treatment consists in free incision, either by the transpleural route, as will be described below under subphrenic abscess, or the abdomen should be opened and the liver explored and incised from below.

IX. SUBPHRENIC ABSCESS.

Infections of the subphrenic space are among the most fatal of all the complications of appendicitis. The mortality is over fifty per cent. and with some authors it is as high as eighty per cent. Deaver reports twenty cases with sixteen deaths; but, just as we have seen that all liver infections do not go on to the formation of abscesses, so we find that some cases that give the cardinal symptoms of subphrenic infection end favorably without operative interference.

Under the title of Nonsuppurative Subphrenic Peritonitis Complicating Appendicitis, Dr. Harold Neuhof collected a number of cases from the second surgical service of Mount Sinai Hospital. The following two cases among others operated in by me are characteristic.

CASE II. Pauline W., aged forty-three years, was admitted as a private patient to Mount Sinai Hospital, January 26th, and discharged March 12, 1910. The patient had had severe general abdominal cramps, and later pain in the right iliac region. In the latter region a small tender mass was felt. At operation a gangrenous appendix and a small abscess external to the cecum were found. There was some serous fluid in the general peritoneal cavity. Following operation, although the wound drained freely, the temperature ranged from 99° to 102° F. After twelve days pain was felt in the right lower chest, where there developed a small area of dullness, diminished voice and breathing, together with intercostal tenderness. February

12th, the white blood cells numbered 11,000; polynuclears seventy-seven per cent. As the signs at the right base were more pronounced, I aspirated the pleura, subphrenic space, and liver in different places with negative result. Three days later, there was an extensive area of dullness and distant bronchial voice and breathing at the right base posteriorly. The respiratory rate was normal and there was no cough, but the fever persisted, as did the pain and intercostal tenderness. February 21st, the physical signs and fever still persisted. White cells were 15,000; polynuclears sixty-nine per cent. The subphrenic space and liver were again aspirated in many places, but with negative result. Thereafter the temperature soon became normal, except for an occasional rise. The pain disappeared rapidly, the physical signs slowly. At the time of discharge from the hospital, the patient was perfectly well and remained so during the following two years that I had her under observation.

In this case the patient first complained of pain and tenderness at the base of the right chest a week after operation. The physical signs of fluid under the diaphragm gradually became very pronounced, and particularly the signs of elevation of the diaphragm. The fever persisted from the time of operation until the convalescence from the subphrenic infection. In the following case the temperature was normal for twenty days during the convalescence from the operation for appendicitis, only to rise to 104° F. with the onset of the subphrenic infection.

CASE III. Samuel S., aged twenty-three years, was admitted to the second surgical service of Mount Sinai Hospital, November 24, 1907, and was discharged January 18, 1908. For two days before admission there had been abdominal cramps, vomiting, fever, and chilly sensations. There was general abdominal rigidity, most marked in the upper right quadrant, where the tenderness was also most marked. The temperature was 103.8° F. At the operation, which I performed shortly after the patient's admission, a gangrenous appendix with abscess was found, together with serous fluid in the free cavity. After nine days the temperature had gradually reached normal and the patient felt well. During the following three weeks the temperature remained normal. At the site of the drainage a sinus four inches deep remained, although there was very little discharge. From time to time the man had complained of pain in the right hypochondrium, but nothing was found on examination. On December 23d, after remaining normal for twenty days, the temperature rose to 103° F. For the next eighteen days there was fever, ranging from 101° to 104° F. Leucocyte counts varied from 10,000 to 19,000, polynuclears seventy per cent. There was severe pain from time to time in the right hypochondrium and at the base of the right chest. On palpation, there was tenderness in the right upper abdomen as well as over the lower right intercostal spaces. The liver was not enlarged to palpation or percussion. The sinus had completely healed. The temperature gradually became lower, pain and tenderness at the same time subsiding. On January 10th, the temperature became normal and remained normal thereafter. We were unable to trace the patient after he was discharged.

In this case a month elapsed from the time of operation until there were evidences of subphrenic infection, and during twenty days the temperature was normal; but, unfortunately, such cases are exceptional. In most cases a subphrenic infection is a life-endangering complication. In many cases the infection extends further to the pleura. In two thirds of Sonnenburg's cases of subphrenic abscess, there was a complicating right sided pyothorax. Children are very rarely affected. Out of 169 cases of subphrenic abscess from all causes collected by Maydl, only ten were in children under fifteen years, and in only one was the primary lesion in the appendix. Here again we see an analogy to infections

of the liver, and this is due to the fact that the channels of infection are the same in both lesions, namely, through the portal system, by the lymphatics, by direct extension from the lumbar peritoneal fossa, and as part of a general peritoneal infection. The characteristic symptoms usually begin between the eighth and thirtieth days after removal of the appendix. In some cases several months have elapsed, and in the interim the patient may be fairly well and able to be about and attend to his affairs. It must not be forgotten that this complication may follow even mild cases of appendicitis. The symptoms at the start are usually vague, and a diagnosis at this time is not possible. The usual symptoms are local pain and tenderness, somewhat embarrassed respiration, dullness on percussion, and, what is of the greatest importance, signs of pleural involvement at the base of the lung. Beside this we find the usual constitutional symptoms of a local infection. Gruneisen maintains that we must consider every subphrenic abscess as a circumscribed peritonitis, and it is true that many of these cases give us the symptoms of a gradually increasing peritonitis. In some cases the onset is sudden, with severe pain, chills, fever, and vomiting. The liver may be greatly displaced downward by the pressure of fluid above it. Occasionally gas develops in the abscess, and then there may be a clearly defined tympanic area. If the signs both local and general remain stationary, we do not interfere, as a fair number of these cases end in spontaneous recovery. This is the class of cases to which we have referred above. In many cases the diagnosis can be made only by aspiration, and it is surprising how even a large collection of pus will not be found, even after many repeated aspirations with large needles. In some cases the positive diagnosis can be made from a good radiograph. I had a case of this kind recently. The patient was an old lady who had many of the symptoms of subphrenic abscess, but repeated aspirations by various men failed to show pus. The radiograph showed a large shadow in the region of the right subphrenic space. Under local anesthesia I resected the eighth rib in the axillary line and sewed the two layers of pleura together. I then aspirated through the diaphragm, found pus, and opened an abscess containing at least eight ounces. The operation, done under local anesthesia, presented no difficulties, and the patient made a good recovery. Gruneisen reports a case in which thirty-six punctures were made at several sittings before pus was obtained, and we have repeatedly aspirated eight and ten times before striking pus; in some of these cases the abscesses were of considerable size. Whenever possible, we do the aspiration in the operating room and we are prepared to cut down on the needle as soon as we find pus. The technic is very simple and can readily be carried out under local anesthesia. Portions of the eighth, ninth, or tenth ribs, or any two of them, are resected over the area where the needle showed pus. If there is pus in the pleural cavity, that is first opened. If not, the two layers of the pleura are sewed together. Sometimes the costophrenic sinus is found completely obliterated by the inflammatory process. In these cases the suturing of the pleura is unnecessary. A large aspirating needle is passed through the diaphragm, and as soon as pus is found

a grooved director is introduced alongside the needle. Then a narrow dressing forceps widens the opening still further until the examining finger can be passed through the diaphragm into the abscess cavity. All pockets are broken up so that we have only a single cavity to drain. The liver is palpated carefully by the finger to ascertain if an abscess has perforated into the subphrenic space. If such an abscess is found, its opening is enlarged and it is drained through the subphrenic space. In some cases a counter incision is needed to secure adequate drainage.

46 EAST SEVENTY-EIGHTH STREET.

THE DUCTLESS GLANDS AND ATYPICAL GROWTH.*

BY SEELYE W. LITTLE, M. D.,
Rochester, N. Y.

Dr. Emil Novak says: "When the ductless gland faddist blows his warm breath on the molecule of fact, it is apt to be vaporized into the mountain of hypothesis and speculation. And yet from this nebula new facts are constantly being crystalized." The mixed metaphor is possibly intentional as more accurately describing the ductless gland faddist. At any rate a fad is a great thing for a physician and I can recommend this one.

That the ductless glands have a great influence on cell growth, on inhibition of cell growth, on cell differentiation or inhibition of the same, with a consequent marked peculiarity in size, shape, and development of various organs or even of the entire individual—all these things are proved and are common knowledge. The same is true of the remarkable selective action on particular tissues of ductless gland influence. We need only to recall such conditions as cretinism, gigantism, eunuchoidism, dwarfism, abnormalities of secondary sex characteristics, certain cases of obesity, certain disturbances in the sympathetic nervous system, and certain aspects of lime and sugar metabolism—we need only to recall such things to prove the truth of the general statement. If we had no other evidence, the presumption would be very strong that there might be a similar connection between ductless glands and what are known in general as pathological "new growths." The presumption becomes a conviction when we deliberately set side by side all the facts concerning ductless glands and all the facts concerning such new growths as cancer.

The accompanying table shows briefly some of the more important and significant facts.

CANCER.	DUCTLESS GLANDS.
Abnormal skin pigmentation very common.	Skin pigmentation common in many ductless gland disorders.
Atypical growth.	Growth function. Necessary to normal growth.
Age incidence (middle life and after).	Premature failure then, if ever, like other organs.
Rare in young, but very rapid.	Failure in young must be more serious than in old, because metabolism and growth active (e. g., diabetes).

*Read, by invitation, before the Medical Association of the Greater City of New York at the Academy of Medicine, November 21, 1915.

CANCER.

Sugar and lime metabolism often disordered. Pathological cell metabolism.

Family incidence.

Embryonic character of cells.

Rare and difficult to infect another individual.

Rarely there are spontaneous recoveries.

Recurrences common.

Occurrence universal.

Regional occurrence marked.

Rarely multiple.

Incomplete operation usually causes more rapid growth.

Older the patient, slower the growth.

Less the approximation to normal cell, more rapid the growth.

Unexplained diminution of stomach hydrochloric acid early in cancer of stomach, esophagus, pancreas, gut, gallbladder (endemic origin). Not apparently in cancer of ectodermic or mesodermic origin until cachexia appears. Cannot be due, as urged, to some secretion of the cancer itself, because in cancer of the gut we should have to assume the secretion absorbed and then affecting the stomach acid. If so, why not the secretion from cancer of the breast or of the uterus?

Would be interesting to know if abnormal stomach acid is not often a condition long antedating the appearance of stomach cancer and a causative factor. But it cannot be the causative factor because sometimes in stomach cancer the hydrochloric acid is normal. In one condition commonly an antecedent of cancer of stomach we do have prolonged disturbance of the stomach acid, i. e., hyperchlorhydria of ulcer of stomach. (Prolonged overactivation of pancreas by this hyperacidity ends in exhaustion of pancreas?)

DUCTLESS GLANDS.

Have important sugar and lime metabolism function. Vital cell metabolism function.

Ductless gland disorders have like incidence and very common in cancer families.

Normally most active in embryo and very young. And necessary for development from embryonic to adult cell. If not normal, embryonic cells remain embryonic.

Necessarily if theory is true. To infect, it would be necessary that right gland be at right stage of failure at time of infection.

Explainable by possible recovery of failing gland or hypertrophy of an aiding gland.

Necessarily if theory is correct. Cause persists. Occurrence universal of ductless gland disorders.

Regional occurrence marked (in same regions?); no data on this point.

Naturally, as explained in paper.

As explained in paper.

All metabolism slower in old. Ductless glands normally less active. So a failing gland not so vital in old individual.

Naturally, as explained in paper.

Acidity of stomach contents one link in chain necessary to activate pancreas (under the theory insular insufficiency necessary to produce endemic cancer). Suggestive that in diabetes stomach acidity often disordered, even to complete absence, which also occurs in pernicious anemia, in any severe cachexia, and in some acute febrile conditions; all of which have ductless gland relations. For example, anemia of Addison's disease is of pernicious type; testicles and ovaries often affected in mumps, and thyroid in typhoid; adrenal insufficiency common in acute infections.

Ductless gland balance is notoriously upset if any one of the glands is disordered.

CANCER.

Usually, perhaps always, occurs at site of injury. But injury by no means always results in cancer. Very rarely comparatively.

The phenomenon explainable if ductless gland is simultaneously subactive.

Increases as complexity of civilized life increases.

In women, generative organs commonest seat of cancer.

Stomach commonest single site (hardest worked and most abused organ in body).

Radical operation often "cures" especially if done early.

Late operation, even if radical, rarely "cures."

Metastases common; yet cancer cells planted in a normal individual rarely "take."

Has actually disappeared in a few cases and has very often, in fact usually, become smaller with marked improvement in general condition under treatment based on this theory.

Finally, no other theory thus far advanced seems compatible with all the known facts.

No fact of either set can disprove the theory, and many offer direct proof in favor of the theory. So much must be granted by any impartial and competent judge with all the data before him. Nevertheless some hitherto unknown fact may absolutely disprove what seems now to be certain. Until disproved, this theory seems to the writer the most profitable and the most hopeful for a physician confronted with the care of a patient with inoperable cancer. And even an operable cancer removed by knife, cautery, radium, or other agent, is in itself no great cause for scientific congratulation. Cutting out a cancer is not curing cancer any more than cutting out a corn is curing corns. However, in the case of cancer, until we can attack its cause successfully, removal by knife, radium, or some such means is at present the best we can do, but by no means is such removal to be considered our ultimate best.¹

It cannot be said that the physiology of any of the ductless glands is known. A little is known here and there of one or another of these organs, but it cannot even be truthfully said that the complete physiological action is known of any single

DUCTLESS GLANDS.

Always tendency to cell reproduction if cell injured. Scar tissue never normal tissue, but simpler. (See Bloodgood, *Boston M. and S. Journal*, January, 1914.)

Should therefore fail oftener than under simpler conditions, like other organs. Also more defectives are kept alive than formerly.

In women, normally, these organs revert after menopause toward infantile type.

Pancreas most complicated, most important, and second hardest worked digestive organ.

May easily be that no other reverted cells elsewhere ready to reproduce. If operation is early, ductless gland involved may often perhaps suffice for its work, or even recover a little after cancer removed.

Ductless gland involved would naturally, in its effort to supply the want, become less and less efficient from overwork.

Naturally, if theory is correct.

Inasmuch as dose is unknown, preparations not standardized, some preparations not even procurable and methods of administration physiologically incorrect, the results have been very remarkable.

¹Inasmuch as the writer has devoted most of his study in the past few years to the relations between ductless glands and the atypical growth known as cancer, he will confine himself in this paper to those particular relations instead of the relations between the ductless glands and atypical growth in general.

function of any single ductless gland. Nevertheless we may make certain reasonable deductions of a general nature from what scattering facts are proved.

It is certainly within the truth to say that the ductless glands have a very important, often a vital part in cell nutrition. In the human body, as elsewhere, a living cell must have a suitable and a sufficient food supply. If it has not, it dies. If the food supply is merely more or less suitable and available, no matter how abundant, the cell may live indeed, but will be more or less of a weakling or a degenerate. If the food supply is abundant and of the most suitable kind, the cell thrives and functions easily. This is the merest platitude, but placed beside the other platitude that the ductless glands have an important, often a vital part in cell nutrition, our platitudes are important, to say the least.

There are certain diseases of nutrition of which the pathology is unknown and of which death is the usual outcome. There are certain abnormalities of nutrition which, while not fatal, are yet embarrassing or incapacitate the victim. Of these diseases, one at least has been brilliantly linked up with failure of a ductless gland—myxedema. Of the abnormalities, some have been equally accounted for by overaction or underaction of the ductless glands, and are sometimes corrected by appropriate measures. But there remains a depressing list of nutritional disorders against which we have made little progress. It has been the writer's effort in the past few years to explain some of these conditions by correlating them with the known facts concerning ductless glands in order to have at least a reasonable theory to work with instead of the usual fruitless, haphazard puttering. Before going on with the main argument, however, we must disabuse ourselves of an assumed fact, because though generally assumed it is absolutely unproved and all physiology is against it. Certain diseases are assumed to be due to hyperfunction of one or another of the ductless glands. It is true that such hyperfunction often accompanies certain diseases, but we might just as reasonably say that overaction of the heart is the cause of fever as to say that hyperthyroidism is the cause of Graves's disease. Furthermore, overaction of any organ *per se* would be a physiological absurdity. Function is regulated automatically by the amount of work to be done. Otherwise the human machine could not last a week. If there is hyperthyroidism in Graves's disease, it is due to some cause further back. Hypofunction of any organ, on the contrary, may easily occur as a result of congenital or accidental causes, or from overwork, infection, disease, age, improper food, and the like; and in that case the essential disorder is hypofunction of the organ involved. So nephritis is essentially hypofunction of the kidneys. But who ever heard of kidneys deliberately overfunctioning beyond the actual work to be done, and extracting from the blood too much sodium chloride or urea? Hyperaction of the kidneys is an absurdity as a disease of itself. So is hyperthyroidism. Therefore in considering the ductless glands, we must think only of subaction as the possible real cause of any disease. Hyperfunction surely occurs and is the cause of many serious, even fatal disturbances, but

hyperfunction in turn must have a cause. It does not occur of itself. Our assumption that hyperaction of a ductless gland is the cause of certain diseases arises merely from our ignorance of the physiology of that gland. It is important also to recall that some of these organs have at least two functions. It may therefore very well be that for some cause it is necessary for the gland to exercise one of its functions strongly and in doing so must also exercise incidentally its other functions strongly, thereby producing symptoms as a result of the unnecessary but unavoidable hyperfunction. For example, we know that the pituitary body has a growth function and a carbohydrate function. Suppose that for some reason the carbohydrate function must be exercised to the limit. It is quite possible that this cannot be done without also exercising the growth function excessively as an incident. There will then be no symptoms of carbohydrate overfunction because that is needed, but the growth hyperfunction, not being needed, will produce symptoms. In a sense then gigantism could be ascribed to hyperpituitarism, but really the cause of gigantism is something that caused hyperpituitarism, the gigantism being a symptom—exactly as an hypertrophied heart is not truly a disease but a symptom. In other words, harmful hyperaction is always a secondary condition.

In considering the matter of growth, we may start with the undisputed fact that certain ductless glands have a remarkable growth-governing function. But the word, growth, commonly means three distinct things, enlargement, reproduction, and differentiation. It is really cell reproduction that is usually meant when we speak of the influence of ductless glands on growth. The long bones of a giant simply contain more cells than the long bones of a normal man, not larger cells. This is one of the three important facts to bear in mind in the present argument. *Ductless glands have an influence on cell reproduction.*

Besides the cell reproduction function, it is undisputed that certain ductless glands have very important metabolic functions. The two are by no means synonymous. Metabolism is an essential to growth, but growth (enlargement, differentiation, or reproduction) is not a necessary result of its metabolism. A cell then as a result of its metabolism (roughly that is, taking in food and giving off waste matter) may either enlarge, reproduce its kind, become differentiated, or do something else. That "something else" is the second important fact to remember. As a result of its metabolism, a cell may not enlarge nor reproduce nor differentiate, but it may, indeed if it is a cell in a normal human adult, it *must* work, and in an adult that work is not for itself at all primarily, but for the good of the whole organism. One of these four things a living normal cell of the adult human body that is taking in food and giving off waste matter must do. It must enlarge, reproduce, become differentiated, or work for the whole organism. This indeed is true for any living cell in an adult multicellular organism not in the state of rest called variously seed, spore, egg, and the like, or in such a state of rest as sleep, hibernation, or similar normal condition.

The third point is the matter of cell specialization.

It is again undisputed that certain ductless glands have an important function with reference to cell specialization, and the frequent assumption is that such ductless gland activity is the cause of the specialization. Feeding a tadpole thymus is said to cause the tadpole to enlarge, but he remains a tadpole. Feeding him thyroid is said to bring about premature adulthood with very little enlargement. But differentiation, at any rate in the human embryo, begins before the ductless glands appear, therefore it cannot be that the ductless glands cause the differentiation. In fact, that is absurd, or how should we account for the ductless glands themselves? It must be much closer to the truth to assume that the ductless glands are indeed essential to any great degree of cell differentiation, because they do something for a highly differentiated or specialized cell which that cell can no longer do for itself by reason of its being a specialist. The more a cell, or a man for that matter, specializes, the more the man or the cell is dependent on other cells or other men. An ameba does everything for itself; a peptic cell in the stomach does nothing for itself beyond taking in its food (prepared elsewhere) from the blood which brings it regularly, and giving off waste matter which is obligingly carried away for it and disposed of at the properly equipped disposal plants. Now any cell in order to live and thrive requires only two things, a proper available food supply and means for waste disposal. In the case of our peptic cell we can account for waste disposal and we know that it must get its food supply from the blood, but it is obvious that the food for a peptic cell must differ from the food of a muscle cell, or else that it must metabolize the same food in a different way, or both. As a matter of fact, it is both. The blood in all the body contains the same varieties of food, and of two given cells one may take more or less of a given variety, say glucose, than the other and may metabolize it differently, or one may decline glucose altogether, while the other takes it. A red blood cell may decline glucose, a liver cell may change it into glycogen, and a muscle cell may break it up into something altogether different; also any cell may decline it altogether if not needed and, most important in the present discussion, a cell that actually needs glucose may not be able to take it, although there is apparently plenty available. This last state of affairs is a symptom of the disease called diabetes, and it is a fact that lack of the islands of Langerhans always produces this result. In other words the island secretion is essential if certain cells are to secure their glucose. If they do not get the needed glucose, they cannot perform their special function; if they do not function they must of necessity do one of two things; die or degenerate into a simpler cell that *can* use glucose without island, but is unable to perform the special function it formerly served. The cell cannot merely stay *in statu quo ante* any more than any other specialist who stops his special work. As stated before, it must do something if it is alive and well nourished, i. e., enlarge, reproduce, become specialized, or work. Therefore in such a disease as cancer, for instance, we have cells very much alive (implying an abundant food supply) which do one of the four things—*reproduce*. Furthermore, these cells are always more or less embryonic in charac-

ter; that is, they bear a similar relation to the neighboring normal adult cells among which they appear, as do the embryonic cells from which the normal adult cells developed. They are practically embryonic cells in an adult. If one could plant some fetal stomach epithelia in an adult stomach mucosa and furnish them abundant nourishment of a suitable, but not of the specializing kind, they would necessarily reproduce because they could not remain *in statu quo ante* (which in spite of possible occasional "rests" of fetal cells, is one fallacy of the Cohnheim theory), and they could do no work for the adult organism because they are embryonic cells. We should have a cancer. But these same embryonic cells in the embryo, not only reproduce, but *pari passu* develop toward the goal of the adult stomach mucosa cells, and at a certain point in the development they stop reproducing; they cannot reproduce, and never again do they reproduce unless for some reason they *revert toward the fetal type to the point where reproduction is possible*. Such changes are clearly possible, as shown by J. Loeb in *Science* for May 14, 1915. It is interesting to note here that cancer cells transplanted into normal fetal or very young tissue will often "take" when they will not "take" in adult tissue.

Why should a normal embryonic cell in the normal embryo develop, become specialized, lose practically every elemental cell function it has, delegating it to other cells, while apparently a similar embryonic cell in an adult may keep on being an embryonic cell with the elemental functions of such a cell?

The writer's idea is that the latter phenomenon is due to failure of certain ductless glands. It has already been stated that the ductless glands appear after cell differentiation has begun. Also they develop step by step as cell differentiation becomes more complete, and they have an important function in cell differentiation. The inference from all that has gone before is that in the normal adult the ductless glands furnish something essential for the maintenance of various specialized cells, though they are not the cause of specialization. In two cases this is sufficiently proved; in diabetes, failure of the islands of Langerhans; in certain cases of inability of certain cells to use lime, failure of the parathyroids.

Suppose now in a given adult are some embryonic stomach mucosa cells; suppose a ductless gland essential to maintain properly the highly specialized mucosa cell, is failing. Plainly we could not expect the embryonic cells to develop when the ductless gland essential even to keeping intact the developed cell is deteriorating. The embryonic cell, lacking the influence of the appropriate ductless gland, simply multiplies without developing as in the thymus-fused tadpole. So the embryonic cells in an adult, with the differentiating favoring or the specialization maintaining ductless gland lacking or failing, naturally reproduces its kind indefinitely. As to how embryonic cells ever appear in an adult, a possible explanation well supported by biological and pathological findings was given in a former paper. At all events, Cohnheim's inclusion theory in the light of present knowledge can hardly hold, except in cases where cancer appears in the young. In such cases that theory might correspond to all the facts, includ-

ing the known ductless gland facts. We merely have to assume that the gland necessary for differentiation fails, or the embryonic-reproduction-stimulating ductless gland persists, or both. All these things are known to occur.

A pertinent objection arises here. If the theory is true, why is cancer usually single? Why do not all the specialized cells maintained by the failing ductless gland deteriorate into simpler less specialized cells and begin to reproduce? The answer is, deterioration does begin normally at about middle life, though multiple cancer is rare. Obviously it would be a rare coincidence if two widely separated specialized cells, both dependent on the same ductless gland, should simultaneously and at the right time with reference to the failing ductless gland reach the embryonic cell stage where reproduction is possible. Also, obviously, the particular cell or group of cells which reach this point first begin to multiply if conditions are favorable, taking the available food supply more and more as they increase, and incidentally impairing the food supply of the whole body and therefore interfering with function everywhere. But remove the cancer completely or incompletely, and what happens? If incompletely, what is left grows faster than ever (more food, of course, for the remaining cancer cells). If it is completely removed, we know how depressingly common are recurrences, either in the region of the original growth or elsewhere. Also we know that the period of "return" varies from a few days to many years. Under the theory this is no mystery, for if the essential ductless gland is failing, all specialized cells depending upon it fail also, *but in varying degrees and at various rates*, depending on heredity, food supply, function, degree of cell specialization, use, abuse, injury, and many other factors. So the original growth being removed, other cells may or may not be ready to reproduce and to pounce upon the suddenly liberated food supply. Nor need the recurrence be even under the control of the original failing gland, for if one fact is proved better than another, it is that the ductless glands are intimately connected in function, one enlarging when another atrophies and vice versa. If the suprarenal cortex regularly hypertrophies when the testicles are removed, it can mean but one thing—more work for the cortex. If the cortex overworks, like any other organ it will fail the sooner. So of thyroid and ovaries, thyroid and pituitary, and of other combinations. Therefore an ectodermic cancer removed might easily be followed in a few months by an endermic cancer.

Another curious fact is explainable by our thesis. Adams and others point out that the closer the cancer cells approximate the normally developed cells, the slower and less malignant is the cancer; and the less typical or suggestive of the normal cell is the cancer cell, the more rapid is its growth and the more malignant it is. This would mean simply that the more the gland necessary to the normal cells fails, the easier is it for such cells to revert and to revert far, and having reverted, to thrive at the expense of the organism.

I have said that in case of failure of a given ductless gland, the cells depending upon it all over the body fail, and that an interrelationship clearly exists

between the various ductless glands. Again, if our theory is true, we ought to find plenty of evidence in a cancer patient of both facts. That is exactly the case, as we may quickly determine by getting an accurate personal and family history of any ten cancer patients taken at random. In these patients, far too often to be coincidental, will be found anomalies in hair, skin, pigmentation, teeth, growth, development; and personal or family histories of such diseases as diabetes, Addison's disease, pernicious anemia, hemophilia, goitre, gigantism, cancer, and other "new growths."

For practising physicians what has gone before must submit to pragmatism. "Will it work?" "Will the theory work in medical practice?" Without now going into case histories, I can only say that with reference to cancer it does work, or appears to, sometimes; more times, not at all. With reference to such diseases as Graves's disease, pernicious anemia, hemophilia, Addison's disease, sarcoma, and other new growths, the same is true. With reference to a host of minor nutritional or metabolic conditions, splendid successes are common enough to take the sting out of equally splendid failures. Nevertheless the successes as they multiply prove the main contention, and the failures must be discounted because of our ignorance, our inability to supply the failing gland secretion in a physiological manner or often even at all; and, though convinced of the general truth of the idea, because of our groping uncertainty in a given case as to just which gland or glands are failing.

For obvious reasons the writer at present experiments boldly with this theory clinically only in inoperable malignant new growths and in such other nutritional disorders of unknown origin as are nearly always fatal; more cautiously in less vital nutritional disorders of unknown origin, and in a wide variety of lesser though obstinate nutritional ailments of obscure or doubtful origin.

In determining what gland preparation to use in a given case, he is guided by his increasingly strong opinion that each ductless gland has to do primarily with the metabolic process of specialized tissues derived from the same embryonic source as itself. The limits of this paper prevent an exposition of this idea, but the evidence is very strong. It means to say, for example, that the suprarenal cortex has to do with mesodermic tissues, the cortex being of mesodermic origin; while the suprarenal medulla, a totally different organ, has to do with ectodermic tissue. Suppose then it is a question of treating an inoperable cancer of the breast. The secretory cells of the mammary gland being of ectodermic origin, theoretically it must be a ductless gland of similar origin that is failing. Such glands are the chromaffin glands including the adrenal medulla, the pineal, and pituitary. The chromaffin glands are excluded because their function seems to be largely connected with the sympathetic nerve system (which is also by the way of ectodermic origin); the pineal is excluded because though undoubtedly it has a growth function, this is normally exerted in infancy, the gland normally like the thymus seems to have little function in adult life, and finally we know very little about it. There remains the pituitary, which seems to fill the bill; it is of ectodermic origin, it surely

has a growth function, it is active normally throughout life, it has a certain connection with other atypical growths like gigantism, with hairiness and extra teeth (hair and teeth are ectodermic), and it has an important sugar metabolism function, which function is disturbed in cancer. Finally in several of the writer's cases it stands the pragmatic test; it works.

In a similar way, by exclusion, by reasoning from known facts, and by clinical trial, in any given case of atypical growth which cannot at present be otherwise explained or otherwise helped, ductless gland therapy is systematically tried and is by no means mere haphazard guess work.

The space limit prevents a completely reasoned presentation of this thesis as well as a recital of case histories and a consideration of the matter of preparations, doses, and administration of preparations. These matters have been considered in former papers, and as data accumulate will be considered further. The difficulty in securing the theoretically correct preparations and their correct administration is great, but not impossible of attainment, and, granting the theory to be fact, easily accounts for relative clinical failure thus far. Nevertheless, even with our present equipment, it is certain that we have a check and sometimes even a control of the growth called cancer. If the theory is indeed true, it is easily understandable that implanting normal glands to replace the failing glands may be our ultimate goal.

109 PLYMOUTH AVENUE.

THE TREATMENT OF INFECTIONS OF ACCESSORY SINUS.

Including the Use of a New Instrument,

By ARTHUR MORGAN MACWHINNIE, M. D.,
Seattle, Wash.

The division of ethmoiditis resolves itself into practically three forms—acute, known as coryza or common cold, purulent ethmoiditis, and the chronic hypertrophic type described by Skillern. Writers add the acute purulent, subacute purulent, chronic atrophic and chronic purulent, and specific ethmoiditis. Theoretically this addition may be ideal, practically it is of consequence only so far as the etiological facts are concerned in pursuing treatment.

In the three divisions first enumerated we must, if possible, ascertain the etiological factors. In the acute form there is a large amount of serous exudate or a small amount of mucus. The frequent use of the handkerchief is not so marked as in the chronic purulent form. During the last few years, people are taking better care of themselves in acute conditions, realizing this necessity before the more serious form of mucopurulent infection takes place. Resolution usually occurs in about seven to fourteen days by attention to the general health, a saline purgative, sterilization of the alimentary canal with ox gall and calomel, and a depletion of the middle turbinate with antipyrin, four per cent. solution, or adrenaline one to 1,000. The object aimed at is the establishment of adequate drainage from the eth-

moidal cells, the contours of which vary greatly as to size, shape, and position. In the treatment with adrenaline, two cases have occurred during the past year where the patient has become unconscious for three minutes from its use. When it is applied locally in the nasal cavities for five minutes, it is exceptional to find any reaction. Prolonged use is apt to cause a reaction greater than the original turbescence.

In this West Coast country, the mucopurulent type is very prevalent. Many people are imbued with the idea that fresh air, regardless of the conditions under which they take it, is all that is necessary for good health. Pass any school yard at recreation time, and there may be seen children between the ages of five and ten years, well wrapped up to the neck, but with no semblance of a covering upon the head, playing in the school yards in the rain. Is it any wonder that the crop of adenoid, tonsil, and sinus infections is on the increase? In the rush for fresh air and the set idea that the more exposure they give their heads the more hardened will the cavities of the head become, discretion or common sense is thrown to the winds. The excessive dissipation of heat from the cranial cavities lowers the natural resistance to a point at which the bacteria in the inspired air find a ready soil for propagation. When the children enter a warm room afterward, reaction follows, resulting in an unusual amount of blood in the head with a transudation of serum into the sinuses; a more appropriate soil for propagation could not be imagined. It is true that this does not take place in all cases, for the natural resistance in some children is great enough to care for these additional impositions thrust upon the nasal sinuses. The old saying, "God is good to the poor," can be applied equally well to those who are injudicious.

In the mucopurulent form, the large amount of discharge necessitates the use of six or more handkerchiefs a day, if it is confined to the anterior or middle ethmoidal cells. If the sphenoidal and post-ethmoidal cells are involved, the hawking and expectoration are more pronounced.

TREATMENT.

Whatever the type of ethmoiditis, treatment always consists in establishing adequate drainage. Theoretically the treatment is as follows: Take the discharge, find the predominant bacteria present, inject the patient with the vaccine made from it, and get the sought for return to normal. My own experience and that of other workers in rhinology shows the fallacy of this theory. Whether it is due to the lack of care in making the smear, culture, slide, or vaccine, or to the personal equation, I do not know. We can always find three, four, or possibly five bacteria, and how to segregate one as the actual invader is beyond my comprehension; but with a combination of vaccines of all bacteria found, there are a few cases where the results are marvelous. Given 100 cases of the mucopurulent type, we should look to find thirty per cent. of successes from the mixed vaccine treatment.

In the examination of the various forms of ethmoiditis, thoroughness should always prevail. First, there must be an examination of the nasal

cavities from the nares to the pharynx, both the inferior and middle turbinates, septum irregularities, if present, and adenoid and tonsil tissues, if present. Second, a summary of the blood should be taken to ascertain whether the hemoglobin index is approximately normal, to find the relation of whites to reds, and to measure the blood pressure. Third, an examination must be made of the condition of the alimentary canal from the duodenum down. Where irregularities exist, every one should be corrected for the alleviation or cure of the ethmoidal discharge.

Conservative treatment to retain as much of the ethmoidal area as possible, should be the aim. In the large number of cases which we see, if the de-

Does cessation of mucopus take place following an exenteration of the ethmoidal area? It certainly does not, as frequently months of aftertreatment are required to do away with the pus formation. Often the patient becomes dissatisfied and seeks relief elsewhere, until finally Nature asserts herself in covering the exenterated area with scar tissue. Treatment, to be ideal, should follow Nature as closely as possible. We see many cases which have been operated in two or three times with complete exenteration of this area, and with abundant pus present.

Theoretically, upon removal of the ethmoidal cells, complete cessation of the discharge follows, but we are dealing with a region after operation in

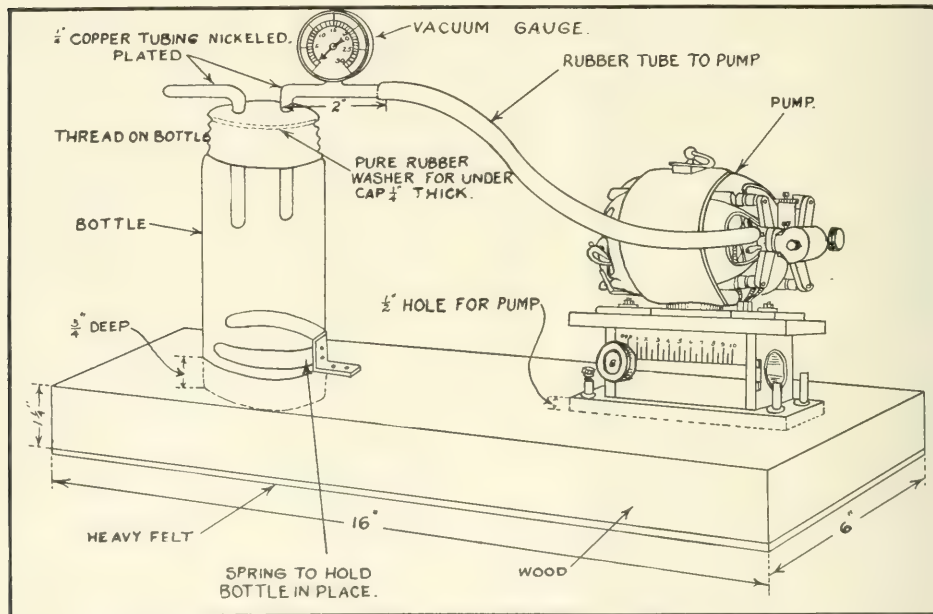


FIG. Doctor MacWhinnie's vacuum apparatus, as perfected by experimentation.

tails are taken care of, as enumerated above in conjunction with the author's instrument described below, the result will be a cure in ninety-seven per cent. of the cases and marked improvement in two per cent. There is hardly a rhinologist who has not seen so much of the middle turbinate removed that a complete change of the vocal resonance has taken place. In removing the middle turbinate, we have removed an organ which has more blood circulating through it in a given time than any other organ of the body of like size. The turbinates furnish in twenty-four hours 350 grams of heat and moisture to the inspired air, the remaining 150 grams coming from the respiratory tract below the nares. Scar tissue as the result of operation in this region adds to the work of the remaining turbinates. The result is hyperactivity of the remaining turbinates and the hyperplastic turbinate.

which the blood supply is very poor and a large area of scar tissue is needed. Resistance is at its lowest and the danger of reinfection from the nasal secretions or extension to the cranial cavity causing meningitis and death must not be lost sight of.

The operative procedure in the treatment of these chronic purulent types varies greatly. If the sinuses were in the same position and there did not exist such variations in contour, size, and partitions, we might hope for more operative success. All surgical procedures must be followed by reparative processes in a region where the blood and lymphatic supply has been reduced to a minimum. Following the traumatism, the discharge is apt to infect a greater area than was originally involved. These facts are seriously considered by every rhinologist who has made a large number of ethmoid and sphenoid exenterations. It is true that a number of patients get

well with a prolonged after-treatment, but that there is always the possibility of the infection travelling to the cranial cavity must never be lost sight of. It has been my custom for a period of two years to carry out the following treatment with little variation in all cases of acute and chronic purulent ethmoiditis, including what some writers call subacute and acute purulent, the one exception being the chronic hyperplastic type: Application of antipyrin, four per cent. solution, or adrenaline chloride with cocaine, three per cent. solution, to the ethmoid region, allowing the pledgets to stay in place until there is complete shrinkage; application of the author's suction pump with from five to twenty inches of vacuum, depending upon the susceptibility of the patient's membranes, entire cleaning of the cells, often requiring fifteen inches of vacuum; injections directly into the ethmoidal cells, by means of a very fine pipette, of fifty per cent. solution argyrol. This pipette holds about two c. c. The patient is instructed to keep this in the nose for one hour before blowing it out. In the vast majority of sinus cases, when it is expelled, large plugs of mucus come with it, and these are frequently not replaced. This procedure is carried out every day, or on alternate days, depending upon the amount of reaction, six to twelve treatments usually sufficing.

In the chronic mucopurulent types, treatment at first every day and then two or three times a week, is necessary. This treatment is continued for three or four months, the time depending upon the amount of reaction and mucopus formed.

In cases where the hemoglobin index is below par, the patient is built up with hypodermic injections of iron and arsenic. When the hemoglobin index is normal, one twelfth grain of bichloride of mercury made up with normal salt solution is injected intravenously every other day.

In all the various forms of sinus infection the patient is given three times a week, one capsule of the following mixture after the evening meal: Extract of ox gall, grains five; calomel, grain one half; regardless of whether the bowels move every day or not. Inquiry is made regarding the exact kind of food the patient eats for a period of three days. If the ration is not perfectly balanced, and we often find it is not, the deficiency is made up by giving a properly balanced one. We find that many people have a distaste for fats in any form. It is then necessary to give them a mixed fat once a day at bedtime. Where it is a deficiency of the mineral salts, it is then necessary to give a combination to overcome this.

In using the pump on the area described above, I have had constructed the apparatus shown in the figure. Fifteen minutes' intermittent use is sufficient to draw out the secretions. In many cases, however, the membranes have become so friable that the bloodvessels are easily ruptured, but this must be guarded against, the vacuum in such cases not exceeding eight inches. An increased flow of lymph and blood is the result of this treatment, the natural resistance to all invading bacteria.

This treatment has been carried out for two and a half years and has served most satisfactorily in infections of the ethmoidal and sphenoidal cavities. I am well aware that personal enthusiasm often

carries one away; accordingly, at my request, Professor Gleason, of the Medico-Chirurgical College of Philadelphia, treated a series of cases extending over six months, with my vacuum combination and his enthusiasm is as great as mine.

Considerable experimentation was necessary in order to develop a constant as well as a variable vacuum. In many cases it was necessary that the vacuum should not exceed five pounds. The plunger type of pump was tried and found wanting, and recourse was had to the oscillatory pump. The size of the tubing between the pump and the gauge, as well as from the bottle to the patient, had to be changed a number of times. The length of the tubing varies with the sitting distance of the patient; it is fitted with an olive tip which fits accurately into one of the nares. The figure shows the apparatus as perfected by experimentation.

SUITE 606, LEARY BUILDING.

GASTROINTESTINAL SYMPTOMS AND EYE STRAIN.

BY AARON BRAY, M. D.,

Philadelphia,

Ophthalmologist, Jewish Hospital; Ophthalmic Surgeon, Lebanon Hospital.

In the study of his cases, the physician is not infrequently confronted with the difficult problem of determining the active underlying cause of a given condition he is called upon to treat. It is not an easy matter to establish a definite causal relation in every case; especially is this true of conditions that are to be attributed to some remote reflex irritation. In obscure conditions, where the causal element must be accounted for by reflex irritation, the therapeutic test alone can decide the question. Some gastrointestinal disturbances must be classed in this category.

The so called functional disorders of the gastrointestinal tract where no organic changes in the stomach can be recognized, in the absence of acute or chronic inflammation, must be considered of reflex origin and not infrequently the visual apparatus may be the offending organ that reflexly causes an irritability of the stomach which gives rise to a chain of symptoms simulating an active gastrointestinal disease.

Irritability of the stomach, loss of appetite, dyspeptic symptoms after the ingestion of food, regardless of the nature of the food, dizziness, nausea and vomiting are often caused by eye strain.

Dizziness as a symptom of some ocular defect is very common. This symptom is frequently attributed by the patient as well as by the attending physician to some gastric disturbance, irregular bowels, constipation, and indigestion. There being no ocular symptoms present, and not being aware of any abnormal refractive condition of his visual apparatus, the patient does not at all suspect his eyes as an element in his dizziness. The habit of blaming the gastrointestinal canal for almost all minor ailments has become firmly rooted in the professional mind; the doctor pronounces the cabalistic formula of autointoxication and suiting his action to his thought the treatment becomes self evident.

The gastrointestinal tract is flushed by laxatives, cathartics, or purgatives, depending upon the judgment and idiosyncrasy of the attending physician, sometimes with temporary, at other times with no relief. Stomachaches are next resorted to in association with some form of rest treatment which of course has its value. But the relief is only temporary; the primary causal element has not been removed.

Dizziness may be the only complaint of the patient, but more often it is associated with headaches which may assume a severe character. Usually it is a dull headache in the frontal region. There is in this form of dizziness an absence of pain in the epigastric region, although a sense of fullness after meals may be present. Loss of appetite is a frequent correlated symptom. This is caused by the dizziness. Ocular dizziness is always aggravated by an overloaded stomach, which disturbs the muscular equilibrium so that the loss of appetite is nature's effort to prevent further complications. The ingestion of large quantities of food would not only increase the dizziness, but would bring about changes in the metabolic processes, cause indigestion, and even culminate in active gastric irritation and so produce an active gastritis. Under such circumstances the gastric manifestation requires local treatment, dietetic as well as medicinal, to alleviate the symptoms, but in order to effect a cure the ocular defect has to be corrected. This is a well established fact and requires no further corroborative evidence by means of case records.

NAUSEA AND VOMITING CAUSED BY OCULAR DEFECTS.

Nausea as a result of some ocular disturbance is not an infrequent condition. It is observed in many of the inflammatory conditions of the eye, such as iritis and glaucoma, but it is also quite often seen as a result of eye strain in cases of errors of refraction and muscular imbalance. This nausea is very often followed by vomiting, and is usually associated with ocular vertigo. This in fact may be the only symptom in cases of disturbance of the ocular balance that do not give rise to a manifest diplopia. Careful examination may show a latent diplopia, however, and an overlapping of the images. Persistent vomiting may also be caused by errors of refraction, especially of the mixed astigmatic type. The following interesting case is a good illustration of persistent vomiting after meals cured by the correction of a mixed astigmatic error of refraction:

CASE. M. A., a well developed man, complained of headaches, dizziness, and vomiting after each meal. Urinary analysis showed no abnormal condition. Had been treated by several physicians without result, and was advised to get glasses. On examination I found the external appearance of the eye normal; eye ground normal. Vision 5/12 in both eyes. Error of refraction, mixed astigmatism. I prescribed the following glasses for constant wear:

O. D.—1.00 Sph. \ominus 3.00 Cyl. ax. 160, v 5/5.
O. S.—1.00 Sph. \ominus 1.50 Cyl. ax. 50, v 5/5.

Patient reported two weeks later that the vomiting had stopped altogether. There was no question that the vomiting in this case was caused reflexly by the ocular defect.

The symptoms often may be of such severe nature as to simulate some very serious condition of the brain. I recall a case seen with Dr. Max Staller where the symptoms all pointed to a brain tumor.

i. e., severe headache, dizziness, persistent vomiting, ataxia, diplopia, but no eye ground changes; this disappeared with the wearing of lenses which corrected an existing mixed astigmatism.

Gastrointestinal symptoms of ocular origin are especially observed in children during the period of school life. Some children have regular attacks of vomiting during their school term. Some vomit every morning; others vomit after meals. Vomiting is a symptomatic expression of some organic or disturbed reflex condition of the digestive apparatus, produced by various factors which react banefully upon the vitality of the child. These children usually suffer from headaches, dizziness, nausea, and loss of appetite and are often compelled to stay away from school for a considerable length of time. Staying away from school is nature's therapeutic measure, which always affords relief. The ocular defect that gives rise to vomiting in school children is astigmatism, simple, compound, or mixed. It is my experience that vomiting in school children that is not preceded by a sense of fullness, epigastric pain or distress, eructation of gases, regurgitation of fluid, heart burn, fever and chills, is caused by an astigmatic error. These children should be carefully refracted. It is not an easy matter to convince parents that their children need glasses, especially when they can see nothing the matter with the child's eye. But the duty of the physician is clear and he must impress the necessity for glasses upon the minds of the parents, if the child's health is to be conserved.

NERVOUS INDIGESTION DUE TO EYE STRAIN.

Functional disturbances of the stomach, gastric neurosis, known also as nervous dyspepsia, is quite often caused by eye strain. We may have all symptoms of an organic gastric condition present. In fact we must remember that this reflex disturbance of the stomach may ultimately result in an organic gastric condition. Morbid function of any organ is apt to give rise to organic changes. The eye strain reflexly causes nausea, anorexia, and vomiting through irritation of the gastric nerve plexus. As a result of this condition indigestion must set in; the undigested food remaining in an irritable stomach causes further changes in the gastric secretion; hyperacidity ensues, which further irritates the gastric mucosa with the evident result that an organic condition is superadded to the primary reflex disturbance that resulted from the eye strain. This eventually may culminate in an active gastritis or even ulcer of the stomach. I am convinced that in a considerable number of cases gastric neurosis is merely a symptomatic expression of asthenopia.

Gastrointestinal symptoms of ocular origin may be caused by:

- | | | |
|-------------------------------|--|---|
| 1. Errors of refraction | $\left\{ \begin{array}{l} \text{Simple} \\ \text{Compound} \\ \text{Mixed} \end{array} \right\}$ | astigmatism. |
| | | |
| 2. Accommodative disturbances | $\left\{ \begin{array}{l} \text{Spasm of ciliary muscles.} \\ \text{Paresis of ciliary muscles.} \end{array} \right\}$ | |
| 3. Disturbances of motility. | $\left\{ \begin{array}{l} \text{Spasm of} \\ \text{Paralysis of} \end{array} \right\}$ | $\left\{ \begin{array}{l} \text{external ocular muscles.} \\ \text{of external ocular muscles.} \end{array} \right\}$ |

The degree of ocular refractive error bears no relation, however, to the severity of asthenopic reflex symptoms. In fact very often it is the minor astigmatic errors that produce the most annoying

symptoms. The heterophorias are the most productive of reflex symptoms, especially so the vertical deviations of the ocular muscles, and in correcting the ocular defects for therapeutic purposes these hyperphorias must be carefully corrected by prisms added to the combination glass that corrects the error of refraction. This is essential and must not be overlooked.

The ophthalmologist often fails to give the desired relief merely because he overlooks the muscular deviation or does not think it necessary to correct it.

There are sometimes therapeutic problems in refraction. Refraction, it is true, is an absolute science; applied refraction, however, or how to refract is an art. It is in the application of the science of refraction as a therapeutic element where difficulties arise. Here judgment and painstaking care are required. There is another element that we must consider in the art of refraction, namely, the intelligence of the patient. In applied refraction for therapeutic purposes we have to take our patient into our confidence, and the various objective tests performed require the aid of the patient, and unless the patient has a considerable degree of intelligence, the result will probably not be absolutely correct. Time, experience, care, and patience are essential to good results. In treating gastric symptoms from the ophthalmological point of view, the ophthalmologist is at a considerable disadvantage in complicated cases. The physician who attends to the medical aspect will try acids or alkalies, one drug or another as the case may be. Not so with the ophthalmologist who is often in a position to choose between two possible prescriptions that would best serve the therapeutic interest of the case, and he must decide upon one or the other. He cannot tell the patient to come back for another prescription if the first one does not give relief, although such a thing is highly probable. The fact therefore that glasses did not give the desired relief is by no means sufficient evidence that the symptoms are not ocular in origin, and not infrequently another pair of lenses gives relief. The point that I wish to impress is that in gastrointestinal disorders there is a great field for ophthalmic therapeutic measures. In fact, I feel that all patients with gastric neurosis, dyspepsia, and even chronic gastric irritation accompanied by the headache, dizziness, anorexia, nausea, and vomiting, with or without local gastric manifestation, such as fullness in the epigastrium, epigastric pain, eructation of gases, belching, and heartburn should be carefully examined for some ocular defect and carefully corrected as a routine therapeutic measure.

917 SPRUCE STREET.

Treatment of Seasickness.—Nemrich, in *Zentralblatt für innere Medizin* for December 19, 1914, reports having found atropine, a serviceable remedy in seasickness. Where the affection has become established, the drug acts only in seven or eight hours. As a prophylactic it is useful. The only unpleasant by effects noted were dryness of the mouth and pupillary dilatation. No tendency to habituation was noticed.

A STAIN FOR TUBERCLE BACILLI.

By EMANUEL KLEIN, M. D.,

Bayonne, N. J.,

Pathologist, Bayonne Hospital.

Carbol fuchsin, followed by decolorization with acid and alcohol and counterstaining with methylene blue, seems to be the only practical method for staining tubercle bacilli, to judge from the conversations I have had with practitioners of general medicine. There are many who wish to do this bit of microscopic work themselves. I am therefore not introducing—since it is not original—but recalling to mind a stain which I, among others, am using at the present time with far more satisfaction and no more effort than the method outlined above. The solutions necessary are the following:

1. Three per cent. alcoholic solution of crystal violet.
2. One per cent. aqueous solution of ammonium carbonate.
3. Ten per cent. solution of nitric acid (C. P.)
4. Ninety-five per cent. alcohol.
5. Saturated alcoholic solution of Bismarck brown of which enough is added to water to make a tincture of iodine color.

Technic.—Make the smear from sputum and fix in the usual fashion or prepare urinary sediment as that is usually prepared. Mix 1 and 2 so that the proportion is one part of 1 to three parts of 2. Then add this solution to specimen and alternately bring to steaming point over a Bunsen flame or lamp and allow to cool three successive times. Pour off excess of stain. Wash in tap water. Add 3 (the decolorizing agent). Rinse with this and follow with 4, also rinsing. Then alternate one with the other until the specimen is perfectly colorless. There is no necessity to wash. Add solution 5 for three minutes. Dry, add cedar oil and examine with immersion lens.

The tubercle bacilli stain a very pretty violet with a light brown—almost yellow—background. This factor is the chief advantage of this stain over the carbol fuchsin methylene blue. This is explained by the fact that in the color spectrum, yellow or light brown is further away from the violet than are the varying shades of red and pink from the varying shades of blue. Again, brown and red in their varying shades merge into each other so that Bismarck brown is not as good a counterstain for red as blue.

The necessity is eliminated of steaming continuously for three to five minutes as must be done with carbol fuchsin, thus in turn eliminating the disagreeable and frequently unavoidable spilling of the stain on tables and other articles.

The decolorizing process is thorough and leaves no doubt in the mind of the worker. The carbol fuchsin method is intended to leave a faint pink; there is a serious doubt in my mind whether we all know what faint pink is, compared with no color at all. Besides, when we come to examine, there can be no doubt that organisms showing in a preparation that has been thoroughly decolorized are acidfast.

This stain is just as effective for urinary sediments as for sputum, and works splendidly in ex-

aming tissues for tubercle bacilli. Proper precautions must be taken in the collection of urine for examination for tubercle bacilli as for any other stain, since it will stain smegma bacilli just as readily as carbol fuchsin. With this stain I have found tubercle bacilli in urinary sediments immediately, whereas the same specimens previously stained by users of carbol fuchsin showed none.

I have pointed out that on account of the contrast in colors, viz., violet against brown compared with light red or pink against light or dark blue, this stain is superior to the carbol fuchsin methylene blue method. Because of this fact not only are the tubercle bacilli seen better, but on account of the comparative ease of preparation, it is a distinctly time saving device, and surely that is worth a great deal. In conclusion, I wish to emphasize that this method is no more difficult than the carbol fuchsin method, nor is it more expensive, and the results are far more gratifying.

937 AVENUE C.

THE QUESTIONS OF ANTIVIVISECTION.

My Answers Thereto.

BY R. S. ROBERTSON, M. D.,
New York.

My first impulse on receiving the subjoined questions, was to throw them away; then I decided to answer them and to give my colleagues an opportunity to read my answers. For this reason I have forwarded the paper to the NEW YORK MEDICAL JOURNAL, with a request to deal with it as it deserved.

(a) Do you approve of experimentation upon human beings without the "intelligent consent" of the person or persons used for this purpose?

A quibble on words. All therapeutic measures are in a sense trials. Any medication could be called experimentation. Any measure for the good of the sufferer should be tried.

(b) If so, what persons should be used for the purpose; criminals?

(Several bills asking for criminals have been brought before Legislatures of the country. It was also recently urged by Alexis Carrel, of the Rockefeller Institute, and by G. Rambaud, M. D., of the New York Pasteur Institute.)

Why not? They are a menace to society.

(c) Defenseless persons in hospitals and in our State institutions of various kinds?

(Noguchi's report, *Journal Experimental Medicine*, published by Rockefeller Institute, December 1, 1911. The physicians of twenty-two different institutions in New York State gave their patients to Noguchi for syphilis experiments; forty-six of them were children from two to eighteen years of age.)

Yes; they are never harmed, nor can you prove that they have been.

(d) Orphans?

(*Archives of Internal Medicine*, published by American Medical Association, May 15, 1908.)

Do not quibble again over words. See answer above (c).

(e) Do you believe a State has the moral right to give one group of its citizens such power over their helpless fellow beings?

Just the same as it has a moral right to protect the public from criminals by incarcerating criminals.

(f) Animal protective societies rescue animals from vivisection experimentation; should not the unfortunate persons in various institutions of the State be as carefully protected as they?

It is not a question of protection in the same sense. Animal protection societies also save animals to kill them. Do they save persons to let them die unaided?

(g) Do you approve of animal vivisection?

Yes.

(h) Have you ever practised vivisection?

I am not in a position to do so. I do, however, gain much knowledge from those who have studied, using animals in their studies.

(i) Have you found the practice of vivisection essential in your own education?

I never could have had the education I have, had not animal experimentation been done at some time or other.

(j) Have not some of the most noted physicians and surgeons attained skill and eminence without vivisection?

No! Every surgeon is indebted to the work of some other man who has operated on animals. Every physician unconsciously uses the facts gained by others.

(k) Do you approve of vivisection for the repetition of demonstrated facts?

Yes. Do you not submit such questions as these year after year and get the same answers?

(l) Do you hold that animal vivisection alone can be relied upon, or must "the final experiment always be on man"? (E. H. Starling, M. D., F. R. S., London.)

The definition of the word experiment is "to search out by trial." So certainly if man is to be benefited by vivisection there must be a trial on him.

(m) Have valuable truths been learned by animal experimentation which could not have been learned in other ways? If so, would you be so kind as to name some of them?

Yes! How about rabies? What would you do if you could not get diphtheria antitoxin from horses? Would you care to be inoculated with smallpox by using your neighbor's virus?

(n) Will you kindly tell us from what medical school you graduated?

Cornell University.

(Signed) R. S. ROBERTSON, M. D.

271 JEFFERSON AVENUE, BROOKLYN.

DR. ACHILLES ROSE—AN APPRECIATION.

BY DAVID GILBERT YATES, M. D.,
New York.

With the passing of Dr. Achilles Rose the profession loses a unique character, and one who, though known personally to comparatively few of the present generation, left a very distinct impress on his time. A profound scholar, a clear thinker, and an indefatigable student of medicine, philology, and history, he had little tolerance for the superficial and ephemeral in medical science. He knew modern Greek as few men not of that nation know it (he always insisted that there was no essential difference between ancient and modern Greek), and his appreciation of its grammatical elegance and flexibility led to a warm advocacy of that lan-

guage as a basis for scientific nomenclature that sometimes passed the bounds of practicability. His work in this field won for him many warm friends in Greece, and it was on the voyage home from a prolonged visit to that country, where he was fêted, lavishly entertained, and decorated by the Queen, that I began to know him from the purely social side. Like most men who live the intellectual life, he was singularly simple and unaffected in his tastes and in his manner, almost austere in his habits, careless of the material rewards of his profession, generous to a fault. He had "the mind of a man and the heart of a child."

He had an intimate acquaintance with the three great modern tongues. Born a German, he always thought in that language and read and wrote it naturally, but employed it only as a scientific vehicle. For recreation he read French and Greek, rarely English literature. The English classics he read in French translations. This had its inevitable effect upon his English style, which, though forcible and direct, often lacked idiom and suavity. Whether he was conscious of this or not I do not know, but the deficiency was a serious impediment in his commerce with his fellows, who were apt to credit him with a brusqueness which was merely linguistic. This disadvantage, together with a certain inflexibility of character (he once naively remarked to the writer: "You know I come from the same town as Martin Luther, and the people from that part of Germany are well known for their stubbornness"), led to frequent misunderstandings and at last to a self imposed isolation during the later years of his life.

Of his services to clinical medicine much might be written. Several of the most valuable aids to the clinician were either his inventions or owed their introduction into this country to him. Probably the most important of these is the continuous warm bath, which humane appliance has largely superseded the older, less humane methods of restraint in hospitals for the insane. The powerful effect of the bath on the elimination of systemic and bacterial poisons is not appreciated by the profession even today.

Another subject in which he was a pioneer was that of enteroptosis, and his application of the adhesive plaster abdominal bandage, the best of its kind, according to Forchheimer, for the relief of this condition, accomplished in his skilled hands remarkable cures, based as they were on an intimate acquaintance with the influence of enteroptosis on the circulation of the liver and on the sympathetic nervous system. Of the value of Doctor Rose's work on carbonic acid I cannot speak with knowledge. His historical papers, centreing about Napoleon (his military idol) and his times, were the product of much scholarly research and wide reading, which do not appear on the surface, and were marred by his inability to command the grace of style and diction demanded by this class of literature.

But the object of this brief tribute to the memory of Doctor Rose is especially to emphasize those qualities which appealed to his intimates—his rugged simplicity of character, his thorough devotion

to his work, which he regarded as a high calling rather than a gainful occupation; his intellectual integrity, and his high type of citizenship. He fought through the Civil War as a private soldier, and I never heard him cavil at his adopted country or its institutions.

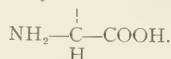
149 WEST EIGHTY-FIRST STREET.

Abstracts and Reviews.

THE PRESENT SIGNIFICANCE OF THE AMINOACIDS IN PHYSIOLOGY AND PATHOLOGY.*

By DR. DONALD D. VAN SYLKE,
Rockefeller Institute for Medical Research.

The aminoacids are now recognized as the units or *Bausteine* from which the protein molecule is built, and it is known that they are the ultimate products of hydrolysis of proteins by acids or by the actions of pepsin, trypsin, and erepsin. The aminoacids are all alike in one characteristic part of their structure—their body—which has the formula:



It is this fraction which gives these acids the chemical properties which are characteristic of them as a class. The typical features of this nucleus are the combination, through a single carbon atom, of an aminogroup with a basicity similar to that of ammonia, with an acid group which has an acidity similar to acetic acid. The differences between the several aminoacids are produced by the groups which are attached to the free valence of the carbon atom and which may be termed the heads of the acids. There are eighteen of these heads known, a different one for each of the eighteen known aminoacids.

Our present interest is concerned with the body of these acids rather than with the several different heads. The simultaneous presence in this body of aminoacid and carboxylic acid groups gives the former the capacity of linking to one another in an endless chain to give rise to complex substances like proteins and protoplasm. When the aminoacids link together through union of the acid and aminogroups, with liberation of a molecule of water, the product is known as a peptide. The peptides, in turn, are capable of combining with more aminoacids ad infinitum, for they have at one end a free amino and at the other an acid group.

The hydrolysis or digestion of a proteid consists in splitting of the peptide linkages with the formation of new acid and aminogroups in direct proportion to the extent of digestion. Accurate determination of the occurrence and extent of digestion of a protein can be made by determining either the amino or the carboxyl groups formed. Very accurate and extremely delicate methods for these determinations have been devised and are now in general use.

*Summary of a lecture delivered before the Harvey Society at the Academy of Medicine, New York, January 15, 1916.

After this brief outline of the chemistry of the aminoacids we are in a position to discuss the fate of protein digestion products in the body. The studies on which our present conception is based have been largely made with the nitrous acid method of measuring the number of aminogroups and have been guided by our conception of the relationship between the aminoacids and the protein molecule.

Upon reaching the stomach the proteins are digested and broken down to the stage of albumoses, which are soluble and are composed of shorter chains than the original proteids. These pass into the small intestine, where they are further digested by the pancreatic juice, being thereby split into short chains of two or three aminoacid groups and into aminoacids. These short chains are finally broken apart into the individual aminoacids by erepsin before or immediately after entering the intestinal wall. What happens to the individual components of the protein molecule—the aminoacids—from this point on has been a matter of theory and speculation for a number of years, but now, by means of the extremely delicate nitrous acid test for amines, we have been placed in a position to follow the course of the ultimate radicals of protein digestion farther in their travels through the body. The theory that the aminoacids were decomposed in the intestinal wall into ammonia and nonnitrogenous residues, as well as the theory that the aminoacids are at once synthesized into blood proteins, can be finally disposed of as incorrect.

We have been able, by the newer and more delicate methods, to show that the aminoacid concentration in the portal blood shortly after a meal may be double the normal concentration of these acids in the blood. And the vividiffusion experiments of Abel, Rowntree, and Turner have proved the presence of several of these acids in the circulating blood of dogs. It has been proved, therefore, that aminoacids are absorbed and circulate in the blood as such, and recent experiments in our laboratory have shown that peptides and albumoses are not absorbed from the intestine. Practically all the nitrogen derived from ingested and digested proteins is found in the portal blood stream in the form of ultimate aminoacids.

After the aminoacids have entered the blood stream they disappear from it with great rapidity. Their fate has only recently been determined. Analyses of tissues of dogs after intravenous injections of known amounts of aminoacids have shown that the several organs and tissues promptly remove all excess of them above the normal concentration. The liver is the first and most active organ in this function of removal, but the muscles, the kidneys, and other organs also remove considerable amounts. The removal by these several organs and tissues does not follow any physical or chemical law, for the acids are not found in the tissues, in even loose chemical combination, and are not present in a concentration equal to their concentration in the circulating blood. The process is called absorption for want of a more specific term.

Having traced the aminoacids from their original formation by hydrolysis of food proteins, through the intestinal wall, into the circulation and out of

the circulation, into the tissues, we must determine their ultimate fate. It has been shown that the greater portion of the daily intake of protein nitrogen is eliminated within twenty-four hours in the form of urea. It is evident, therefore, that the aminoacids find but temporary lodgement in the tissues by which they are absorbed and are, for the most part, rapidly destroyed and excreted. It is probably the liver which is the most active organ, both in the absorption and in the destruction or preparation of the aminoacids for elimination or storage as reserve protein. By experiment it was shown that the liver does not store aminoacids to any appreciable extent, but converts almost all of the aminoacids reaching it into urea as fast as they arrive. It is probable, however, that the liver is not the only tissue capable of converting them into urea, but it is certain that it is the most active normally. The liver does not wait until the tissues of the body have been saturated with aminoacids after a protein meal before destroying them, but begins their destruction at once as they reach it after absorption, and within a very few minutes after the ingestion of meat. Whether or not the liver destroys all of the aminoacids which reach it, and whether it converts a certain proportion of them into reserve protein which it stores, are points which have not yet been proved, and upon which we cannot therefore speak.

A considerable store of free aminoacids is always to be found in the muscles and other tissues, and this cannot be reduced in amount even by prolonged fasting. Chemical incorporation of the aminoacids into reserve or tissue protein does not take place rapidly after absorption of the acids from the blood stream.

Some of the lower forms of life can synthesize all of their required aminoacids from simpler substances, but such is not the case with the higher animals and man, and some of these acids which are known to be essential for growth must be obtained already synthesized from the proteins of the food supply. So far we know but little as to which of the aminoacids can be synthesized by man and which must be derived ready formed from his food. We do know, however, that lysin, tryptophan, cystin, and probably tyrosin are essential and must be obtained ready formed. We know, further, that the higher animals can synthesize some of the simpler aminoacids, such as glycolic.

The aminoacids which are not incorporated into the body are broken down by splitting off the aminogroup with the formation of ammonia and a hydroxyl acid. The ammonia is converted into urea and eliminated. The fatty acid left is then converted into glucose in the case of half of the aminoacids.

There are two fields in which the aminoacids have been thought of possible interest in pathology. The Abderhalden reaction is based on the belief in the development in the tissues of the body of specific ferments capable of attacking certain specific proteins with the liberation of aminoacids. We have spent a year, which might otherwise have been valuable, in studying this reaction in the Living In Hospital by the delicate nitrous acid test. We have

observed a large number of pregnant women and of normal controls, and we have found no difference in the results in the two groups. We may briefly state our position by saying that we do not believe that there is any such thing as the Abderhalden reaction.

Attempts have been made to use the changes in the aminoacid or urea content of the urine as indices of disturbance of liver function. Extensive experimental and clinical studies in chloroform and phosphorus poisoning in dogs, advanced diabetes, and the toxemias of pregnancy, have yielded little of value. It is true that in some cases there has been found an abnormal abundance of aminoacids in the blood or urine, but of its significance nothing definite can be said at the present time.

Contemporary Notes.

Battlefield Casualties.—In the figures for the total British losses since the beginning of the war, recently given out by the War Office, the proportion of killed to wounded, observes the *Military Surgeon*, for January, 1916, works out almost exactly in the ratio of one dead for each three wounded. This was for all the forces in all zones and classes of military activity. No differentiation for the casualties in trench warfare has as yet been given out officially, but certain reports indicate that in such warfare about one person is killed to each two wounded. These figures are interesting in comparison with the proportion of one to four which had been accepted before the war, and indicates that the kind of warfare which is being conducted bears directly on the amount and character of transportation and hospital facilities required in the zone of such warfare. Our accepted basis for estimates on the clearance of the battlefield will, like so many other standards, doubtless have to undergo material modification.

Failures among Specialists.—We cannot now enlarge upon our reasons for believing that specialism is responsible for much of the ingratitude of the present day, observes the *Journal of the Medical Society of New Jersey* for January, 1916, especially the specialism that savors of commercialism or is inadequately equipped. We only express our strong conviction, based on much thought and observation, that no doctor is fitted for a specialty until he has had five or ten years' experience as a general practitioner. If that experience cannot be had as the old time family doctor got it, it should be obtained in a hospital, where general diseases are treated, by service as a resident physician. Most failures—and they are many—among specialists have been due to faulty judgment arising often from lack of experience in general practice or lack of knowledge of other diseases as they complicate the special diseases which they treat. We believe the best solution of the problems that confront the general practitioner and the specialist in their relations to each other, is in so adjusting those relations that they shall work in hearty cooperation. Then both will do better work and call forth more gratitude from their patients.

Male Babies in War Time.—*The Medical Press and Circular* for December 8, 1915, notes that a correspondent of the *Spectator* (London, Eng.) suggests that among the newly born a marked change in the proportion of males to females has been taking place since the outbreak of war. He does not pretend that his figures are complete, and admits that those which he does present are drawn from the upper and middle classes, who advertise domestic events in the newspapers. These figures show that from August to September, 1914, the two sexes balance one another, whereas in the months from May to September, 1915, the percentages of increase of males over females were respectively as follows: May, 12.8; June, 30; July, 21.3; August, 9.4; September, 20. The point is an exceedingly interesting one. It has a strong bearing upon many aspects of the vexed question of the determination of sex. To any one with a statistical mind it is well worthy of further investigation.

The Dog as a Carrier of Disease.—Of the diseases carried by dogs, remarks *Pediatrics* for December, 1915, the foot and mouth disease is probably of the greatest interest at this time. In this case the dog acts as a mechanical carrier of infection. The dog which runs across an infected farm easily may carry in the dirt on his feet the virus of the most contagious of animal diseases to other farms and thus spread the disease to the neighboring herds.

There are, however, many other maladies in the spread of which the dog takes an active part: Rabies, hydatid, ringworm, favus, tapeworm, roundworm, and tongueworm are often conveyed to human beings in this way. It occasionally happens also that the dog carries fleas and ticks, transmitting bubonic plague or the deadly spotted fever in this way. Hydatid disease is caused by the presence in the liver, kidneys, brain, lungs, and other organs, of a bladder worm or larval tapeworm. A dog which is allowed to feed on carrion or the raw viscera of slaughtered animals may eat a bladder worm containing numerous tapeworm heads. These tapeworm heads develop into small segmented tapeworms in the intestines of the dog. The tapeworms in turn deposit eggs which are passed out in the excrement of the dog, and spread broadcast on grass and in drinking water where animals can eat them and thus become infected. The hog is particularly liable to this disease because of its rooting habits.

Of the external parasites which dogs may carry to animals, fleas and the various kinds of ticks are both troublesome and dangerous. The remedy is clear. The owner must keep his dog clean, not merely for the comfort and happiness of the dog, but to prevent it from becoming a carrier of disagreeable and dangerous vermin. These reasonable measures, important to the stock farm, have a direct connection with the health of the family. Where ringworm or other skin diseases break out among the children, or the worm parasites develop, it is well to determine whether a dirty or uncared for dog may not be carrying infection on his skin or his hair, or conveying disease from carrion.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JANUARY 29, 1916.

THE NEGLECT OF THE AGED.

The much neglected study of the aged, their care, and their treatment has at last found definite expression in the organization of the New York Geriatric Society, which has had its first meetings. That the period of the beginning of life should be receiving so much attention, practically most of the attention of the medical profession, and much more from lay workers, while the period at the end of life, the period of age, is allowed to slip into oblivion, neglected, unstudied, and misunderstood, is, to say the least, not consistent. True, the human being during its early life is the most helpless of animals, and the longest helpless, and his very existence, let alone his subsequent usefulness, depends upon the amount of care born of proper study, accorded it. The child's uselessness is only such in the externally material; intrinsically it is a great builder, and a most rapid one. Development is most rapid in infancy, less in childhood, least in the adult. The aged, instead of building up, are destroying, slowly, to be sure, but certainly nevertheless. If this destruction is very rapid, the aged can become more helpless and in need of greater care than the child.

On the other hand, hardly any amount of helpless age, except, perhaps, in the demented conditions, will leave a wholly unproductive mind. Indeed, mental activity usually far outlasts other functional activities. The aim of geriatric endeavor is to afford

an opportunity for lengthened mental activity unhampered by bodily infirmity, to prolong the period before age can rightfully be said to have set in, and, when age has set in, to maintain mental activity through harmonious organic functioning. Age, it is to be remembered, is the period of slowest decline; the aged age more slowly than the young. It is better, perhaps, to prolong the period of health and efficiency from maturity than to force an early maturity. An early maturity not infrequently means an early decline, in which there is neither the intrinsic activity of early life nor the extrinsic productiveness of later life.

Life has been prolonged by the progress in methods of preventive medicine from an average period of twelve years, which obtained in the dark ages, to the present average of nearly fifty years. It is not enough, however, merely to prolong life; with it we should prolong the period of usefulness and physical ability and so do away with the dread of old age; for it is only with the prolongation of life that the problem of age becomes a pertinent one. All die young who die during a period of productiveness. Geriatrics resolves itself into the study of the conditions necessary to make the period between maturity and death as long as possible and as comfortable and as productive as possible; and the period of helplessness as short as possible.

While there are no special pathological conditions peculiar to the aged other than those of general fibrosis consequent on, or perhaps causing the disappearance of parenchymatous tissues, it is universality of this fibrosis which causes the general disability and discomfort. On the other hand, fibroid changes in all organs should proceed equally, so that decline will be as symmetrical as development. Any extraordinary adverse conditions applied at this period to a particular organ hasten fibrosis; and it is especially against this one sided process that the aged must be protected. Eternal vigilance is the price of safety.

MEDICAL SALARIES.

A steady job, with a salary, is more attractive to some physicians than the irregular work and uncertain returns of practice. The young doctor who is in search of a salaried position must, however, not expect too large an income; for certainly the average employer will not, even if that employer is himself a physician, pay him a large sum.

Not long since there appeared in a medical journal an advertisement for a "physician with horse," at the magnificent salary of \$500 for both man and beast. It was, of course, expected that the doctor be a graduate of a first class college, with hospital experience, etc., and, while no specifications were

made in regard to the horse, he was at least expected "to go."

While this is an example of a modest offer, it shows the too expectant young medical man the way the wind blows. It matters not how much time and money he has spent on his education, he cannot set the price, and the price is low.

The medical inspection of schools offers a considerable number of salaried positions—perhaps the largest number of full time positions—but the pay for this work will not average more than \$1,200 per annum, or far less than is paid to many teachers and principals of schools. In the United States public health and military services the salaries are more nearly adequate, but such work has disadvantages which make the pay less than it seems.

Whatever the income may be from the practice of medicine, that from salaried offices is certainly small, and it is well for the seeker after salaries to keep the fact in mind and avoid disappointment.

WOMEN IN MEDICINE.

Two distinguished physicians recently carried on an animated controversy in one of the secular papers, as to the biological fitness or unfitness of women for the successful practice of medicine. As in the present ground hog war, neither side was able to overcome the other by convincing argument; but doubtless each was confirmed, by the tilt of arms, in his belief in the infallibility of his own theory.

While it is not to be doubted that women are best able, in the capacity of nurse, to care for the sick, and are biologically fitted to stand a strain of prolonged bodily and mental activity that would floor their brothers, it is most significant that while many women take up the arduous duties of nurse, few of them enter the medical profession. Women are pushing into every sort of employment that offers them opportunity, and that they are not rushing into the profession of medicine proves either that this work is distasteful—which amounts to their being unfit for it—or that they do not make a success of it, which may be attributed again to the same reason.

The theorists at the head of the woman movement, notably the committee of the Collegiate Alumnae Association, in looking over the field of employment and finding comparatively few women in the medical ranks, have jumped to the conclusion that, because their numbers are few, there must be a great lack of women physicians; and the president of a prominent college for women, following this hypothetic lead, announces in his recent annual report that there is a crying demand for women physicians. We have never heard that, in this country, there has ever been in reality any such demand for women physicians,

and when there is, we may be sure there will be enough of them to supply it, unless women do not feel themselves fitted for, and attracted toward the profession. If they are not so attracted, they should certainly not be forced into medicine by their sisters.

There is apparently a large field for women physicians, and that is in the countries of Asia in which male doctors are forbidden to treat the other sex; women physicians are doing a noble work in those lands. They deserve all credit for it. If, however, men were allowed to treat the sick women of these countries, might there not be less demand for women doctors?

In painstaking laboratory work women trained in medicine have proved very efficient, though even here the supply seems ample; but for general practice in this country there are too many men and seemingly there is no dearth of women.

Whether women are constitutionally, mentally, and morally less fitted for the work of the physician and surgeon than men, we dare not attempt to say, for fear, in this day, of the consequences of our temerity. At this writing we are only stating the facts of supply and demand in the medical markets of this country.

THE ANTISYPHILITIC TREATMENT OF EPILEPTICS AND IDIOTS.

Idiocy and epilepsy are frequent results of syphilis, and it seems that a specific treatment is indicated in all cases where symptoms or lesions of a luetic nature or dystrophic stigmata exist. What is still more interesting is to know whether we should institute specific treatment in the absence of any former manifestation of lues in a subject in whom there is a positive Wassermann. Clearly, if we are dealing with a subject who has attained adult age, or nearly so, it would be wrong to prescribe mercury merely on the pretext of preventing what is no longer preventable, namely, the various dystrophies, arrest of development, or the considerable bodily waste produced by a long standing epilepsy.

But if the subject is young or still in childhood, the diagnostic indications obtained from a complete clinical examination, including a Wassermann, may very likely offer therapeutic indications of great interest. For example, take a child just born, with a large head and whose blood gives a positive Wassermann; it is more than probable that the large head will end in hydrocephalus. Another child is found unable to walk at the proper age or can only articulate a few syllables when he should talk. Or, again, a subject remains infantile at the age of puberty, or another's teeth hardly appear before they begin to decay. In such cases a positive Wasser-

man should be an indication for specific treatment.

In dystrophic states and epilepsy of parasyphilitic nature, specific treatment may have a happy influence, and Fournier pointed out that this treatment has lessened or even overcome certain hereditary syphilitic dystrophies. Therefore, it may be said that in a child suspected of hereditary syphilis, a positive Wassermann should preclude hesitation because specific treatment is clearly indicated.

But how are we to suspect hereditary syphilis in a child when idiocy or epilepsy is the only manifestation? The answer is plain. We should suspect it always and resort systematically to the Wassermann reaction. These deductions may be pushed still further, and when a child is considered to be an hereditary syphilitic, the parents should be submitted to treatment in order to eliminate the possible influence of heredity in future pregnancies.

It is of common occurrence for treatment greatly to lessen or even neutralize the influence of heredity, and it has been also demonstrated that this neutralizing action manifests itself in hereditary parasyphilis as well as in true hereditary syphilis. It may also be said that specific treatment should be tried on the woman whose child is under treatment, if she becomes pregnant, and observation has shown that, under these circumstances, the offspring may be born untainted, although, unfortunately, fully successful results are rather the exception, because the damage is already wrought at the very beginning of fetal life.

Thus the great importance of the Wassermann reaction is seen and already cases are numerous which show that specific treatment may stamp out certain dystrophies, allow the intelligence to develop normally, and reduce or even cause disappearance of the epileptic attacks, whether they form a part of the clinical picture of idiocy or have arisen in a child supposedly normal.

HYDROCYANIC ACID AS A FUMIGANT.

The wider practical application of an old and efficient fumigant is an event second in importance only to the discovery of a new one. Such an event is worthy of notice. The Public Health Service has of late made extensive use of hydrocyanic acid in antiplague work, and with good results. Recently Creel and his associates (*Public Health Reports*, December 3, 1915), by a series of practical experiments, have shown the value of this gas and given much useful information as to methods of applying it.

The value of this agent as an insecticide has long been known, but, by reason of the danger to human life and the expense, its use has been so much re-

stricted as to prevent its application except within narrow limitations. Experience having taught its value in antiplague work, where the destruction of rodents and rodent parasites is paramount, a demand arose for more knowledge as to its relative penetrating power, necessary time of exposure, cost of production, and the danger to human life involved in its practical use.

From the results of their experiments, Creel and his coworkers seem to have made it evident that we have in hydrocyanic acid a valuable insecticide for practical use. It does not attack metals and fabrics. A much less quantity of material than heretofore recommended is found efficient, and the commercial products are as satisfactory as the chemically pure ones, thus greatly reducing expense. The gas possesses greater penetrating power than sulphur dioxide gas, is generated more rapidly, and the necessary time of exposure is less, being only one hour. It has, as is known, very feeble germicidal powers and is unsuitable as a disinfectant. The element of danger to human life, while it must be taken into consideration, is certainly not so great as has been generally believed. For the avoidance of trouble, care is necessary; but experience has shown that a wide practical use may be made of this agent without serious accidents. This gas will doubtless prove a welcome addition to the list of fumigating agencies at the command of the sanitarian.

SOME COMPLICATIONS OF VESICAL DIVERTICULA.

Infectious complications in vesical diverticula are not uncommonly met with and their gravity is well known. The infection may be limited to the diverticular cavity, giving rise to what is usually termed a diverticulitis; but the great danger resides in the fact that it often extends to the upper urinary tract, causing serious pathological changes. A diverticulitis may exist without cystitis, but when inflammation of the bladder occurs, it can be controlled by appropriate treatment, while the cavity of the diverticulum, on account of insufficient drainage, contains stagnating urine with development of bacteria.

Clinically, the symptoms of inflammation of a diverticulum are those of cystitis, but certain signs belong to it exclusively, such as alternating cloudy and clear urine; the voided urine being clear, purulent urine can be afterward withdrawn by catheter. A diverticulitis may sometimes become acute, recalling by the intensity of the local and general symptoms, a perivesical abscess. The inflammatory process rarely leads to gangrene or perforation, but should this take place, the situation becomes critical. As in rupture of the bladder, the prognosis is gov-

erned by the absence or presence of adhesions binding the diverticulum to the surrounding viscera. When they exist, the adhesions limit the extent of the infection and prevent it from involving the peritoneum.

Infection of the upper urinary tract is favored by compression of the ureter by the pocket, and should the ureter be completely obstructed a pyelonephritis ensues. Another serious infectious complication is a thrombosis of the iliac vessels. Calculi, too, are a common complication when the diverticulum is the seat of infection. In this case the calculi are phosphatic in composition and may reach a considerable size. Uric and oxalic acid stones have also been found. The symptomatology varies greatly and it is only by the cystoscope that we become certain of the true nature of the process. Radiography will also be of help, but may give inexact data as to the number of stones. Intradiverticular neoplasms are rare and are discovered only by the cystoscope. Clinically, the growth gives rise to severe hematuria, which, if intermittent in character, leads to suspicion of a renal origin.

Being thus aware of the great number and variety of complications to which a vesical diverticulum is heir, as well as their ordinarily serious nature, it behooves the surgeon to be on his guard in every case in which a diverticulum has been discovered. Diverticula should not be allowed to remain, as removal of these congenital defects may be accomplished with success, particularly when taken in hand before complications have supervened.

FAKED ALBUMINURIA.

Minet (*Presse médicale*, Jan. 6, 1916) communicated to the Société de médecine de Paris, on December 10, 1915, a note on the fact that albuminuria may be simulated by introducing albumin into the bladder via the urethra; the trick is not common among soldiers, but is met with among working men. Detection should follow instructions to urinate into two glasses with an interval between the acts; the second glassful of urine will contain little or no albumin. A more accurate test is to have the suspect urinate until the bladder is about half empty, then to withdraw the remainder of the urine by catheter and examine it.

News Items.

Frederick Forchheimer Chair of Medicine.—The formal inauguration of the Frederick Forchheimer Chair of Medicine at the University of Cincinnati, and the installation of Dr. Roger Sylvester Morris as Frederick Forchheimer professor of medicine, took place on Friday evening, January 28th.

The Harvey Lectures.—The next lecture in the course will be given on Saturday evening, February 5th, at the Academy of Medicine, by Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research, his subject being Spirochetes.

Pathological Society of Philadelphia.—Dr. A. E. Taylor was elected president of this society at the recent annual meeting, and other officers were elected as follows: Dr. Herbert Fox, vice-president; Dr. O. H. P. Pepper, secretary and treasurer; recorder, Dr. John A. Kolmer; curator, Dr. Robert A. Keilty.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, February 1st, Laryngological Society, Medical Examiners' Association; Wednesday, February 2d, Physicians' Motor Club (directors), College of Physicians; Thursday, February 3d, Obstetrical Society, Southeast Branch, County Medical Society; Friday, February 4th, Kensington Branch, County Medical Society.

Physicians' Motor Club of Philadelphia.—At the recent annual meeting of this organization, the following officers were elected to serve during 1916: President, Dr. S. Leon Gans; first vice-president, Dr. John J. Robrecht; second vice-president, Dr. Charles A. E. Codman; third vice-president, Dr. Charles R. Haig, Jr.; secretary, Dr. Howard A. Sutton; treasurer, Dr. Lewis H. Adler, Jr.; directors for four years, Dr. Theophile J. Ellinger and Dr. Edmund S. Saylor.

A Department of Dentistry at Columbia University is under consideration. It is planned to establish a school of dentistry on a highly scientific plane, which will be closely allied with the medical school, the requirements for admission conforming to the standards and previous academic training as required for medical students. The program of studies for the first two years will be practically the same as that in the medical department, the remaining two years being given wholly to dental practice.

Phi Delta Epsilon Club of New York.—At a regular meeting of the club, held on Thursday, December 30th, the following officers were elected to serve for the year 1916: President, Dr. Aaron Brown; first vice-president, Dr. Leopold Marcus; second vice-president, Dr. Morris Grossman; treasurer, Dr. A. Noah Schiller; secretary, Dr. Felix Graboff; financial secretary, Dr. Jacob Grossman; historian, Dr. E. Seward Benjamin; librarian, Dr. A. S. Blumgarten; governors, for one year, Dr. S. Klemberg and Dr. A. C. Schwenk; for two years, Dr. Joshua H. Lerner and Dr. A. J. Bellar; for three years, Dr. M. B. Gordon and Dr. J. Braun.

The de Roaldes Prize.—The American Laryngological Association announces that the de Roaldes Prize, a gold medal representing \$100, is now open for competition to practitioners in regular standing in the United States and Canada, who are not members of the American Laryngological Association. The object of the prize is to encourage the advancement of the sciences of laryngology and rhinology. Essays must be typewritten, the customary means taken to prevent the disclosure of the author's name, and they must be in the hands of the secretary of the association, Dr. Harmon Smith, 44 West Forty-ninth Street, New York, prior to April 20th. Dr. D. Bryson Delavan is chairman of the prize fund committee.

Personal.—Dr. W. F. Mathews, of Brooklyn, has been appointed health officer of the Port of New York, to succeed the late Dr. J. J. O'Connell.

Dr. Charles P. Henry has resigned as health officer of Reading, Pa.

Dr. William R. Holony, of Los Angeles, has been elected president of the California State Board of Medical Examiners, and Dr. A. M. Smith, of San Francisco, vice-president.

Dr. Bertha Van Hoosen, of Chicago, was the guest of honor at a dinner given by the Blackwell Medical Association, of Detroit, on Friday, January 14th.

Dr. H. Holbrook Curtis, of New York, one of the founders of the National Institute of Social Sciences, was presented with a silver loving cup on the occasion of the annual dinner of the institute, Friday evening, January 21st.

Dr. A. C. Kimberlin, of Indianapolis, Ind., contributed \$5 to the fund being collected by the Committee of American Physicians for the Aid of the Belgian Profession.

New Hospital Established in Detroit.—The Detroit Eye, Ear, Nose, and Throat Hospital was recently established in the Shurly Building, which is situated in the downtown section of Detroit. Dr. Burt L. Shurly is at the head of the staff and is assisted by Dr. W. R. Hamilton and Dr. W. A. Defnet. Among the physicians on the consulting staff are Dr. Eugene Smith, Dr. Frank Walker, Dr. W. A. Spitzley, Dr. A. P. Biddle, and Dr. Preston M. Hickey.

Health Department Clinics for School Children.—On January 1st the Department of Health of the City of New York reorganized its various clinics for school children. In conformity with the decision of the Board of Estimate the operative treatment of adenoids and diseased tonsils has been given up entirely. The eye clinics and dental clinics will be continued under the jurisdiction of the Bureau of Child Hygiene of the department, but will be held in certain school buildings throughout the city, to save the expense of renting premises for the purpose.

Child Labor Conference.—The National Child Labor Committee announces that the annual conference on child labor will be held in Asheville, N. C., February 3d to 6th. The general topic for discussion is Safeguarding American Childhood, and special attention will be given to the Keating-Owen child labor bill which has been referred to the House Committee on Labor. Local problems relating to child labor will be studied, and the effect of child labor on health, education, and industry will be discussed. Standards of factory inspection will also be considered. All State health officers and factory inspectors and school officers have been invited to attend the conference, and each State has been asked to send from one to five delegates.

New Officers of the Philadelphia County Medical Society.—The following officers have been elected to serve for the year 1916: President, Dr. John D. McLean; first vice-president, Dr. William N. Bradley; associate vice-presidents, North Branch, Dr. Daniel Longaker; South Branch, Dr. J. Evans Scheehle; Kensington Branch, Dr. Thomas I. O'Drain; West Branch, Dr. A. Wiese Hammer; Southeast Branch, Dr. Jacob Levy; Northeast Branch, Dr. Charles N. Sturtevant; Northwest Branch, Dr. Harry B. Wilmer; secretary, Dr. William S. Wray; assistant secretary, Dr. Elmer H. Funk; treasurer, Dr. Edward A. Shumway; additional censor, Dr. Lewis H. Adler, Jr.; additional directors, Dr. Henry D. Jump, Dr. John F. Roderer, Dr. Frank C. Hammond; to fill vacancy caused by resignation of Dr. G. Morton Illman, Dr. Benjamin F. Devitt.

Public Lectures on Disease Prevention.—A course of free lectures on the prevention of disease will be given by the Public Health Education Committee of the Medical Society of the County of New York, at the New York Academy of Medicine, on alternate Tuesday evenings and Thursday afternoons, from February 1st to March 23d. On Tuesday evening, February 1st, the subject selected for consideration will be Nerves in Order versus Nerves in Disorder, and the following addresses will be delivered: Nerves Out of Tune, by Dr. Thaddeus Hoyt Ames; Surge Control, by Dr. Mary Sutton Mack; Nerves of the Surgeon. Family, Nurse, and Doctor, by Dr. William Seaman Bainbridge. On Thursday afternoon, February 10th, Childhood Conditions will be discussed, the speakers being Dr. Abraham Jacobi and Dr. Godfrey R. Pisek.

The Death Rate of New York City.—According to official reports of the Department of Health of the City of New York for the week ending January 22, 1916, the mortality from influenza and pneumonia is decreasing. During the week 1,760 persons died in the city of New York, compared with 1,458 during the corresponding week of 1915. This increase of 302 deaths raised the death rate for the week 2.37 over that of the fourth week of 1915, the respective rates being 15.99 and 13.62. There were reported 501 deaths caused by influenza, bronchitis, and pneumonia, 209 deaths more than during the corresponding week of last year, but 58 fewer than the previous week this year. In other words, the outbreak of gripe and pneumonia appears to be definitely on the wane. Heart disease and nephritis showed an increase of 41 deaths. The acute infectious diseases showed a very slight increase, to wit, 7 deaths. The mortality of tuberculosis on the other hand, was lower the past week than during the corresponding week of 1915. During the first four weeks of 1916, the death rate for the city was 16.47; the rate for the corresponding period of 1915 was 14.89.

A General Assembly of the Faculties of Columbia University was held at the College of Physicians and Surgeons, Medical Department of Columbia University, Friday evening, January 14th, for the purpose of inspecting the teaching and research laboratories, the Sloane Hospital for Women, and the Vanderbilt Clinic. Addresses were made by Dr. Samuel Lambert, dean of the medical faculty; Dr. Francis Carter Wood, director of cancer research; Dr. George S. Huntington, professor of anatomy, and Dr. A. V. S. Lambert, associate professor of surgery.

The American Medicopharmaceutical League.—A regular monthly meeting of the executive committee of this organization was held on Monday evening, January 24th. After the election of new members, Dr. Samuel F. Brothers, corresponding secretary, announced that 732 members had been elected during the past thirty-three months. He also reported that three papers had already been submitted for the eighteenth annual meeting to be held on May 22d. It was the sentiment of the meeting that the league should cooperate with other medical organizations in furthering Commissioner Kingsbury's work in employing salaried physicians in city hospitals and dispensaries. The members present also fully approved of the importance of instruction on proper care of the teeth and the gums in the prevention of disease. The next meeting of the executive committee will be held at 516 West 140th Street, New York.

A Low Death Rate in New York State Last Year.—The State Department of Health has made public a summary of returns of births and deaths for the State for 1915 with the death rate computed on the new estimate of population furnished by Samuel L. Rogers, Director of the United States Census Bureau. The deaths numbered 145,552, giving a death rate of 15.0, the lowest death rate in the history of the State. The rate for New York city was 15.1 compared with 15.0 for 1913 and 1914, and 14.9 for 1912.

The rate for the State outside of New York city was 14.9 compared with 15.2 for 1914 and 15.8 for 1913. The average death rate for the three years preceding 1913 was 15.9, or exactly one point above the rate for 1915. The 0.9 point reduction this year over 1913—the last year before the reorganization of the State Department of Health—computed on a population outside of New York city of approximately 5,000,000, means a reduction of deaths actually occurring of 4,500.

The Present High Cost of Drugs Unparalleled.—The high cost of living has been a common topic of discussion for some time past, but the high cost of being kept from dying bids fair to exceed it. The present high prices of drugs and chemicals have never been equalled even in the times of our own Civil War. The following list, which has been prepared from authentic material by the Publicity Committee of the Pennsylvania Pharmaceutical Association, shows some of the more remarkable jumps in price, comparing the prices of July, 1914, at the time of the outbreak of the European war, with the high point reached since then:

	Increased		Increased
Acetanilide	300%	Antipyrin	300%
Belladonna	700%	Carbolic acid	100%
Caffeine	250%	Calomel	200%
Wood tar	200%	Xantholene	500%
Phenolphthalein	100%	Pilocarpine	150%
Potassium bromide	1500%	Potassium permanganate	700%
Quinine	1200%	Saccharin	600%
Sage	200%	Scheele's acid	200%
Solid	800%	Thymol	600%

In some of these instances, as in the case of belladonna, the rise in price is due to the fact that this drug is largely cultivated in and exported from Germany and Austria. In the case of the coal-tar products the reason is found in the use of many of the basic substances in the manufacture of explosives; thus, carbolic acid is largely used in making the explosive known as picric acid, sometimes called lyddite, and all available stocks are being diverted to that use so far as possible. Quinine is high in price because so much is used in the treatment of febrile conditions arising in troops exposed in the trenches.

Every time a pharmacist refills an old prescription at its original price, the chances are he is losing money. There is no class of substances in which the rise in price has been so little felt by the consumer and largely equalized by the taking of smaller profits as in the case of drugs. This condition, however, cannot continue indefinitely, and drugs and medicines are bound to rise much higher in price if the war continues.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE CORPUS LUTEUM IN THERAPEUTICS,

By LOUIS T. DE M. SAJOUS, B. S., M. D.,
Philadelphia,

Associate Professor, Experimental Therapeutics, Temple University.

Investigations having for their purpose to identify and isolate the active constituent of the corpus luteum have been numerous, but only in a relative degree fruitful. Iscovesco, of Paris, has extracted from the corpus luteum as well as the entire ovary a number of lipid substances, one of which, a yellowish waxlike body, soluble in oil, was found to exert a pronounced stimulating action upon the genital system, injections into young female rabbits causing a striking enlargement of the ovaries and uterus to several times the size noted in control animals. He believes the lipoids isolated by him to represent the active internal secretion of the ovary, and produces evidence to the effect that the most active of the lipoids exists both in the corpus luteum and in the remaining tissue of the ovary. Some investigators, on the other hand, cling to the older view that the active ovarian principle is a protein substance occurring in conjunction with a lipid or lipoids. Herrmann, in a recent research, obtained from the corpus luteum, as well as from the placenta, a thick yellow oil, which turns brown upon oxidation in the air and powerfully excites the growth of the reproductive organs. In common with Frank and Rosenbloom, he believes that the active substance is not a lipid, but is simply carried along with the lipoids when these are extracted from the luteal tissue as a whole. Thus no preparation of an active principle of the corpus luteum is as yet available for therapeutic use, unless the lipid preparations of Iscovesco, already used by him with satisfactory results in clinical work, are to be considered such. The material now chiefly employed consists of the dried corpora lutea of cows or sows, exhibited in tablets, capsules, or cachets in doses of five to ten grains three times a day. The dried substance represents usually about five to six times its weight of fresh luteal tissue. Preparations made exclusively with the corpora lutea of pregnant animals are considered the most efficient.

Corpus luteum therapy has been applied chiefly in disturbances of menstruation and for the removal of the symptoms of the menopause, physiological or artificial, such as hot flashes, spells of perspiration, psychoneurotic manifestations, digestive difficulties, vesical irritation, etc. The best results have been obtained in the climacteric group of cases. Marked, though not always complete relief is usually experienced by these patients, the use of the remedy for an indefinite period being, however, necessary if permanency of result is to be secured. Dannreuther has reported two cases of pruritus vulvæ associated with the menopause in which the itching was

relieved with striking promptness by corpus luteum. He urges routine administration of the drug in all cases approaching the menopause as well as after hysterectomy and oophorectomy, whether partial or complete. In some cases where but one ovary has been removed, compensatory activity by the other proves insufficient; corpus luteum therapy under these conditions is likely to prove beneficial.

Menstrual disturbances amenable to corpus luteum include, in particular, functional amenorrhea and dysmenorrhea of ovarian origin. Among patients with the former condition Dannreuther lays stress on the slightly obese, anemic, pale type of young woman who begins, soon after puberty, to complain of headache, malaise, nervousness, and constipation, together with scanty menstruation and, possibly, acne vulgaris. In such patients, by combining corpus luteum with hygienic treatment and tonic remedies, marked general improvement as well as stimulation of the menstrual flow can often be secured. Leighton reports excellent results from the use of corpus luteum in a certain proportion of cases of dysmenorrhea, in particular those showing symptoms of ovarian insufficiency, such as irritability, malaise, depression, headache, and scanty menstruation, with pain, especially on the first day of the period. This observer has become convinced that there occur cases of dysmenorrhea of which the chief cause is deficient action of the natural corpus luteum; the striking effect of the remedy in these patients would thus easily be accounted for.

Additional conditions in which corpus luteum has proved beneficial, though less consistently than in the disorders already referred to, are sterility, infantism of the reproductive organs, repeated abortions, and hyperemesis in the early months of pregnancy. Sterility is, of course, influenced only in the absence of gonococcal or other infection as well as of cervical stenosis. Elliott has reported the case of a married woman of twenty-seven years, masculine of figure, with uterus of walnut size and ovaries palpable, menstrual show only three or four times during life, epistaxis, and sexual feeling almost absent, in which corpus luteum therapy, coupled with uterine massage, was followed by a partial return of menstruation and by pregnancy. Dannreuther found the drug of similar value in two cases of repeated abortion of obscure origin. In the hyperemesis of pregnancy corpus luteum has been employed by a number of observers with variable, but often distinctly favorable results.

The two most important prerequisites to success in the use of this drug appear to be: 1. The selection of a preparation made exclusively from the corpora lutea of pregnant animals, and, 2, due attention to the fact that the action of the drug is frequently slow in asserting itself, and that the drug should be given up only when thorough trial has demonstrated its lack of efficiency.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Olivet, Mich.

Department of Biology, Olivet College

Fourth Communication.

ALCOHOL.

Certain things are fairly well known about the pharmacodynamics of alcohol, even if a few others are more or less speculative. The latter constitute an inevitable subject for debate, and even the former are vigorously challenged by interested partisans. Perhaps no subject outside the domains of theology and politics has so irritating an effect on some audiences as that of alcohol. We might easily carry the simile farther and safely assert that the inflammatory reactions are due far more to passion than to reason.

Not more than a decade ago, alcohol, in the form of whiskey, brandy, or champagne, was a sheet anchor for a multitude of physicians confronted with serious cases of hectic debility. Gradually pseudo-essences of peptones were submitted, the prescribers not being totally unmindful of the constantly high alcohol content. Recently, however, the enlightenment issuing from experience, as well as from experiment, has led an increasing number of practitioners and hospital authorities to discard alcohol entirely as an internal medicine, reliance now being placed on more physiological means for assisting nature in recovery.

In considering to what extent alcohol shall be used as a medicine, it is highly desirable to see, first, if the pharmacodynamics of the drug disclose a logical availability, and, second, if this particular drug is better than possible alternatives.

On the central nervous system alcohol is a general depressant, acting first on the highest and hence least stable areas, and then progressively depressing all the nervous functions in reverse order to their evolutionary development. Naturally, numbing of the higher sensibilities reduces the field of consciousness, but when is this particular result in this way desirable? If an analgesic is really indicated, alcohol is certainly not the best available; if a hypnotic is demanded, other drugs possessing a more quiet efficiency will give the physician better satisfaction. Viewed from practically any angle it seems that there is no really good reason for using alcohol for its effect on the nervous system. To be sure, a certain Cambridge (Mass.) professor has advocated drowning the laborer's discontent and weariness in beers and light wines, but such immaturity of judgment has reference to social rather than to immediately medical issues.

Alcohol diminishes the capacity for accurate muscle coordination, but therein exists no therapeutic indication. No constant change is experimentally determinable in the effect produced on the heart, blood pressure, or respiration by moderate doses of alcohol, so it cannot here be rationally employed for any assumed medicinal effect. Alcohol lowers bodily temperature through cutaneous vasodilatation, but why employ so powerful a drug when so simple and

effective an alternative as cool sponging is always available?

Alcohol has been advocated as a food because of its readiness of combustion in small quantities in the tissues, but is not this possible advantage outweighed by the decreased resistance to infection engendered by alcohol? In other words, are the deleterious systemic effects of the drug adequately counterbalanced by the moderate saving it may insure in protein catabolism? This is a question whose answer ought always to precede decision.

Alcohol is a good hardener of the epidermis and may thereby, when locally applied, reduce considerably the tendency to bedsores. It is also a good preservative of animal tissue, but in this capacity ought not to be used until circulation of blood has entirely ceased.

Alcohol, in the form of champagne, has been recommended for the vomiting of pregnancy and for seasickness, but whatever slight benefits here ensue are due to the carbonic acid rather than to the alcohol, and the same results might readily be obtained by the administration of a slightly alkaline carbonated water.

Ales, beers, and porters used to be favorite prescriptions of the languid minded; but the younger physician, with his alert mentality, is using hygiene and physiological measures instead, with commensurate rewards both to his patients and to himself.

From the viewpoint of pharmacology, then, alcohol has very little standing as a drug for internal administration. Due regard for the welfare of the sick ought, therefore, to make the physician hesitate before assuming a responsibility unjustifiable by present scientific opinion.

Sphagnum Moss as a Dressing for Wounds.—William Mair, F. C. S., of Edinburgh, kindly sends us an account of the opening, at Edinburgh, on December 13th last, of a large factory for the making of sphagnum moss into a surgical dressing for army purposes. An address was delivered by Mr. John Cathcart, surgeon to the Royal Infirmary, in the course of which he explained the properties of sphagnum moss. The moss was long ago used in the Highlands as a dressing. Nevertheless, the fact remained that it was to Germany that surgeons in Great Britain owed their knowledge of its values as a surgical dressing. He pointed out that cotton wool was generally employed in the dressing of wounds, and while it had a high absorbent power, it was not so efficacious as sphagnum moss, which he considered to be the "very best material which the world knows at the present time" for the dressing of war wounds. The disadvantage of cotton wool was that while the discharge was absorbed, it did not spread, but went right through, which meant a great deal of waste and trouble. Sphagnum moss, on the other hand, was like a sponge—it did not exude until every part of it had taken up the discharge. This was its great value; it protected the patient, the bed clothes, and the surroundings. The moss was also very deodorizing. Mr. Cathcart mentioned sawdust as having been used as a dressing at the beginning of the war. After an article, he said, had appeared in a newspaper regarding the moss, consignments

gathered by the people began to come in. The largest lot yet received had come from Shetland, and consisted of forty-nine sacks. Mr. Cathcart described the enthusiastic way in which the scheme had been taken up, and thanked those who had assisted. They had several tons of moss in hand. That was a small quantity, and although it was enough to go on with, he hoped to get more. Moss collecting in winter was quite good. He also pointed out that while every effort was made to keep down expense, and various Edinburgh merchants had done well by sending boxes, expenses were incurred, and he appealed for subscriptions. Mr. Cathcart read two letters which he had received from the officers of war hospitals, one with 2,000 beds. Both letters spoke in high terms of the moss, and asked for more to be sent out. In conclusion, he showed the audience, by means of a bowl of water and a piece of prepared sphagnum how remarkably absorbent the moss is.

Sodium Nucleinate in Dementia præcox.—

Charles F. Read, in the *Medical Record* for January 15, 1916, reports ten cases treated with this drug in the Chicago State Hospital with varying success. Donath's method was used, wherein a ten per cent. solution in physiological saline with small amounts of sodium cinnamate is injected under the skin of the abdomen in doses of from five to forty c. c., with an average dose of twenty-five c. c. The interval between injections was usually one week.

New Form of Dressing for the Vaccination Site.—

L. Camus, in *Bulletin de l'Académie de médecine* for November 16, 1915, states that while the application of a protective dressing over the vaccination site is often useless, there are many circumstances under which such a dressing becomes necessary or at least advisable. In the former group are patients exhibiting a broken skin surface over an area of moderate or large extent. In an epidemic of smallpox, or even where but a single case has developed in a given locality, such patients must be vaccinated in spite of the area of cutaneous denudation, and in them, as well as in groups of children among which are some unvaccinated and suffering from impetigo, the protective dressing is a necessity. In view of the fact that most cases of transferred vaccinal inoculation occur in normal subjects who have come into contact with the vaccinal site or with an excoriated pustule borne by the vaccinated child, the frequent advisability of using a protective dressing even in the absence of the predisposing conditions already referred to is manifest. The various metallic, glass or other shields hitherto used for the purpose have been faulty in that they interfere with the local circulation, catch in the clothes, are cumbersome, interfere with the movements of the arm, and, in some instances, hinder perspiration and cause maceration of the epidermis. Camus's device consists of a narrow rectangular piece of thick cloth on both surfaces of which a layer of gauze has been attached with the aid of some nonirritating adhesive material. The cloth, but not the gauze, is provided with one or more circular openings, intended to circumscribe the vaccinal area or areas. Before the vaccination one of the gauze coverings is removed

and the cloth fastened to the skin by means of its exposed adhesive surface. The superficial layer of gauze is now lifted up and vaccination effected within the circle or circles. The gauze is at once replaced over the cloth and the patient may immediately put on his clothing. With a little care not to pull on the shield when the clothing is put on, the device may be allowed to stay until the vaccinal pustule begins to dry.

Sodium Citrate in Direct Blood Transfusion.—

C. B. Schildecker, in the *American Journal of Obstetrics* for November, 1915, states that there is nothing to preclude the use of sodium citrate to prevent coagulation of the blood in direct transfusion. The salt is without toxic action in the amount necessary for this purpose. To facilitate transfusion he has devised an apparatus consisting of a glass stoppered graduated cylinder with lateral outlet tubes near the top and bottom. Two glass cannulae, one fitting over, and the other within the lower outlet tube, are also used. In beginning the transfusion the larger cannula is introduced under aseptic precautions into the vein of the donor and the small one into the vein of the recipient. The apparatus is then connected with the cannula in the vein of the donor, five c. c. of ten per cent. sodium citrate solution placed in the cylinder, and the blood allowed to run in gently, good admixture with the citrate solution being effected with a glass rod. When the required amount of blood has been obtained, the clamp on the vessel is tightened, the physician's thumb placed on the side tube, and the apparatus transferred to the arm of the recipient, when the blood is allowed to run in. Advantages of this method are that the whole procedure is visible through glass, that it can be completed in ten minutes, that it can be carried out by the relatively inexperienced and in a private office or dwelling, and that the quantity of blood taken and transfused can be exactly measured.

Ethylhydrocupreine Hydrochloride in the Treatment of External Eye Diseases.—

J. S. Wyler, in the *Lancet-Clinic* for December 25, 1915, reports the results obtained with instillations of the above mentioned alkaloidal substance, a quinine derivative, in external eye affections other than pneumococic corneal ulcers, in which its efficacy has already been established. As recently mentioned by Grunert, the drug is of value in acute and mild subacute infections of the lacrimal sac. Wyler reports two cases, with long standing itching and redness of the eye, in which analogous favorable results were obtained. In the first much stringy mucus was being secreted, and treatment with various recognized drugs had given no benefit, epinephrine and novocaine alone bringing temporary relief. Instillation of one per cent. ethylhydrocupreine hydrochloride solution, every two hours, brought absolute comfort, which persisted throughout the summer under continued use of the drug. In the second case a one per cent. solution, used three times daily, also brought complete relief. In three cases of trachoma a considerable improvement took place under the influence of the same drug. Two of these cases showed pannus formation and the third a central corneal ulcer. Instillation of a two per cent. solution of the drug, every three hours, reduced the

pannus, and brought relief from pain, gradual diminution of the ulcer, and improvement of vision. Three cases of phlyctenular inflammation in children were most favorably influenced by treatment with a ten per cent. solution of the drug in the office and a one per cent. solution at home. Two of these cases had corneal involvement. In all a rapid disappearance of the photophobia was noted. Results from the use of the drug in parenchymatous keratitis were unfavorable and in gonococcal ophthalmia doubtful.

Local Treatment of Suppurating Skin Lesions and Infections.—George Home (*Brit. Med. Jour.*, Jan. 1, 1916) has secured particularly favorable results in the rapid healing of ulcers, boils, and suppurating skin infections by the following method: The suppurating surface should be gently wiped dry with a piece of three per cent. cyanide gauze. The region should then be covered with six to eight layers of clean cyanide gauze, cut only slightly larger than the involved area and applied dry. These, in turn, should be covered with adhesive plaster applied in strips and imbricated so as to make the dressing watertight. The dressing should be changed as little as possible, being left from one to four or more days *in situ* according to the indications. Subsequent dressings are carried out in the same way. Boils should be opened, wiped dry, and dressed as described.

Treatment of Grippe.—Grippe is discussed in the *Journal A. M. A.* for January 15, 1916, and it is emphasized that the patient should exercise special care to avoid further exposure at the onset of a coryza or tracheitis. An initial cold can often be broken up by a day or two of rest at home, with the usual common and simple remedies. When the disease is developed, the patient should be kept in bed and warm. Hot drinks such as malted milk, tea, or lemonade are often very comforting and hot water bags and extra coverings are needed. The general malaise and headache may often be relieved by aspirin, acetanilide, antipyrin, etc., but these should not be continued too long. Two suitable formulas are:

R	Acidi acetyl-salicylici,	0.6 (3iss);
	Pulveris camphoræ,	0.7 (gr. x);
	Pulveris ipecacuanhæ et opii,	4.0 (3j).
M.	et divide in capsulas No. xx. Sig.: One every three hours.	
R	Acetphenetidini,	1.5
	Phenylis salicylati,	1.5
M.	et fac chartulas No. v.	(ââ Gr. xxv).

Where the nasal mucosa is much affected, the administration of small doses (grain 1/20 to 1/10) of the extract of belladonna may be cautiously tried and often gives good results. Saline or mildly alkaline gargles are of value where there is much throat irritation. A suitable prescription is:

R	Aque hydrogemi dioxidi,	}	aa 500 ñi
	Alcohol,		
	Glycerini,		
	Aque cinamomi,		
M.	et S. Dilute with four or more parts of water and use as gargle.		

The use of sprays containing small amounts of epinephrine will often give relief and permit of the drainage of the sinuses when these are involved in

the inflammatory process. General supporting treatment and the proper adjustment of the diet are prerequisites to success.

Laryngeal Diphtheria.—W. W. Behlow says, in the *California State Journal of Medicine* for January, 1916, that antitoxin in sufficient doses is indicated as soon as the diagnosis is made to take care of all the toxin present. Thirty to forty thousand units subcutaneously will usually suffice, but no standard dose can be recommended for general use. If the symptoms are severe, as shown by the rapid heart, the exhaustion, the cyanosis, and the marked stridor, we should never wait too long before performing intubation or tracheotomy. It is better to intubate too early than too late, for the continued strain may be too much for the patient. Both operations should be performed by a skilled operator. Local measures, such as steaming, have little if any good effect. Plenty of cool fresh air is desirable, but care should be taken not to expose the patient.

Diphtheria Carriers and Their Treatment.—In the *Western Medical Review* for January, 1916, W. P. Wherry records his experiences in three cases of diphtheria carriers in which the tonsil was the site of retention of the organisms. In two of these, local washes containing the Bulgarian bacillus, or silver nitrate, and even the galvanocautery failed to cause the disappearance of the organisms. Other surgeons have used sprays of pure cultures of the staphylococcus, pure phenol, and other agents without effect. From these observations it seems evident that the local treatment of chronic tonsillar infection with the diphtheria bacillus is a failure. In the three cases reported the condition was at once cured by tonsillectomy, and this is recommended as the only effective means at our command.

Method of Tonsillectomy Minimizing Hemorrhage.—A. P. Voislowsky, in the *Medical Record* for January 15, 1916, describes the method used in St. Luke's Hospital, New York. This, in effect, is the use of a Titus suction tongue depressor to avoid sponging, the engagement of each tonsil in a Beck snare so that both are approximated in the middle line and grasped together with a tenaculum. Then the snares are tightened so as to enucleate the tonsils, which come away together on the tenaculum. Hemorrhage is almost nil, the uvula is never injured, and healing is rapid without distortion of the pillars.

Mixed Antityphoid and Antiparatyphoid Vaccination.—Sergeant and Nègres, in *Bulletin de l'Académie de médecine* for October 26, 1915, report their experiences in Algeria in preventive vaccination against disorders of the typhoid type. Beginning in October, 1914, a mixed vaccine in each c. c. of which 200,000,000 of paratyphoid organisms were added to the 400,000,000 typhoid bacilli previously employed, was used. The method of preparation was that of H. Vincent. Five strains of typhoid bacilli, two strains of the A paratyphoid organism, and one strain of the B paratyphoid organism were represented in the vaccine. Every subject to be vaccinated received 3,300,000,000 organisms in four successive injections of 0.5, 1, 1.5, and

2.5 c. c., respectively. In over 100,000 vaccinations carried out with this preparation, local and general reactions were found no more marked than after simple typhoid vaccination. Used during an epidemic in which the ratio of cases of paratyphoid to cases of typhoid fever was as one is to four, the vaccine proved equally effective against all varieties of organisms. The most striking proof of the efficiency of the vaccine was the resulting closure of all typhoid wards in the Algerian military hospitals while numerous cases were constantly arising among the civilian population.

Rheumatic Fever.—The *Journal of the Medical Society of New Jersey* for December, 1915, has this prescription:

℞ Acidi salicylici, 5ss;
Liquoris ammonii acetatis, 5iv;
Spiritus aetheris nitrosi, 5i;
Syrupi simplicis, 5i.

M. Sig.: Tablespoonful every three hours, well diluted.

Medical Treatment of Gastric Ulcer.—Edwin H. Fiske, in the *Long Island Medical Journal* for December, 1915, states that bismuth and large doses of sodium bicarbonate are recommended in the medical treatment of gastric ulcers. The dose of bicarbonate should be one to two drams, which should be continued for months after it produces a diminution of the pain, the hypersecretion, and the hyperacidity.

Renal Calculus.—Ralph Emerson Taylor writes in the *Providence Medical Journal* for January, 1916, that treatment is expectant and surgical. In the expectant treatment, diuretics and morphine are given for pain. Always operate for fixed stone. Pyelotomy is done for stone in the pelvis; nephrolithotomy where the stone extends into the calices. When the function of the kidney is greatly impaired, nephrectomy is the rule. Ureterolithotomy is indicated when the stone has passed from the pelvis into the ureter.

Treatment of Intoxications.—Christopher J. Patterson, in *Albany Medical Annals* for January, 1916, says that elimination is of paramount importance. The bowels and kidneys should be made to work, and especially the skin. Continuous hot water bath is most useful; the hot wet pack is also of value. Murphy drip has been used to increase the urinary output. The lungs must not be inhibited in their functions as organs of elimination. For this purpose the patient should be kept quiet, by stupefying medicine if necessary.

Resuscitation from Gas Poisoning by Living Erythrocytes.—A series of experiments on rabbits and dogs were carried out by W. H. Burmeister (*Journal A. M. A.*, Jan. 15, 1916) to determine the value of the use of living erythrocytes in the treatment of poisoning by carbon monoxide. The blood was collected in a solution of sodium citrate in the proportion of one per cent. of the salt to the total shed blood. To this there was added an equal volume of sterile Ringer's solution containing 2.5 per cent. of dextrose. This was the preparation used for transfusion and was found to keep well for many days in the ice box. Twelve of fifteen dogs treated with transfusions of this blood mix-

ture recovered after poisoning which proved fatal in all control animals. One which died was fatally ill before the experiment and the other two died of causes apparently not directly due to the lethal action of carbon monoxide. From these experiments the use of citrated, living human erythrocytes in the treatment of gas poisoning is strongly suggested; it is urged that stations be established where such prepared erythrocytes could be obtained at once, just as pulmotor stations are maintained.

Diabetes.—The *Journal of the Medical Society of New Jersey* for December, 1915, has two formulas:

For Diabetes Mellitus.

℞ Potassii phosphatis, 2 parts;
Aque, 75 parts.

M. Sig.: One teaspoonful two or three times daily, in wine or hop tea, to relieve excessive thirst.

For Diabetes Insipidus.

℞ Strychnina sulphatis, gr. 1/48;
Acidi hydrochlorici diluti, ℥x;
Aque laurocerasi, 3ii.

M. Sig.: To be taken three times daily in water.

Paroxysmal Vagotonia and Its Treatment.—D. Danielopolu, at a meeting of the Biological Society of Bucharest (*Presse médicale*, August 5, 1915), reported his observations concerning a symptom complex characterized by attacks of pronounced vertigo, vomiting of the cerebral type, and nervous bradycardia, occurring in subjects free of any sign of a heart lesion. The condition, the etiology of which is as yet unknown, has as its immediate cause a paroxysmal excitation of the vagus nerve. The treatment recommended consists in the administration of 0.0005 to 0.001 gram of atropine sulphate half an hour before meals.

Intravenous Use of Typhoid Vaccine in Typhoid Fever.—Joseph L. Miller, in the *Illinois Medical Journal* for January, 1916, reviews the literature on this procedure since it was first used by Fraenkel, in 1893. Statistics vary so much that it is impossible to draw definite conclusions as to reduction of mortality, although it appears that the intensity and duration of the disease are lessened. The one striking feature of the treatment is the immediate and permanent interruption of the fever. The initial dose recommended is 300,000,000 bacilli; and crisis may follow even a second or third injection of the same or a larger dose. Violent reaction with a chill is usual, and though alarming is apparently not dangerous.

Medical Treatment of Exophthalmic Goitre.—At a recent meeting of the North Side Branch of the Chicago Medical Society, Stephen R. Pietrowicz (*Journal A. M. A.*, January 8, 1916) reported that a large proportion of patients of the milder type would recover if given absolute rest, both mental and physical, with the addition of partly forced feeding and the removal of pathological foci in the oral cavity, which latter seem to have a direct etiological relationship to the disease. The patients should be given the lactic acid ferments in the form of natural or artificial buttermilk. A change of environment is often helpful. Sodium phosphate, magnesium sulphate, and sodium bromide may be required for sedative effects. Local applications over the thyroid have proved ineffective.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

August 1915.

Etiology of Typhus Fever, by Fr. Proeschner.

By means of a special method of staining with basic methylene blue, the author has been able to render visible the etiologial organisms of rabies, poliomyelitis, variola, vaccinia, and foot and mouth disease. All these organisms have been held to be ultramicroscopic, but are readily demonstrable when stained by appropriate methods. It was sought to test the possibilities of the same method in the discovery of the causative agent of typhus. Blood was available from three fresh and six convalescent patients and in all samples there were found large oval or irregular cells, either singly or in clumps, which could be identified as endothelial cells thrown off from the intima of the vessels. Such cells were found chiefly in the margins of the smears, where at times they were very numerous. The vast majority of these cells contained in their protoplasm numbers of small diplococci and diplobacilli of a diameter of two tenths to three tenths of a micron. Some of the cells were almost completely filled with these organisms, while in others they were scanty. Similar organisms were sparse in the free plasma, and were seldom found in the polynuclear leucocytes. The organisms were most abundant in blood specimens taken on the first and second days after the fall in temperature. They could not be discovered with the usual methods of staining. Similar findings were absent from a series of control preparations taken from normal persons and from patients with various diseases. Whether or not these bodies are the etiologial organisms of typhus fever remains to be determined by cultural and other experimental procedures, but their characters and the restriction of their presence to cases of typhus fever strongly suggest the belief that they are.

MEDIZINISCHE KLINIK.

December 12, 1915.

Experimental Basis for Specific Treatment of Weil's Disease, by Ulenhuth and Fromme.—On the strength of the constant presence of spirochetes in the livers of infected guineapigs, it was sought to cure the disease by the administration of such agents as salvarsan, neosalvarsan, colloidal silver preparations, colloidal antimony, compounds of mercury and arsenic, atoxyl, and optochin. All these were tried in sufficient range of dose, but none had any curative effect. It was observed, however, that an active immunity was present in animals which had survived infection, and efforts were therefore directed to the possibilities of inducing active or passive immunity. It was found that the injection of killed organisms failed to induce immunity to subsequent infection. Active immunity could be produced only by the injection of sublethal doses of the living virus. Under repeated injections of ascending doses of the live virus, it was possible to secure a high degree of active immunity in rabbits as well as guineapigs, and other animals were also found to yield an active serum. The injection of this active immune serum into normal animals would prevent infection by ac-

tive virus. From these experiments there was reason to believe that it might be possible to prepare an immune serum which would prove of value in the treatment of the disease in man. Such a serum has actually been prepared and has been used with success in a considerable number of cases upon which a report will be made later.

Significance of the Wassermann Reaction, by Kurt Halbey.—From an exhaustive analysis of the literature, Halbey is forced to the conclusion that the procedure is a great advance in our methods for the diagnosis of cerebrospinal syphilis. Although the reaction is not specific for syphilis, its occurrence in other conditions does not materially detract from its value, since the conditions in which it is found are readily diagnosed and are not likely to be confounded with syphilis. We should not depend solely on the Wassermann reaction, however, for the diagnosis of syphilis, but should consider the history and the clinical manifestations as of great importance. In tabes and paresis the reaction in the spinal fluid is almost always positive, but other tests, such as the Nonne-Apelt, the albumin determination, and the cell picture, should be employed in addition. The views of various investigators regarding the value of the Wassermann reaction as a guide to the progress of treatment in syphilis of the central nervous system, are so conflicting that we cannot form any judgment as yet.

PRESSE MÉDICALE.

November 8, 1915.

Copious Albuminuria in the Diagnosis of Meningeal Hemorrhage, by Georges Guillaín.—The value of copious albuminuria as a distinguishing sign in some cases of hemorrhage from the meninges, is emphasized, and the conclusions of a recent article by Macris, tending to discredit Guillaín's former work in this connection, are refuted. The sign is of value only when positive; it is frequently negative, even in the presence of hemorrhage. The albuminuria varies in degree from two to twenty grams to the litre of urine, and is transitory, reaching a maximum in twenty-four to forty-eight hours after its onset, then rapidly receding until, in a few days, no trace of albumin, or but a few cgm. to the litre, remain. The sign is of value in the differentiation of meningeal hemorrhage from ordinary forms of nephritis, uremia with nervous symptoms, apoplectic attacks due to cerebral embolism or thrombosis, and bulbar diseases. Copious albuminuria is not met with in simple chronic nephritis, occurring only in syphilitic nephritis, certain cases of acute nephritis, and in amyloid disease—all conditions easily recognized clinically. The copious albuminuria of meningeal hemorrhage, in contradistinction to that of acute nephritis, is unaccompanied by edema, high blood pressure, gallop rhythm, polyuria, or casts. Albuminuria in bulbar disease, contrary to current views, is relatively rare. The occasional copious albuminuria of meningeal hemorrhage is, therefore, of diagnostic value.

November 1, 1915.

Clinical Features of Paratyphoid Fever, by J. Levi Valensi.—In a study of forty cases, the temperature curve of paratyphoid fever was found to

present three distinct types. The first is that without a plateau or the brief type, in which after rising to 39° or 40° C., the temperature oscillations at once show a downward tendency. This type was noted in seventeen cases, and is considered by the author a diagnostic feature of paratyphoid against typhoid fever. The second type, noted in nineteen cases, presents a plateau at 39° or 40° C., the disease running a two or even three weeks' course, followed by a rather rapid defervescence occupying three or four days. In the third type a plateau occurs at 38° C., and the duration of the disease does not exceed two weeks. The pulse rate was observed to follow closely the temperature, ranging from eighty to 100 a minute, and in twenty-seven out of twenty-eight cases a drop to sixty occurred in the afebrile period. In the single exceptional case the pulse remained at eighty and the patient later had a relapse. In general, paratyphoid fever presented the clinical characteristics, often in a mild, but also rather frequently in a severe form, of a typhoid infection. Torpor was generally less, delirium never present, and rose spots were frequent—sometimes so abundant as to suggest typhus fever. Bronchitis and lung congestion were common accompaniments. Two patients in the series of fifty died—a four per cent. mortality. Infections by the A and B paratyphoid organisms did not seem to differ in gravity or clinical features. Blood cultures, made in forty cases, showed the A organism present in twenty-three and the B in seventeen.

REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

December 21, 1915.

Cutaneous and Mucous Membrane Reflexes in the Psychoneuroses, by E. Fernandez Sanz.—After a most exhaustive study of the literature it seems that there is no uniformity of the action of reflexes in psychoneuroses. In neurasthenia and traumatic neurosis the reflexes are normal or exaggerated. In hysteria they are often normal, though they may be either lessened or increased; diminution being in relation to anesthesia or hypesthesia. Abolition of these reflexes in hysteria alleged to exist by some writers, is problematical. Reflexes of mucous membranes of the cornea and pharynx may be suppressed in hysteria, though not as often as was formerly supposed, while the Babinski reflex is never seen.

BRITISH MEDICAL JOURNAL.

January 1, 1916.

Traumatic Implantation of Epidermis, by G. H. Edington.—The details are reported of the case of a soldier who received a bullet wound near his shoulder which healed kindly. Some days after his return to service the wound broke down and emitted some sebaceous material. After several repetitions, it was laid open, and several deposits of sebaceous matter and desquamated epithelium were removed. It seems that living epithelium had been carried into the wound by the bullet and had established itself in the tissues, with the production of a condition resembling that found in a dermoid cyst.

Wick Drains, by G. H. Colt.—With the aid of an ordinary child's knitting spool for making cat tail

reins, exceedingly satisfactory wick drains and packing can be made. Several different sizes of spools should be used and only three pins should be employed. The material should be a good grade of absorbent cotton yarn, and the size should be adjusted with reference to the diameter of the finished wick. This wicking can be made rapidly and cheaply by convalescent patients. It requires about five hours to make twenty-two yards of thick wick and thirty-six hours for 130 yards of thin wick. The wicking can be cut into suitable lengths and sterilized, when it is ready for use, either for drainage or packing.

LANCET.

January 1, 1915.

Widal Reaction with Standardized Cultures, by E. W. Ainley Walker.—The microscopic method of performing the Widal reaction fails to give comparable quantitative measures of the titre of a blood serum on repeated tests. This failure is due to: 1. The bacterial emulsions or cultures used are of undetermined and variable bacterial content, and it has been shown that the agglutinating power of a given serum may vary 100 per cent., depending on variations in the density of the bacterial emulsion used. 2. The cultures themselves vary greatly in sensitiveness to agglutination. 3. The age of the culture affects its sensitiveness greatly. 4. Its agglutinability is also materially influenced by differences in the reaction or composition of the culture medium. The macroscopic method of quantitative determination of the agglutinating power of blood serum as perfected by Dreyer, on the other hand, gives accurate and constant results, is simple in conduct, and easy of application. The standardized ingredients for the test can be purchased in sterile and constant form. For accurate diagnostic purposes the repeated quantitative determination of agglutinins from day to day has become absolutely necessary since the general introduction of anti-typhoid inoculation.

Diagnosis of Tuberculous Meningitis, by D. W. Keiller Moody.—It is not easy to make a correct diagnosis of this condition in adults, and any fairly typical sign or symptom may be of value if it is sufficiently constant. In four cases recently observed in adults retention of the urine was encountered, coming on without apparent cause and while the patient was fully conscious. The retention was not associated with distress or with desire to void or with a feeling of fullness of the bladder, which suggested that it might have been due to a cord lesion. So constant was this typical symptom of painless urinary retention in tuberculous meningitis in male adults, that the author has come to regard it as pathognomonic of the disease and of great diagnostic value.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

January 15, 1916.

Seminal Vesiculitis, by Louis E. Schmidt.—In the course of a discussion of the relative values of vesiculectomy and vesiculectomy, the signs and symptoms of vesiculitis are given under five heads. The sexual signs comprise painful erections, painful or-

gasm, impotence, weak orgasm, premature ejaculation, azoospermia, pyospermia, hemospermia, and epididymitis. The last condition is always an indication of vesiculitis on the same side, and hemospermia is an equally positive sign of vesiculitis. These indications are positive even in the absence of any pathological condition which is evident to the examining finger. The urinary symptoms are painful micturition, frequency, dribbling, weak stream, and colicky pains simulating ureteral or appendicular colic. Itching, warmth, fullness, pain, sensation of a mass in the rectum, and bearing down feeling constitute the rectal symptoms. The abdominal symptoms are mainly intestinal and are often mistaken for other conditions. The systemic symptoms are those of infection in general, with a special tendency toward the involvement of the joints and neighboring tissues. In the treatment of vesiculitis, massage and other minor methods should always be given a thorough trial, and operation undertaken only when they have failed. The surgery of the vesicles is still in an uncertain state, and it seems best to give the patient the benefit of possible drainage by vasotomy before adopting more radical measures.

Signs and Symptoms of Impending Death, by Thomas F. Reilly.—Probably one of the hardest of problems in clinical medicine is to foretell surely the occurrence of death and to give some approximation as to how long it will be deferred. Single instances of mistakes in the prediction of death are likely to occur with any of us, but, except in typhoid fever, tuberculosis, cholera, and wet brain, the foretelling of a fatal outcome should be a matter of considerable certainty. Usually the processes of death begin peripherally and end at the centre, so that the earliest evidences are to be found at the periphery. Thus smell is the first of the special senses to be lost, with taste, sight, and hearing following in the order given. The usual causes of death are failure of the heart, respiration, or vagus, asthenia, and shock. There are few single phenomena which can be regarded as infallible signs of approaching death, and usually a combination of two or more is required.

Food Poisoning by Bacillus paratyphosus B., by Harry S. Bernstein and Ezra S. Fish.—A serious epidemic of food poisoning involving sixty persons in a small restricted region, arising from the eating of contaminated pie, is reported in some detail. Four of the cases proved fatal. The symptoms developed in twelve to nineteen hours after ingestion of the pie; occasionally they came on in four or five hours. There were epigastric pain with a burning sensation extending from fauces to stomach, great thirst, vomiting lasting about six days, pains in the legs, and diarrhea. High fever was observed in some of the patients. Three of the fatal cases lasted only four days, the fourth for three weeks. Investigation of the factors led to the discovery of a single batch of pie made locally in the region of the epidemic as the source of the epidemic. Samples of the pie dough were found to contain organisms of the paratyphoid B. group, which gave typical agglutination reactions against known serums and also against a series of serums obtained from several of the recovered cases.

Creeping Eruption of the Skin, by Frank Crozer Knowles.—This rare disease usually involves the exposed surfaces of the body, though it may occur elsewhere, particularly near the genitalia. The eruption usually begins with itching and a creeping red line from one to four mm. wide and 0.5 mm. elevation above the surface is soon apparent, though the earliest sign may be only a red spot, from which, however, the line soon shoots out. The line does not branch, but is often crooked. The case reported in the present study occurred in a girl infant twenty months old, and the regions involved were excised intact and subjected to study by serial section. By this means the causative parasite was actually discovered *in situ*. The exact nature of the parasite is unknown.

MEDICAL RECORD

January 15, 1916.

Fractures of the Elbow, by Jacob Grossman.—Fifty cases were studied, of which twenty-four were of the internal condyle, fourteen of the external condyle, eight were supracondylar, and four were of the olecranon. The acute flexion position is advised in all cases of doubtful diagnosis, excluding olecranon fractures. Massage and passive movement should begin about the tenth day.

Flatfoot; Its Relation to Neuritis, by William Martin.—It is important to make arch plates from plaster casts of the feet and also to provide lateral heel pieces to prevent rocking of the foot on the globular os calcis. Where neuritis is associated, there must be dietetic care and electrical treatment, such as the static wave, static sparks, brush discharge, and resonator effluve.

Diagnostic Value of the Russo Reaction, by Max Kahn and Lawrence Wechsler.—The reagent is 0.1 per cent. aqueous solution of methylene blue, several drops of which are added to a few c. c. of urine. A positive reaction is characterized by a mint or emerald green color. Russo, in 1905, described this test as pathognomonic of typhoid fever, but from careful investigations this is disproved, although it should be used as a routine procedure in laboratory work. A positive Russo and diazo reaction in the same case should help in diagnosis. In fifty-three typhoid urines examined, it was positive in thirty-one and negative in twenty-two.

AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

December, 1915.

A Prognostic Sign in Acute Suppurative Peritonitis, by H. A. Pantzer.—Some cases of peritonitis, owing to their violent symptoms and the conditions found at operation, are apparently doomed to succumb, and yet end in prompt recovery. Pantzer's observations lead him to the conclusion that where there is found in the abdomen, by the side of an encapsulated collection of foul material, a free or encapsulated collection of fluid which is practically odorless, a strong systemic activity is indicated and the prognosis is correspondingly improved. The defensive fluid collection may consist of either clear or quite clouded serum.

Proceedings of Societies.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Twenty-eighth Annual Meeting, Held at Cincinnati, December 13, 14, and 15, 1915.

The President, Dr. BACON SAUNDERS, in the Chair.

(Continued from page 189.)

Unilateral Hematuria Associated with Fibrosis and Multiple Microscopic Calculi of the Renal Papillæ.—Dr. R. L. PAYNE, Jr., of Norfolk, Virginia, referred to his previous experimental work, in which the chiefly developed vascular lesions were eliminated as a cause of symptomless unilateral renal hemorrhage. He reported a case of symptomless unilateral hematuria, in which bisection of the kidney showed macroscopically a normal cortex or parenchyma, but every papilla presented the cherry red appearance typical of angioma. The kidney was removed, and careful microscopic studies disclosed an absence of pathological findings in the cortex or parenchyma proper, but the papillæ showed definite chronic inflammatory changes. These changes consisted of, 1, an overgrowth of connective tissue; 2, multiple microscopic calculi; 3, dilated capillaries with the small calculi in close apposition or the capillaries surrounded by the connective tissue proliferation; 4, a network of dilated capillaries on the surface of the papillæ, many of which were ruptured with free blood escaping. These numerous, though small varices, were evidently the source of the hemorrhage, and the inference was that the numerous calculi, aided by the connective tissue they had originated, succeeded in causing an obstruction to the venous return, with a subsequent dilatation of the capillaries and varicosities.

In Cases of Symptoms without Gallstones, What Disposition Shall Be Made of the Gallbladder?—Dr. LE GRAND GUERRY, of Columbia, South Carolina, said his own personal results showed that in about twenty-five per cent. of the cases of gallstones without symptoms operated in, they failed to get permanent relief. It was evident that seventy-five per cent. of the cases were cured by simple drainage of the gallbladder, since the figures they had obtained showed that from twenty-five to thirty per cent. represented the cases that were not relieved. Manifestly it would be unwise and unnecessary to subject the seventy-five per cent. that could be cured by the simple method to the greater risk of a more serious operation. As they saw it, out of every 100 cases, seventy-five were cured after cholecystotomy, and twenty-five per cent. were not relieved permanently.

In what cases should the gallbladder be removed? He did not feel that the advocates of cholecystectomy in those cases had completely made out their case. He was willing to grant that a certain percentage would be relieved by removal of the gallbladder, the so called strawberry gallbladder, the cases in which there was an infection of the bladder itself, but as they had already seen, probably a good many of those cases could be caused by con-

ditions other than infection of the gallbladder wall. Of the five cases he had operated in before the gallbladder had been removed, the results had been as follows: In two cases the patients died on the third and fourth day after an effort on his part to establish communication between the common duct and the duodenum or stomach. The third patient was alive two months later, with a permanent biliary fistula. The other two patients were well, one two, and the other three years after an anastomosis between the common duct and the duodenum.

Accepting the work of Archibald, it seemed reasonable that the division of the sphincter of the ampulla had a certain definite field of usefulness. Archibald had so treated his cases experimentally with good results. He believed that certain cases were best treated by the establishment of a permanent communication between the gallbladder and duodenum. Lastly, his feeling was that that disease was like most other diseases, there were no hard and fast lines to be drawn, and that the best results would be obtained by a judicious selection of the operation to suit the individual case.

Caudal Anesthesia in Genitourinary Surgery.—Dr. BRANSFORD LEWIS and Dr. LEO BARTELS, of St. Louis, stated that this was the method of anesthesia proposed and first used by Lāwan and was based on the use of saline injection into the sacral canal as suggested in 1901. It was the nerve blocking method of local anesthesia applied in the sacral canal, using a combination of novocaine, potassium sulphate, and adrenaline as the local sedative fluid. They had used the method in eighty-five cases, and with such success that they felt justified in making a report. This method was to be distinguished from that of spinal anesthesia in that the solution was not injected into the spinal canal. The spinal canal was separated from the sacral canal by the cuff of dura mater which closed down on the cauda at about the first segment of the sacrum. An injection of fluid, therefore, into the sacral canal, did not reach up into the spinal canal. The injection served to obtund the sensibilities of, or anesthetize the nerves issuing from the anterior sacral foramina that formed the sacral plexus. One of the most important nerves of this plexus was the pudic, distributed to the bladder and prostate and other genitourinary organs. By treating this nerve, an anesthetic condition of the organs mentioned was secured.

Directions for preparing the solution were given, and their experience with various doses was detailed. It was found preferable to use larger quantities of weaker solution, rather than small quantities of stronger solution. It was found that the pressure effect of the anesthetizing fluid strongly influenced success. From fifty to ninety c. c. of the fluid was now being used.

The particular value of the method lay in the debilitated, decrepit, and aged patients that required major genitourinary work. Prostatectomies done suprapubically, the removal of vesical stones, and cystoscopies in hypersensitive patients, had all been done with marked success and comfort under this method of anesthesia.

Local Anesthesia.—Dr. HERBERT P. COLE, of Mobile, presented a résumé of major operations

performed within his clinic during the past two years. This group included 185 abdominal operations upon the appendix, gallbladder, intestines, ovaries, and uterus. He reported one case of nephrectomy, three radical cases of amputation of the breast for carcinoma, two cases of decompression of the skull, and one exenteration of the orbit for sarcoma. Seven abdominal operations were performed during pregnancy without maternal mortality. Seven major operations were performed upon children under two years of age, with one death from bronchopneumonia, twelve days after establishing a Littre artificial anus in a child three days old.

Forty-seven cases were operated in between the ages of fifty and eighty-seven years, with a mortality of 4.5 per cent.—two deaths. The deaths occurred in one case on the eighth day after enterostomy, and the fifth day of ileus and peritonitis in a patient sixty-five years of age. The second death occurred on the fourth day after drainage, and the sixth day in peritonitis in a patient sixty-eight years old. Local anesthesia as the procedure of choice in cases offering grave mortality risks, was a factor of safety too potent to be neglected.

Hydatid Cysts of the Liver.—Dr. GEORGE BEN JOHNSTON, of Richmond, had had two cases of hydatid cyst of the liver during the past two years, and about six months ago, another case was reported in a Richmond hospital. This was remarkable because, prior to 1913, only two cases of *tenia echinococcus* infection were reported from Virginia, and 250 from the United States and Canada. The Virginia cases occurred in Alexandria and Staunton. There was, however, another case infected in Virginia, but reported from Buffalo by Cary and Lyons. Their two cases came from the rural districts where people were frequently exposed to infection, both from dogs and from meat which was not properly inspected. The case that was operated in, in Richmond, several months ago occurred in a foreigner who had lived in this country only a short time. Their cases, however, were not from the region in which the epidemics in hogs had been reported. They had in mind those infected regions and were waiting to see if there would be a relative increase in infections of the *tenia echinococcus* type among their patients living in those places. Surgery was the only method of treatment for this condition. Wherever possible, it was always best to remove the cyst *in toto*; if that was impracticable, to remove as much of the cyst as possible and drain, and if that again was impossible, to aspirate the cyst.

Intussusception in Infants.—Dr. LEWIS S. McMURTRY, of Louisville, said that intussusception was essentially an accident in infancy, since three fourths of the cases obtained in children under two years of age. In a series of 300 cases collected by Grisel, 204, that is, sixty-eight per cent., occurred in breast fed infants under one year of age. Of all the varieties of intestinal invagination, the ileocecal was by far the most common, and almost invariably was found in infants and young children. Grisel concluded that in infancy eighty-two per cent. at least were of this variety.

In dealing with a case of suspected intussusception in a baby, the physician should, if possible, decide on the diagnosis before leaving the house. He

should study the case closely, give it immediate attention, and weigh each symptom carefully. The fate of the patient depended upon early diagnosis. When abdominal section was done, success would depend more upon the operator's expedition and skill, with refinement of manipulation, than perhaps in any other abdominal operation. The young infant was easily shocked. It was important that the invagination should be reduced by pressure from the apex of the intussusception, so that it was pushed out from within instead of being pulled out. The appendix should not be removed unless absolutely necessary, and every effort should be made to abbreviate the operative procedure. In his own experience he had found chloroform preferable for anesthesia.

It was well known that after release of the invaginated intestine there was a tendency toward recurrence of the invagination. To prevent this, several operative procedures had been tried. One was to shorten the mesentery by securing it in a position parallel to the intestine. Eliot adopted the method of attaching the disinvaginated intestine to the parietal peritoneum by a few sutures of catgut. This latter method proved satisfactory in his cases. Every addition to the operation that was not absolutely necessary should be omitted, and every moment of time should be conserved in the patient's interest. Even with the best judgment and skill, the mortality of the operation during the first twenty-four hours stood at forty per cent.

When an irreducible invagination was found, the best procedure perhaps was to establish an artificial opening in the intestine and wait until later for the resection of the invaginated bowel. There was but little choice, however, between this and resection of the intestine at the time, since both procedures were followed by an extremely high mortality.

Operative Treatment of Pyloric Obstruction in Infants.—Dr. WILLIAM A. DOWNES, of New York, stated that his report included sixty-six cases operated in, in five and one half years. All presented the characteristic symptoms. A tumor was palpated in every case before operation, and this finding was verified at the time of operation. This experience threw new light upon the etiology and pathology of the condition. The theory best explaining the symptom complex was, that a true malformation was present at birth, consisting of an abnormal thickening of the circular muscle of the pylorus, and to this was added an edematous condition, some ten days or later, after birth. The edema probably resulted from the greater activity of the stomach necessary to force an increasing amount of food through the narrowed and elongated pyloric lumen.

Gastroenterostomy was performed in thirty-one of the sixty-six cases, the remaining thirty-five being operated in according to the method of Rammstedt. This consisted of making a longitudinal incision, two to three cm. in length, which was carried through the serosa and hypertrophied circular muscle fibres down to the mucous membrane. This incision was well liberated. Of the thirty-one cases in which gastroenterostomy was done there were eleven deaths—a mortality of thirty-five per cent. Of the twenty discharged as cured, two afterward were fatal from gastroenteritis and one from diph-

theria. The remaining seventeen patients were well and had developed normally. Röntgen ray examination showed the stomata working satisfactorily, and little or no bismuth passing through the pylorus. Of the patients dying in the hospital—a number began to vomit late in their convalescence—reoperation and autopsy offered no satisfactory explanation for the return of symptoms.

After this unsatisfactory experience it was decided to give the partial pyloroplasty of Rammstedt a thorough trial. Consequently, this operation had been done in the last thirty-five cases. In this series there were eight deaths—a mortality of twenty-three per cent. Of the twenty-seven patients discharged as cured, two had died since leaving the hospital; the remaining twenty-five were well for a period of a few weeks to one and one half year. In no case had there been a return of the symptoms. The general condition of the babies submitted to the two types of operation averaged the same. A number in each series were almost moribund at the time of operation, and this accounted for the immediate mortality. The patients operated on according to the Rammstedt method vomited less and were easier to feed after operation.

The advantages of the partial pyloroplasty over gastroenterostomy were time consumed for operation, the former requiring less than half that necessary to perform the latter; the operation required much less surgical skill than gastroenterostomy; and the continuity of the gastrointestinal tract was preserved. Röntgen ray examination, one and one half year after operation, and autopsy on a patient dying three months after operation, demonstrated the fact that the stomach functioned normally and that the tumor disappeared entirely after this procedure.

The Use of Iodine in Combating Peritonitis.—Dr. J. A. CRISIER, of Memphis, in his large experience in the use of this drug and the clinical manifestations after its use in these cases, had been led firmly and conscientiously to believe that the infected fluids free in the cavity, were at once sterilized, and that the absorption of toxins, which after all was the real mortuary factor in peritonitis, was immediately terminated for at least twenty-four hours. Also an outpouring of serum and new phagocytes was immediately encouraged. He was strengthened in this belief by the fact that a high temperature in these cases in a few hours almost invariably fell to normal or nearly so. Furthermore, there was an abundant serous drainage, more plentiful than the drainage common in other methods. This tended to disgorge and in a measure wash out the subserous cellular tissues, which might receive some beneficent antiseptic effect through a process of osmosis directly from the iodine that had come in contact with the inflamed serosa.

In his investigations of the elimination of the iodine element, he had found that it had never appeared in the urine earlier than the eighteenth hour after its use in the abdomen, and then only in very small quantities. The height of elimination was attained about the seventy-second hour. He conjectured that the absorption of toxins was held in abeyance for a like period. All the facts brought out by these studies, including clinical, physiological,

and chemical combined to show the truth of this assertion. During this period there was developed in the patient an autoresistance and toleration quite sufficient to overcome the disease. From December 1, 1914, to December 1, 1915, he operated in 678 abdominal cases with twenty-three deaths. In this number of operations he had 104 pus cases. In other words, slightly over fifteen per cent. of all of his abdominal cases were due to pus in the abdomen, either localized and walled off, or free with no effort at walling off. In this latter series he had one death, the patient reaching him in a moribund and utterly hopeless condition.

Typhoid Perforation; Peritonitis.—Dr. FRANK D. SMYTHE, of Memphis, stated that the positive indications for operation in connection with typhoid fever were: 1. Typhoid after the first week, usually the third, with sudden pain in the abdomen, severe, persistent, growing progressively worse, and muscle spasms; 2, pain, at first locally, rapidly extending, with or without nausea and vomiting; 3, tenderness upon pressure, local and general.

After reporting a case of typhoid perforation with unusual and interesting history, he stated the points of special interest were: 1. Diagnosis of peritonitis. 2. The man felt sufficiently well to engage in a wrestling match as a matter of choice when the perforation occurred. 3. He had not lost a day from his work nor missed a meal. 4. The only evidence of trouble prior to perforation was an estimated loss of about ten pounds in weight and a feeling of malaise two weeks before operation. 5. Immediate operation had been urged by his family physician. 6. The diagnosis of peritonitis was made from the pain in the abdomen, its severity, persistence, and the rigidity of the abdominal wall. 7. Tenderness upon pressure. 8. Collapse. 9. Vomiting early, with intermittent nausea. 10. Widal made daily for seven days and proved negative. On the third day after operation blood culture was made with negative result, and on the eighth day a positive Widal was obtained.

Plastic Operations for Acquired Deformities of the Face.—Dr. J. SHELTON HORSLEY, of Richmond, called attention to the fact that plastic operations on the face were usually not life saving procedures, but relieved not only the discomfort and mental anguish of the patient, but also of his associates who daily viewed the deformity. Plastic surgery of the face required a kind of ingenuity to meet unusual conditions and to make things fit. The age and health of the patient must be given due weight. While general principles could guide in certain groups of cases, each case was a law unto itself. Dividing the face regionally, he reported three cases of deformity of the forehead after the loss of a portion of the anterior wall of the frontal sinus. The infundibulum was probed, and if not sufficiently large, gauze was run through it. Then small skin flaps were taken from the margins of the defects and turned in, cutting the pericranium farther out than the skin, so it could be overlapped like a double breasted coat. The raw surface was covered by sliding flaps from other portions of the forehead. A deformity of the eye caused by fracture and displacement of the portion of the bone to which the inner canthus was attached, was corrected by re-

placing the bone and shortening the upper lid. Defor-
mities of the nose were corrected by grafting
bone from the rib or by sliding a flap including mu-
cous membrane and cartilage from the septum of the
nose. Large openings in the cheek were closed by
transplanting a flap from the forehead with the at-
tached anterior temporal artery dissected out and
transplanted in the new position. Defects in the lip
were corrected by various methods. When the
whole thickness of the lip was involved, as after
noma, flaps which included mucous membrane were
slid up from the cheek. In other instances flaps
were transplants from the neck or from the arm.
When the arm was used the pedicle was cut in about
two weeks.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowl-
edge no obligation to review them all. Nevertheless, so
far as space permits, we review those in which we think
our readers are likely to be interested.]

*Medical Hints. For the Use of Medical Officers Tem-
porarily Employed with Troops.* By J. EDWARD SQUIRE,
M. D. (Lond.), F. R. C. P., D. P. H. (Camb.), Companion
of the Order of the Bath; Knight of Grace of the Order
of St. John of Jerusalem; Lieutenant-Colonel (Hon.
Col.), Late R. A. M. C. (V.), Consulting Physician
Mount Vernon Hospital for Diseases of the Chest, etc.
Oxford War Primers. London: Henry Frowde (Ox-
ford University Press) and Hodder & Stoughton, 1915.
Pp. 128. (Price, \$1.)

In this volume are covered the diseases that are apt
to occur in military camps. The infectious diseases, with their
periods of incubation, periods of infectiousness, appearance
of rash, etc., are tabulated and the general treatment of
fevers is given. Then follows a careful description of the
infectious diseases, including their etiology, symptomatol-
ogy, differential diagnosis, complications, and treatment.
Under the heading, diseases of the digestive tract, general
rules as to regularity in eating, the care of the teeth, the
care of the bowels, etc., are given. Under diseases of the
respiratory tract, bronchitis, pneumonia, bronchiectasis,
pleurisy, hemothysis, and pulmonary tuberculosis are dealt
with. Another chapter is devoted to cardiac diseases, in
which dilatation, hypertrophy, disturbances of function, the
tobacco heart, and valvular lesions receive attention.
Rheumatism and tonsillitis make up two interesting chap-
ters, while the treatment of scabies and pediculosis is also
given space. Other subjects treated are frost bites, poison-
ing by gases, arsenical poisoning, the effects of tobacco
and alcohol, malingering and its detection, neurasthenia,
marching, and discipline in hospitals.

*How to Live. Rules for Healthful Living Based on Mod-
ern Science. Authorized by and Prepared in Collabora-
tion with the Hygiene Reference Board of the Life
Extension Institute, Inc.* By IRVING FISHER, Chairman,
Professor of Political Economy, Yale University, and
EUGENE LYMAN FISK, M. D., Director of Hygiene of
the Institute. New York and London: Funk & Wagn-
alls Company, 1915. Pp. xiv-345. (Price, \$1.)

So much practical wisdom and scientific common sense
reside in this little book it outclasses many treatises on
medicine. Its succinctness, lucidity, and charm of diction
amplify its usefulness as well as its availability. To be
sure, it offers only a bare outline of a great subject; indeed
the greatest subject to which man can give his mundane
attention. Upon conduct, behavior, learning to do the right
things and to avoid the wrong ones, depends the well and
end-all of man in this world and they form a mighty sound
basis for advance to any other. Here we are and here we
must work out our salvation, at least our survival, also
the grounds as well as means for justifying and maintain-
ing our existence. It is to the lasting credit of a group

of industrial organizations (life insurance) that so admir-
able a supplementary organization as the Life Extension
Institute has been formed and so efficiently elaborated.
Their crowning act is this little manual of idealized stand-
ards and rules of conduct.

After a careful second reading, few points meriting
criticism are found. Whatever divergences of opinion we
might entertain as to certain statements, are as nothing
in comparison with the sanity of the conclusions and
economic force of the recommendation. Obviously the
authors have taken an astonishingly wide survey of all
reputable data and have used rare judgment in the selec-
tion and formulation of opinions. The choice of subject
matter for consideration, the arrangement and form of
presentation leave little to desire.

One hope we venture to express: That members of the
medical profession will at least make themselves familiar
with the subject matter herein outlined, in order that they
may not become placed at disadvantage by laymen, many
of whom are equipped with a correct knowledge of the
science and practice of hygiene.

*Public Health Bulletin No. 71. Studies in Vocational Dis-
eases. I. The Health of Garment Workers.* By J. W.
SCHERESCHESKY, Surgeon, United States Public Health
Service. II. The Hygienic Conditions of Illumination in
Workshops of the Women's Garment Industry. By J. W.
SCHERESCHESKY and D. H. TUCK, Assistant Physicist,
United States Public Health Service. Prepared by Direc-
tion of the Surgeon General. Washington: Government
Printing Office, 1915. Pp. 224.

This bulletin is a forceful, concise account of one of the
most comprehensive, inclusive, and exact studies ever
made into the physical condition of industrial workers. It
is a model in method for students of industrial hygiene.

The investigation was made under the auspices of the
Federal Government by members of the United States Pub-
lic Health Service in cooperation with the Joint Board of
Sanitary Control of the cloak, suit, and skirt, and dress
and waist industries of New York city. This board con-
sists of representatives of the manufacturers, of the unions,
and of the public, controlling the management of the most
highly organized and one of the largest industries in the
country, the associated garment trades.

The studies were made under the direction of Dr. J. W.
Schereschewsky, a member of the Public Health Service
well equipped to direct and carry through such investiga-
tions. In 1912, Doctor Schereschewsky was in charge of
and responsible for the notably good exhibit of the Inter-
national Congress of Hygiene and Demography in Wash-
ington. His interest at that time was deeply aroused in the
importance of industrial hygiene through collecting ma-
terial for this exhibit relating to disease among industrial
workers. His familiarity with this topic undoubtedly led
to his selection to conduct this important investigation. In
this country such complete cooperation between workers,
employers, and scientists in an investigation along indus-
trial lines was most noteworthy.

The investigation consisted of a complete physical ex-
amination of 2,000 male and 1,000 female workers, chemical
examination of the air, observations as to conditions of
heat and humidity in the shops of the trade, and an in-
spection of the sanitary conditions.

Special and skilled attention was given by Mr. D. H.
Tuck, the assistant physicist, to the problems of the hygienic
conditions of illumination in workshops. So complete have
been Mr. Tuck's studies that a large impetus to interest in
this important matter should result. No physician or in-
dustrial manager responsible for the health of workers,
should be without this bulletin as a reference book.

Interclinical Notes.

A splendid feature of the *Survey* for January 15th is an
article, National Yardsticks for Health, by Graham Romeyn
Taylor, which is a description of the activities of the Pub-
lic Health Service, a body of men who have always com-
manded the sympathies and respectful approval of the
NEW YORK MEDICAL JOURNAL. This introduction to popu-
lar notice of the vastly important role played in our na-
tional life by Surgeon General Rupert Blue and his men,
should remove many misunderstandings and smooth the
way for further progress. A sympathetic account of the

trip of the *Oscar II* will be a novelty to many of our readers, who have enjoyed much newspaper humor on the subject.

* * *

An admirable article on the adoption of children, by Dr. Charles Gilmore Kerley, appears in the *Outlook* for January 12th. The writer points out that illegitimate children are the offspring, not of the depraved, who do not have children, but of the victims of misplaced confidence, and he truly remarks that criticism here by the male sex is out of order. He remarks, moreover, that an adopted child is more likely to be strong and healthy than one born in a family, because its condition is certified to by a competent authority, whereas average children have to be taken as they come.

* * *

We are informed that a druggist who was slowly starving in a New Jersey village, has been suddenly placed on the road to wealth by the establishment near by of a powder factory; he is unable to keep up with his orders and sales. We suppose that doctors have sufficient instinct of self preservation to keep their eyes open for such chances. We hear that the village in question had a population of about 500 a year ago, whereas now it numbers over 20,000 souls; where one physician once sufficed, there is now plenty to do for half a dozen.

* * *

One of our office boys seems to have been inspired by the new Department of Modern Treatment and Preventive Medicine to contribute the following brief essay upon a timely topic:

NASAL PREPAREDNESS.

It is to cough; it is to sneeze;
It is to breathe the germey breeze;
It is to entertain the gripe;
It is to let one's business slip.

We clean our hands, we clean our face,
We clean most every other place,
All but our nose.
Poor nose,
Neglected nose

Superfine, long, tiptilted, slender,
Jolly-red, pallid, thin, robust, or tender!

We heed the wise words of departments of health,
Eschew the society of people of wealth,
Flee the companionship too of the poor
(In fact ever prone to show *them* the door)
If ever they cough or sneeze.

Avoid overcrowded and very warm places,
To the vile demon, Rum, we turn stony faces,
Get plenty of rest and lots of fresh air,
In fact give ourselves the best of good care,
In order to live at our ease.

All but our nose;
Red; lacrymose;
Weeping and wiped from minute to minute,
It seems as though the devil were in it.

Though making our moan,
We leave it alone,
Full of dust and germs galore,
Soot and dirt and something more.
Why don't we wash it out?

Lave it, clean it, get it clear;
Not leave it till some other year.
With a teaspoon of salt in a pint of warm water,
(Add sodium borate if you think that you'd order)
Gargle your throat and wash clean your nose,
For these are the spots where the vile germlet grows.
A sniff of boric powder before you go to bed
Will help to keep bacteria from swarming in your head.

An easy trick, it works so slick,
To keep us all from getting sick,
It knocks the doctor out of a job,
It keeps infection out of the nob;
But spite of it all, we don't care at all
To clean out the nose and get rid of our woes
But rather prefer to turn up our toes
Under the sod where the daisy grows!

Lay readers of the *Survey* may well be grateful to the editors for entrusting to the competent Dr. A. J. Rongy the reviewing of Margaret Tracy and Mary Boyd's silly work on twilight sleep. "The book," says the reviewer coldly, "is a typical product of the American mind which at the same time lacks the training to cope with a truly scientific subject." A dispassionate discussion of heliotherapy is another good feature of the *Survey* for January 15th.

Meetings of Local Medical Societies.

MONDAY, January 31st.—Poughkeepsie Academy of Medicine.

TUESDAY, February 1st.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine (Section in Surgery); Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates; Medical Society of the County of Ulster; Medical Society of the County of Orleans.

WEDNESDAY, February 2d.—New York Urological Society; Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine.

THURSDAY, February 3d.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, February 4th.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association; Saratoga Springs Medical Society; Society for Serology and Hematology, New York (annual).

SATURDAY, February 5th.—Benjamin Rush Medical Society, New York.

Official News.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending January 22, 1916:

Bartlett, C. J., Captain, Medical Corps. Reports arrival at Fort Worden, Washington, for duty. **Bayle**, E. W., First Lieutenant, Medical Reserve Corps. Reports arrival at Fort Caswell, North Carolina, for duty. **Billingslea**, C. C., Major, Medical Corps. Reports arrival at Fort Leavenworth, Kansas, for duty; will proceed to Philippine Department for duty when necessary. **Blanchard**, Robert M., Captain, Medical Corps. Now on leave of absence in Washington, D. C., will report in person to the commanding officer, Walter Reed General Hospital, Washington, D. C., for temporary duty, during the absence of Captain Percy L. Jones. **Carswell**, R. L., Captain, Medical Corps. Reports relief from duty at Fort Oglethorpe, Georgia, and assigned to duty with Ambulance Company No. 5, and will accompany it upon its return to its home station, Fort Snelling, Minnesota. **Darnall**, Carl R., Major, Medical Corps. Relieved from duty in the Philippine Department, to take effect May 4, 1916, and will then proceed to the United States, and upon arrival report for further orders in accordance with General Order No. 80, War Department, 1914. **Davis**, William R., Captain, Medical Corps. Reports en route

to Fort Meade, South Dakota, for station. **Dowdle**, Edward, First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, on account of an existing emergency, to take effect on or about February 10, 1916, and will report in person on or about that date to the commanding officer, Fort Ontario, New York, for duty during the absence on leave of Captain Daniel F. Maguire, Medical Corps, upon whose return to Fort Ontario, First Lieutenant Edward Dowdle will return to his home and upon arrival there stand relieved from further active duty in the Medical Reserve Corps. **Duncan**, Louis H., Captain, Medical Corps. Granted two months' leave of absence upon arrival of First Lieutenant Thomas H. Scott, Medical Reserve Corps, at Sierra Blanca, Texas. **Freeman**, Paul L., Captain, Medical Corps. Relieved from duty at the Walter Reed General Hospital, Washington, D. C., and will report in person to the commandant, Army Medical School, Washington, D. C., Hill, Felix R., Captain, Medical Corps. Relieved from duty at Fort Myer, and will report in person to the commanding officer, Walter Reed General Hospital, Washington, D. C., for duty. **Miller**, Reuben B., Major, Medical Corps. Relieved from duty at the Army Medical School, effective at such time as will enable him to comply with this order, and will proceed to San Francisco, Cal., and take transport to sail from that place on or about April 5, 1916, for the Philippine Islands, and upon arrival at Manila, will report in person to the commanding general, Philippine Department, for assignment to duty. **Rhodes**, John E., First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in that corps has been accepted by the President, taking effect January 17, 1916. **Trasher**, Benjamin O., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort H. G. Wright, New York, and will proceed without delay to his home, and upon arrival there will report by telegraph to the adjutant general of the army; leave of absence for one month and twenty-eight days is granted, to take effect upon his arrival at his home; upon expiration of leave of absence, relieved from active duty in the Medical Reserve Corps.

Births, Marriages, and Deaths.

Born.

Booth.—In Portland, Oregon, on Wednesday, January 5th, to Dr. and Mrs. Courtland L. Booth, a daughter.

Married.

Graham—Macklin.—In Bluffton, Ind., on Wednesday, January 5th, Dr. Covey R. Graham, of Bryant, Ind., and Miss Hazel Macklin. **Harvey—Cartwright**.—In San Francisco, Cal., on Wednesday, January 5th, Dr. William S. Harvey, of Chicago, and Miss Allie McHenry Cartwright. **Hults—Potter**.—In Brooklyn, N. Y., on Wednesday, January 5th, Dr. Charles Voorhees Hults and Miss Marion Louise Potter. **Legge—Gerrish**.—In Pittsburgh, Pa., on Wednesday, January 12th, Dr. John L. Legge, of Cumberland, Md., and Mrs. Helen Louise Gerrish. **Milnor—Poersel**.—In Seattle, Wash., on Wednesday, January 5th, Dr. Guy C. Milnor, of Warrensville, Pa., and Miss Nellie Poersel. **Moss—Lincoln**.—In Chicago, Ill., on Wednesday, December 20th, Dr. B. J. Moss, of San Diego, Cal., and Miss Rose Lincoln. **O'Keefe—Evans**.—In Boston, Mass., on Tuesday, January 4th, Dr. Edward Scott O'Keefe and Miss Ruth Evans. **Ramroth—Kalkbrenner**.—In Marion, Ohio, on Wednesday, January 12th, Dr. Robert Ramroth and Miss Marguerite Theresa Kalkbrenner. **Russell—Lyons**.—In Huntington, W. Va., on Saturday, January 1st, Dr. Donald Russell and Miss Eugenia Lyons. **Stone—Roulston**.—In Colorado Springs, Colo., on Thursday, December 23d, Dr. Otto L. Stone and Miss Leona Marion Roulston. **Strong—Freer**.—In Ann Arbor, Mich., on Friday, January 7th, Dr. Richard F. Strong and Mrs. Agnes Leas Freer. **Trotter—Grayson**.—In Westfield, N. J., on Tuesday, January 4th, Dr. Arthur Guy Trotter, of Greenwood, Miss., and Miss Mary Mal-

neapolis, Minn., on Wednesday, January 12th, Dr. Albert J. Wentworth and Miss Lydia Johnson.

Died.

Blank.—In Milwaukee, Wis., on Wednesday, January 12th, Dr. Henry Blank, aged fifty-one years. **Bowen**.—In Saranac Lake, N. Y., on Wednesday, January 12th, Dr. James J. Bowen, of Buffalo, N. Y., aged forty years. **Bryant**.—In Kingston, N. Y., on Thursday, January 13th, Dr. James D. Bryant, aged forty-five years. **Canby**.—In Calhoun, Ill., on Monday, January 10th, Dr. Samuel S. Canby, aged sixty-eight years. **Colegrove**.—In Salamanca, N. Y., on Friday, January 14th, Dr. F. J. Colegrove, aged eighty-three years. **Crawford**.—In Lynn Grove, Ky., on Monday, January 3d, Dr. Charles N. Crawford, aged sixty years. **Davis**.—In Pittsburgh, Pa., on Wednesday, January 12th, Dr. Mayes S. Davis, aged fifty years. **Dings**.—In Keota, Iowa, on Friday, January 14th, Dr. Samuel Dings. **Eberg**.—In Simsbury, Conn., on Sunday, January 16th, Dr. Arnold Eberg, aged fifty-eight years. **Fletcher**.—In Somerville, Mass., on Friday, January 14th, Dr. William K. Fletcher, aged eighty-eight years. **Freeman**.—In Joplin, Mo., on Wednesday, January 5th, Dr. H. J. Freeman, aged eighty-five years. **French**.—In Denver, Colo., on Tuesday, January 11th, Dr. Francis M. French, aged seventy-six years. **Garver**.—In Ephrata, Pa., on Saturday, January 1st, Dr. Michael B. Garver, aged seventy-two years. **Gaugler**.—In Dayton, Ohio, on Saturday, January 8th, Dr. Richard S. Gaugler, aged forty-seven years. **Graham**.—In Freedom, Pa., on Tuesday, January 11th, Dr. Franklin Graham, aged seventy-seven years. **Groll**.—In Germantown, Pa., on Wednesday, January 5th, Dr. E. Groll, aged forty-five years. **Grove**.—In Shepherdstown, W. Va., on Thursday, January 13th, Dr. Robert C. Grove, aged sixty-two years. **Hache**.—In Somerville, Mass., on Saturday, January 8th, Dr. Henry C. Hache, aged forty-seven years. **Holbrook**.—In Lowell, Mass., on Sunday, January 16th, Dr. Guy Holbrook, aged seventy years. **Impey**.—In Omaha, Neb., on Monday, January 10th, Dr. Charles Impey, aged sixty-three years. **Jaegers**.—In Chicago, Ill., on Tuesday, January 18th, Dr. Frank J. Jaegers, of New York, aged seventy years. **Jenkins**.—In Los Angeles, Cal., on Friday, January 7th, Dr. J. Evans Jenkins, aged thirty-six years. **Jones**.—In Chambersburg, Pa., on Tuesday, January 11th, Dr. Meredith D. Jones, of St. Louis, Mo., aged sixty-five years. **Kirkpatrick**.—In La Harpe, Kansas, on Tuesday, January 11th, Dr. Andrew Kirkpatrick, aged seventy-eight years. **Leaming**.—In Otterbein, Ind., on Thursday, January 13th, Dr. Lewis Leaming, aged forty-two years. **Maynard**.—In Syracuse, N. Y., on Saturday, January 15th, Dr. William H. Maynard, aged fifty-seven years. **Millikin**.—In Cleveland, Ohio, on Thursday, January 6th, Dr. Benjamin L. Millikin, aged sixty-four years. **Minter**.—In Burley, Idaho, on Friday, January 7th, Dr. John M. Minter, aged thirty-three years. **Morrill**.—In New York, on Sunday, January 16th, Dr. J. Lee Morrill, aged sixty-eight years. **Neal**.—In Peru, Neb., on Monday, January 10th, Dr. John F. Neal, aged eighty-one years. **Neffner**.—In Weishberg, Ind., on Wednesday, January 12th, Dr. Robert T. Neffner, aged forty years. **Nitzsche**.—In Dubuque, Iowa, on Sunday, January 9th, Dr. Robert F. Nitzsche, aged eighty-seven years. **Pearce**.—In Steubenville, Ohio, on Thursday, January 13th, Dr. Enoch Pearce, aged eighty-three years. **Spangler**.—In Mapleton Depot, Pa., on Friday, January 7th, Dr. J. G. Spangler, aged fifty-five years. **Swett**.—In New Hartford, Conn., on Thursday, January 13th, Dr. Josiah Swett, aged sixty years. **Tate**.—In Tate, Ga., on Thursday, January 6th, Dr. William B. Tate, aged fifty-seven years. **Taylor**.—In Camden, N. J., on Friday, January 14th, Dr. H. Genet Taylor, aged seventy-nine years. **Thomas**.—In West Chester, Pa., on Friday, January 14th, Dr. Charles Monroe Thomas, aged sixty-seven years. **Thornton**.—In Buffalo, N. Y., on Sunday, January 16th, Dr. William I. Thornton, aged thirty-seven years. **Tomlinson**.—In Morley, Mo., on Monday, January 3d, Dr. Thomas E. Tomlinson, aged fifty-nine years. **Tweeddale**.—In Washburn, Ill., on Saturday, January 8th, Dr. James R. Tweeddale, aged eighty-three years. **Ward**.—In Croydon, Vermont, on Sunday, January 3d, Dr. Artemas Ward, aged seventy-nine years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 6.

NEW YORK, FEBRUARY 5, 1916.

WHOLE NO. 1940.

Original Communications.

ACUTE APPENDICITIS.*

By JOHN B. DEAYER, M. D.,
Philadelphia.

The limited space at my disposal will not allow me to attempt a systematic treatise on appendicitis, the symptomatology and pathology of which often are so extensive and varied as to render each almost interminable. The important points that have been learned about this disease are, first, that it is the most common intraabdominal inflammation; that indigestion is often a forerunner, preparing the soil for the infection; that, being an infectious disease and the most common infectious disease of the abdominal cavity, the appendix constitutes the avenue by way of which infection most commonly invades the upper abdomen, therefore, the biliary apparatus, the pancreas, the duodenum, and pyloric end of the stomach have as their worst enemy the appendix.

Appendicitis occurs in the acute and chronic forms. Acute appendicitis may be either perforating or nonperforating (catarrhal, interstitial), gangrenous (moist and dry), and phlegmonous. Acute nonperforating (catarrhal, interstitial) appendicitis may be seen as subacute, the more acute symptoms having subsided; this type of appendicitis is subject to relapse. Chronic appendicitis is seen as catarrhal, interstitial, and obliterative (an advanced stage of the interstitial and catarrhal).

In studying appendicitis we must look at it from several points of view, the anatomical, etiological, bacteriological, and pathological.

The anatomical side presents, in addition to the different positions which the appendix may hold, study of the peritoneal fossæ in close relation to the appendix.

The peritoneal fossæ at the site of the ileocecal junction are formed by folds of and depressions in the peritoneum. The folds of the peritoneum forming these fossæ are the ileocolic and the ileocecal. The ileocolic fold extends between the anterior surface of the terminal mesentery of the ileum and anterior surface of the cecum; it carries a branch of the ileocolic artery, which makes it a vascular fold. The space beneath this fold and above the terminal ileum and its mesentery is known as the ileocolic fossa. The ileocolic is the least important fossa in this region. The ileocecal fold extends from the free border of the terminal ileum to the

cecum and is continuous with the mesoappendix; the latter is continuous with the inferior layer of the mesentery. This is a bloodless fold.

The ileocecal fossa situated beneath this fold is bounded on the right by the mesentery of the ascending colon and on the left by the mesentery of the ileum. This fossa may be very deep and long and at times it may extend upward behind the ascending colon as far as the kidney and duodenum. The mesoappendix sometimes divides the ileocecal fossa transversely, thus forming the superior and inferior ileocecal fossæ.

The subcecal, the remaining fossa in this region, is immediately under the cecum, which must be lifted up to expose it. It is less constantly present than the ileocolic or ileocecal fossæ; its mouth is found behind the junction of the cecum with the colon. When a mesocecum is present the mouth of the fossa is flush with the tip of the cecum and base of the appendix. This fossa is frequently the site of the appendix, and when the mouth becomes glued to the cecum at the base of the appendix it can readily be understood how the appendix is believed to be absent.

The appendix may be buried in either the ileocecal or subcecal fossa, more often the latter, making it difficult to find. There have been many reports of congenital absence of the appendix and yet it seems strange that I have never met with a case in the many operations I have performed. I am rather inclined to think that the appendix has been present in some of these reported cases. The position the appendix holds has an important bearing upon the location of the point of greatest tenderness to palpation and the point of reference of pain.

The positions in which the appendix is found are below and to the outer side of the cecum, to the outer side of the cecum and colon, pointing upward and outward, and behind the cecum pointing upward; to the inner side of the cecum, lying beneath or above the terminal mesentery of the ileum; and pointing downward, occupying the false and many times the true pelvis. I have known the appendix to lie behind both the ascending and transverse colon, extending to the splenic flexure. I have knowledge of a case of fecal fistula occurring in an appendicitis where the appendix held such a position which was subsequently operated in.

Where the appendix lies beneath the mesentery of the terminal ileum and is in advanced inflammation, intestinal obstruction due to adhesion of the terminal ileum to the posterior parietal peritoneum

*Read before the Southeast Branch of the County Medical Society, Philadelphia, October 22, 1915.

is occasionally seen after the removal of the appendix.

In reviewing the various positions which the appendix may occupy, it is at once evident that the location of the tenderness and the point of referred pain must necessarily differ in particular cases. The appendix holding a high position to the outer side of or behind the ascending colon, bringing the tip or terminal end in proximity to the gallbladder, duodenum, pylorus, or head of the pancreas, may give rise to symptoms which are difficult to interpret. Also when the appendix is in the pelvis, particularly in the female, confusion may again arise. I believe the appendix when holding a pelvic position in the female is responsible for a percentage of cases of sterility. I believe further that pelvic appendicitis in the girl is a more serious matter than pelvic appendicitis in the male, as the proximity of the uterine appendages causes a risk of infection in the shape of a salpingitis. In passing, I may remark that pelvic appendicitis is a cause of extra-uterine gestation. Extrauterine gestation does not occur in the presence of normal Fallopian tubes, therefore, where the tubes are exposed to inflammation, as they necessarily are in pelvic appendicitis; there must result desquamation of the ciliated epithelial lining in a percentage of cases, which renders the tubes impaired physiologically.

The etiological factors in appendicitis are either predisposing or exciting; of the former, age stands out as the most prominent, and next to age previous attacks of appendicitis. The disease is most common between the ages of ten and thirty years. The susceptibility of young adults to the disease is dependent on the numerous disturbances of the gastrointestinal tract, the result of dietary indiscretions, and the fact that at this time of life the adenoid tissues, in which the appendix is rich, are prone to inflammation. More cases of appendicitis occur in males than in females. Constipation is considered by many as an exciting factor, yet I do not attach much importance to it as a cause. I should rather say appendicitis is the cause of constipation. Any catarrhal condition of the intestinal canal predisposes the mucous membrane to bacterial invasion when the mucous lining of the appendix is to a degree endangered. That influenza exerts a predisposing influence in the production of appendicitis there is no doubt in my mind. I have seen too many cases under these conditions to be in any way doubtful.

Infectious diseases are a factor not to be overlooked. Foremost among the exciting factors are disturbances of digestion. When digestion is faulty the bacterial flora of the intestine may be much increased and pathogenic organisms may be present in abundance. It must not be forgotten that indigestion is more often the result of appendicitis, particularly of chronic appendicitis. Typhoid fever, tuberculosis, and actinomycosis are also exciting factors.

The question of traumatism as an exciting factor is of most importance from the medicolegal standpoint. Personally I have never seen an undoubted case of appendicitis caused by trauma. From the lawyer's viewpoint trauma figures too often, but this is not to be wondered at when we realize that the

average lawyer perhaps knows as much about traumatic appendicitis as he does of law.

The bacteriology of appendicitis may be dismissed with a word in reference to the various microorganisms found in the culture of the serosa of the appendix, of the surrounding peritoneum, and the peritoneum distal to the appendix, and of the exudate, including pus. The microorganism practically always found in both acute and chronic appendicitis is the colon bacillus, which differs in virulence, depending upon the variety present, of which there are several.

Peritonitis is seen as localized and diffused. The portion of the peritoneum most susceptible to infection is the diaphragmatic; next in frequency, the enteronic, that covering the intestines; and last, the pelvic peritoneum. The peritoneum is covered with a single layer of delicate flat endothelial cells, lubricated by a thin film of lymph, making the peritoneum merely moist. The peritoneal cavity remains a cavity only by virtue of this single layer of endothelial cells. It will therefore be seen that the peritoneum does not contain fluid, and that when fluid is found in the shape of serum upon opening the cavity it is evidence of inflammation. The peritoneum defends itself by this function of exudation, which, with that of absorption, makes it the most important serous membrane of the body. It has been well said that when the peritoneum is insulted, it weeps, and with its tears defends itself. The peritoneum does its best work when not disturbed, when at rest, therefore medication which increases peristalsis, disturbs the peritoneum and aggravates inflammation. The peritoneum unhampered by meddling medicine or surgery is a most wonderful protector of life. It can be insulted and it pardons; it can be defiled and it cleanses and reconstructs, but it must be allowed to do its own work in its own way unhampered by the overzealous doctor and surgeon. Destruction of the endothelial layer of the peritoneum results in the formation of granulation tissue, which attaches itself to adjacent structures forming adhesions. The function of exudation enables the peritoneum to form adhesions which are in the highest degree important and protective. Any treatment that breaks down these adhesions, such as purgation early in peritonitis, defeats the end the peritoneum is capable of accomplishing. This is one way the peritoneum encases infection, making it a localized peritonitis as against a diffused peritonitis did it not possess this power. Any treatment of peritonitis that interferes with this walling in property is irrational, illogical, and unphilosophical, and may be harmful to the extreme. Many a promising youth suffering with acute appendicular peritonitis has, by an ill timed dose of salts, calomel, or castor oil, been sent to his long home. The function of exudation, I repeat, is at bottom entirely protective in nature.

The portions of the peritoneum most susceptible to infection are the diaphragmatic and the enteronic. The differential points between a diffused and a localized peritonitis are that in the former the pain is greater, the abdominal breathing more restricted, and the rigidity and tenderness embrace a greater area of the overlying abdominal walls; upon aus-

cultation the peristaltic waves are heard over a greater area and the abdominal breathing is less marked in the diffused than in the localizing variety. In the early stage of peritonitis the tenderness and rigidity are best elicited by slight pressure. Many a doctor practises his profession for a life time, yet never acquires the sense of touch.

When the infection has invaded the coats of the bowel, to the degree of abolishing the function of the sympathetic nerves (Auerbach and Meissner), the vomiting, which early in the disease was reflex and consisted of the contents of the stomach, now is regurgitant and the patient is unable to expel flatus per rectum. When peritonitis has reached this stage, rigidity is replaced by distention, and the abdominal walls are not nearly so sensitive to slight pressure. The patient is now toxic from absorption of the toxins in the contents of the distended coils of bowel, and the face gets the expression frequently spoken of as peritoneal facies—the eyes are bright and the brain is active, but the patient is not conscious of his serious condition.

The extent and degree of virulence of the inflammation influence the pulse and temperature, but particularly the pulse, which becomes rapid and gradually loses its volume. These cases are not uncommonly diagnosed as intestinal obstruction by the physician who sees the patient for the first time in this stage. While it is true that there is an obstructive ileus paralyticus, it is not, however, the true ileus due to mechanical obstruction. When the obstruction is marked, the belly is silent upon auscultation and the pulsations of the aorta are distinctly heard throughout the involved area. When the intestines are distended as the result of paresis, and nothing is heard on auscultation except the pulsation of the aorta, a tinkle with each pulsation of the aorta is often heard owing to the disturbance of the fluid in the coil of bowel in contact with the aorta. What is sometimes thought to be peristalsis is a tinkling due to displacement of the contents of the paralyzed bowel by the movement of the diaphragm, or the pressure of the head or the stethoscope. It is needless to say this is a most unfavorable condition and too often bespeaks a fatality.

The blood count, early in the inflammation, if the latter is at all frank and the patient possesses a good resistance, shows a high leucocytosis with a slight rise in the polynuclears, while in the advanced stage of the disease the leucocytes may drop to normal or in some instances to subnormal and the polynuclears rise. It must be understood that the microorganisms possess the power to penetrate the wall of the intestine, and, therefore, the wall of the appendix. The normal intestinal wall does not allow bacteria to go through, but in the event of the mucosa becoming diseased and its resistance reduced, the bacteria penetrate with more or less facility. It is most certain that toxins elaborated by the virulent *Bacterium coli commune* retained by portions of the bowel, so alter the mucous membrane as to permit infection of the wall of the bowel; this without doubt occurs in appendicitis. This is the explanation of periappendicular abscess in the absence of perforation. The most virulent germ, fortunately but seldom present, is the streptococcus.

The pathological role of acute appendicitis is so extensive and varied as to make it entirely out of

the question to attempt other than a cursory discussion. The points in pathology I will touch upon are chiefly in connection with peritonitis and abscess.

Appendicular abscess, the result of appendicitis, is met with in several varieties: First and most common is where the collection lies beneath the anterior parietal peritoneum, in front of, below, and to the outer side of the cecum, the pus being confined by the cecum, coils of small bowel, omentum, parietal peritoneum, and inflammatory exudate. Second is where the collection lies to the outer side of the cecum and ascending colon or behind the cecum and colon between the layers of the ascending mesocolon in the retroperitoneal cellular tissue. Third is where the collection lies in the pelvis, usually entirely shut off from the general peritoneal cavity by the adherent coils of small bowel occupying the upper pelvis. Fourth is that in which the collection of pus is near the median line of the abdomen to the median side of the cecum. Fifth is that in which the pus is free in the general peritoneal cavity or exists in the shape of many pockets between the coils of intestine.

In addition to these varieties of abscess, we meet with secondary abscess, residual abscess, and metastatic abscess. Secondary abscess occurs as a rule in close proximity to the primary abscess. Residual abscess occurs at the site of the primary abscess; while metastatic abscess may be present at any point in the abdomen distant to the site of the original, or may be situated in the parotid gland, pancreas, liver, in the shape of multiple points of suppuration, pyelophlebitis, etc.

The clinical history of appendicitis is most typical, that of a patient being perfectly well, suddenly seized with acute abdominal pain, first referred to the umbilical or epigastric region, and accompanied by vomiting. The pain is wavelike and paroxysmal, the patient restless, in this respect in marked contrast to the patient who is the subject of perforation of a gastric or a duodenal ulcer, or of the gallbladder or base of the appendix close to the cecum. In perforated gastric or duodenal ulcer the patient lies quiet with very fixed muscles, which to palpation are most rigid. In appendicitis, after a few hours the pain becomes localized to the right iliac fossa or site of the appendix and there is no longer vomiting.

A proportion of cases of appendicitis start with diarrhea, and when they follow the ingestion of indigestible material, vomiting being present as well as diarrhea, are sometimes regarded as ptomaine poisoning. I rarely see a case of ptomaine poisoning, while I see many cases of appendicitis with vomiting and diarrhea. In passing, I may state that as a rule diarrheal cases are serious from the start.

The diagnosis of acute appendicitis as a rule is not hard to make, yet like other conditions there are instances where it is impossible to arrive at a correct conclusion immediately after seeing the patient. The clinical history, with the rigidity, tenderness, site of reference of pain, usually makes it comparatively sure. The differential diagnosis is equally easy in the majority of instances.

If this sequence of symptoms and signs, namely, pain, vomiting, fever, tenderness, and rigidity is interrupted, the diagnosis of acute appendicitis may

well be considered doubtful. Fever invariably accompanies acute appendicitis. It must not be lost sight of that reference of pain depends upon the position of the appendix. If the inflammation is most intense in the end of an appendix holding a northerly position, pain is referred to the right hypochondrium; where the appendix occupies the pelvis, the pain is most likely to be left sided. When the pain subsides suddenly and the patient has a severe chill, gangrene is to be strongly suspected. Chills or chilly sensations not followed by fever are nervous in character. Two causes for the absence of pain in appendicitis are the indifference of the patient to pain, and a very rapid spread of gangrene.

Leucocytosis is of value as a confirmatory symptom when the patient reacts well to the infection. On the other hand, if the system is overwhelmed by the infection, the number of white cells may not be increased while the polynuclear cells will; yet in the presence of a high polynuclear and a low leucocyte count the former is suggestive of marked absorption of toxins. Personally I rely more on physical findings than I do upon the leucocyte count. The degree of tenderness is influenced by the degree of inflammation; it therefore may be termed mild, moderate, or exquisite. Exquisite tenderness, in my experience, means pus, or exudate on the verge of rapidly becoming pus.

The most important point in differential diagnosis is the distinction between acute cholecystitis and acute appendicitis. Acute pancreatitis, perforated ulcer, or perforated gallbladder, presents symptoms so much more intense than those of acute appendicitis that they should not give rise to confusion.

At this late day of standardization, every physician should be familiar with the treatment of acute appendicitis, the rational treatment carried out by men that have the largest and longest experience with this disease. First and most important is that the doctor examine the patient and not make the diagnosis through the clothes. I with others have made mistakes by not examining the patient, to be chagrined thereafter. It may be said of all cases of acute abdominal pain that nothing in the shape of purgative or aperient medicine should be given until the cause of the pain is understood. In my experience purgatives play the greatest amount of havoc in acute abdominal conditions.

Formerly it was taught that morphine should never be given until the diagnosis was made, yet in some cases, small in number I admit, where the diagnosis cannot be made immediately and the patient is suffering, a small dose of morphine (one twelfth to one sixteenth of a grain) given hypodermically, is perfectly proper and will not mask the symptoms and signs if not repeated. If the disease be at all frank, the diagnosis having been made, the only safe and proper treatment is immediate operation. Delay in carrying out operation must mean in the course of a few hours localized or diffused peritonitis. In the presence of peritonitis and in the absence of operation the patient should be set up in bed, given nothing by mouth, not even cracked ice, water, or anything in the shape of food; he should be given enteroclysis by the Murphy method, and have an ice bag over the site of the rigidity and tenderness. The ice bag is useful to

keep the doctor from making too many examinations, thereby irritating the inflamed appendix, and, secondly, for the local anesthetic effect. That it has any effect in controlling inflammation I think is fallacious. The remark that is frequently made, "freezing out the disease" is too absurd to mention, yet it has been the means of sending many a sufferer in quiet repose to the eternal rest of the grave.

The more we see of appendicitis the greater respect we have for the disease. Those who have not had a large experience will find that what at first was a straightforward disease, is one of the most difficult and treacherous. Every case of appendicitis is a case unto itself. The only means of distinguishing the different class of cases is large experience, and even then it may be difficult.

Where the case goes on and improves nothing should be given by the mouth until there is restoration of peristalsis and the patient is passing flatus. It is my practice to operate in cases of localized peritonitis where the lesion can be localized and there is peristalsis in the surrounding region of the abdomen. In diffused peritonitis, in the absence of peristalsis and of a definite point of localization, it is my practice to defer operation until the peritonitis becomes a localizing or localized one. The principles of anatomical and physiological rest, assisting the functions of the peritoneum, absorption, and exudation, are defeated by any treatment other than the foregoing. As to this question there is no doubt in my mind, as I have had too many thousand cases to entertain any other idea. It is my experience that ninety per cent. of cases of perforating peritonitis have been purged, and it must be admitted that in a perforating appendix there is peritonitis of a high or low grade, depending upon the virulence of the microorganism, the resistance of the patient, the ability of the peritoneum to protect itself or to yield to the onslaught of the bacteria.

I cannot in closing do better than quote from Moy nichan:

Perforation means purgation
In an appendix kinked and bad.
Food and drink may worry him,
And aperients drive him mad.

The death rate in appendicitis at this late day should be practically nil, which I am sorry to say is not the case. All that is necessary is to look over the mortality of this disease in any hospital, when we shall be astonished, if we are not already familiar with the statistics. Practically every death from appendicitis means that somebody has been at fault, in other words, somebody is to blame.

THE PROMPT CURE OF GONORRHEA.

Principles and Practical Applications.

By GEORGE A. WYETH, M. D.,
New York.

Gonorrhea can be aborted, in the majority of cases, if seen within twenty-four hours after a purulent discharge has begun, except in primary cases. By "aborted" I mean cured within five to seven days, leaving the patient free of gonococci and all discharge, with urine clear, and able to withstand all provocative tests. Recent statistics as to the success of modern abortive methods vary widely, rang-

ing from forty-five per cent. reported by Frank and Lewin, of Berlin, to ninety per cent. reported by Ballinger, of Atlanta. My own personal records of private practice show success in sixty per cent. of cases.

Gonorrhea begins as a local infection and should be treated locally at the earliest possible moment. He who defers local treatment jeopardizes his patient's chance of an early recovery. If progress is to be made in the cure of this condition, we must realize that, as in cancer, our best chances lie in early attack. The so called conservative treatment, which postpones all local attention until the acute discharge has diminished, is a tacit confession that until the eleventh hour we rely upon nature to rid the patient of gonococci. Such a procrastinating policy sacrifices the patient's most favorable opportunity of being rapidly cured by modern methods.

It is a peculiar thing that, in this country, in far too many instances, the term "abortive treatment" as used in the textbooks, appears to mean anesthetizing the urethra and the injection of some strong, highly irritating antiseptic, such as silver nitrate or mercury bichloride. Indeed, in the 1912 edition of Keyes, in the introduction to the subject of abortive treatment, I read, "In the production of chronic urethritis the abortive treatment has taken the place of the sound of our fathers." A little further on, in italics, appears, "the surest way to abort gonorrhea is not to try to abort it." This is a very unfortunate teaching if it results in fixing in the mind of the physician, the belief that no patient who becomes infected with gonorrhea can be cured within a few days. Whether or not the word "abortive" correctly describes the treatment, certain it is that a large proportion of patients with acute, uncomplicated gonorrhea, if seen within twenty-four hours after a frank discharge has been established, can be cured within five or six days, except in cases of primary infection.

In primary cases the infection makes more rapid progress than in secondary and later cases for the reason that the cylindrical epithelium of the virgin urethra once attacked by the gonococcus undergoes destruction. It is never regenerated as cylindrical epithelium but always as pavement epithelium, which is less easily penetrated by the gonococcus.

From our studies of the pathology of acute gonorrhea we know that the first effect of the entrance of gonococci into the urethra and their lodgment in the tissues is a simple inflammation with characteristic symptoms, and that the gonococci do not penetrate the stratified squamous epithelium of the fossa navicularis, but extend by continuity to the cylindrical epithelium of the pendulous portion, where they produce more marked changes. Here the mucous membrane is swollen and loosened, and covered by many layers of pus corpuscles. The capillary blood-vessels are markedly dilated, their lumen is filled to bursting with polymorph leucocytes, and their walls—except for the wandering out of leucocytes—show no changes. One of the striking features is that the inflammatory process is not distributed evenly over the entire surface of the urethra, but is predominantly lacunar and perilacunar. Another striking feature is that gonococci seen upon the surface of the epithelium and squeezed between the de-

generated epithelial cells, are practically all enclosed in the pus cells, while of those seen in the sub-epithelial spaces some are intracellular, *but many more are extracellular.*

Here, then, is Nature's battleground for her struggle against the invading enemy. She has dilated the bloodvessels to the utmost, and is sending forth her warriors, the leucocytes, to engulf the rapidly increasing army of gonococci by her usual means of defense, phagocytosis. The belief that the gonococcus is a parasite of polynuclear cells, in which it thrives, and that the extracellular ones are short lived, I do not endorse. That the gonococci are found intracellularly is not due to any predilection of the gonococcus, nor is it a mere coincidence. It is a definite, specific act of nature. If we incubate an emulsion of gonococci with washed human blood corpuscles for ten or fifteen minutes, after the method of Sir Almroth Wright, we find practically no gonococci within the leucocytes. But let us add an equal amount of fresh blood serum and incubate for a few minutes, and then we shall find the leucocytes filled with gonococci, just as happens with staphylococci, streptococci, etc. Again, gonococci are nonmotile microorganisms, and it is fantastic to believe that they must depend for their existence upon some charitable leucocyte moving toward them to afford sustenance. The leucocytes that have performed their function of phagocytosis, and thereby contain gonococci, show no evidence of having been injured by the latter. Indeed, if gonococcal pus is stained with neutral red, the intracellular cocci are stained red, while the extracellular ones remain unstained. This procedure was used by Metchnikoff to demonstrate the secretion of an acid peptic fluid by the phagocytes, and the staining of the intracellular, and not the extracellular gonococci, shows similar secretion on the part of the gonorrheal pus cells. As has been pointed out, gonococci seen on the surface of the epithelium are almost entirely intracellular, while of those below the surface in the lower strata, some are intracellular, but many others extracellular. It is evident, therefore, that the gonococci are not dependent for their existence upon the protoplasm of the polymorph leucocytes. It has been my custom to examine microscopically the discharge of every patient at every visit, and it has been my observation that the new, well developed cases, where no evidence of phagocytosis is shown, are invariably more stubborn in yielding to treatment than cases where the gonococci are mostly intracellular. It is in the latter group of cases that I feel vaccines are indicated, for I believe that the extent of phagocytosis and the degree of the opsonic index go hand in hand in this process. Finger failed to infect patients suffering from fever and general leucocytosis, and cases of spontaneous cure have been reported in attacks of pyrexia, to say nothing of cases that nature herself has cured.

Since in the early stages of gonorrhea nature's mode of fighting the gonococci is by phagocytosis, the indication in treating this disease is to employ a remedy which, first, stimulates leucocytosis; secondly, acts as a mild gonococcicide; and, thirdly, cleanses thoroughly the urethra without injury to the tissues. Thus, in the early stages, the aim is to increase the discharge, and not to check it as has

been the time honored custom. Nothing is more positively contraindicated than the prevailing use of astringents, which, by their constricting effect upon the mucous membrane and bloodvessels, hamper rather than assist Nature's remedial processes.

In my experience, after much experimenting chemically, bacteriologically, and serologically, the indications stated above are best met by the use of Neisser's own remedy, protargol, in a 0.25 to 0.5 per cent. solution, though I also advocate the use of any mild therapeutic agent, which fulfils the indications. Protargol itself so acts upon the urethra that its injection into a normal urethra produces a discharge macroscopically and microscopically identical with that of gonorrhea, lacking, of course, the gonococci. In a two per cent. solution, however, protargol is astringent, like most of the popular silver salts, and in this strength is to be avoided so long as gonococci are present. The use of any strong astringent injection in this condition is to be condemned, as its mode of action is distinctly contrary to Nature's, and the effect is to predispose to complications as well as to chronicity of process.

If a patient is seen within twenty-four hours after a pus discharge has begun, a microscopic examination of the pus is made. Here at the outset we can determine the prognosis with a certain degree of accuracy by the microscopical findings, for it has been my observation that cases with a profuse, purulent discharge, in which the leucocytes show that they are functioning by the pus corpuscles being filled with gonococci, invariably yield more kindly to this treatment than do cases with scant discharge in which gonococci are mostly extracellular. The patient is instructed to urinate into two glasses, passing most of the urine into the first glass and the last two or three teaspoonfuls into the second glass. If this second urine is clear, and the patient gives no clinical evidence of a posterior involvement or other complications, we may hope to succeed with the so called abortive treatment. By means of a Janet-Frank syringe with a Wheeler tip, the anterior urethra is flushed with 300 to 450 c. c. of a 0.25 to 0.5 per cent. solution of protargol, depending upon the intensity of the inflammation. The head of the penis is held firmly between the thumb and first finger of the left hand, the tip of the syringe is inserted into the meatus, and the solution slowly injected until the anterior urethra is filled. The syringe is then slightly withdrawn, and the solution is allowed to flow out. Successive flushings are continued until the whole amount of solution is used, always with care that no undue pressure is exerted, as from the use of an elevated irrigator.

A hand syringe of at least two drams' capacity is prescribed, and the patient is instructed how to inject the urethra himself every four hours, being told first to urinate and then slowly and gently inject the solution which is to be retained in the urethra for three minutes. This procedure is to be repeated, thus making two three-minute injections every four hours. Very often after such treatment, at the patient's visit the following day, I have found that the microscope showed no gonococci. In such cases a fairly encouraging prognosis may be made. Even if a few gonococci are still to be seen, there is no reason for discouragement as to the possibility of

cure within five or six days. The initial treatment is repeated, and the patient reports on the following day, though more favorable results may be expected if the patient can be seen twice daily. No internal medicine is given, and no diet regulation is attempted, beyond the advice that the patient abstain from alcohol and highly seasoned foods. Exercise should be interdicted to prevent complications, and the patient is directed to drink freely of water.

After the third day, if no gonococci are found, the frequency of the patient's injections is decreased; and after the fourth day all treatment is discontinued, although the patient is kept under observation. Should he remain free of gonococci the case is said to be aborted. If, on the other hand, not all the gonococci have been eliminated, immediate treatment is again instituted and regulated by the microscope. Though our hope may not have been realized, yet we have at least the satisfaction of knowing that we have not unduly prolonged the attack, and that by continuing the treatment we can limit the duration of the gonococcal infection to from three to six weeks instead of the usual six weeks to three months.

30 EAST FORTY-SECOND STREET.

CRIMINOLOGY FROM THE STANDPOINT OF A PSYCHIATRIST.*

BY MORRIS J. KARPAS, M. D.,
New York,

CLARK of Clinic, New York Neurological Institute (Theoretical Division).
Formerly Assistant Resident Alienist, Psychopathic
Department, Bellevue Hospital.

Ever since psychiatry made actual progress, the subject of criminology has become the object of psychological interest and assumed a more or less scientific course. If we cast a glance over the history of civilization, we shall find that at one time psychiatry and criminology were closely identified, and, indeed, for many years the insane was considered the half brother of the criminal. The unfortunate patients with well developed mental maladies were looked upon as evil creatures and were punished with imprisonment, scourging, whipping, and the like. As a matter of fact, even today there are some who view the insane in the light of criminology. Furthermore, in some States of the Union the temporary detention of the insane and the procedure of commitment are based upon the same methods as those of the criminal.

However, with the advancement of psychopathology and better understanding of the dynamics of human conduct, psychiatry is gradually ridding itself of criminology, and then again criminology is being studied along the lines of psychology. It cannot be too strongly emphasized that crime is an expression of maladjustment, and in a large majority of instances, the instinctive life or the unconscious is the determining factor. The fact that an antisocial deed is usually of an instinctive origin was also conceived by the great Greek philosopher, Socrates. In defining the conception of virtue, Socrates maintained that it must depend upon

*Read before the New York Society for Mental Detentions, held at Columbia University, January 17, 1919.

knowledge; "hence knowledge is the strongest power of man and cannot be controlled by passion. In short, knowledge is the root of moral action, and, on the other hand, lack of knowledge is the cause of vice. In other words, no man can voluntarily pursue evil, and to prefer evil to good would be foreign to human nature. Hence, in the Socratic sense, in the unconscious lies the root of antisocial deeds" (1).

It is interesting to observe that the more complex the social organization is, the greater the number of crimes, because adjustment in such communities presents some difficulty. It is to be remembered that in animal life two important instincts function, one, *self preservation*, and the other, *self perpetuation*, both of which play an important part in adaptation. In fact, Mercier (2) speaks of "three sets of instinctive desires, impelling him to seek three different ends; or more strictly, to seek one main end—the perpetuation of the race—partly directly, and partly through the intermediation of the two others—the conservation of the individual self, and the conservation of society. We find that while, on the whole, the three ends harmonize, and effort toward each is necessary to the attainment of the other two, yet there is a certain antagonism among them, and each can be attained only by the sacrifice of some effort in respect of the others."

What we wish, is to lay great stress on the fact that the instinctive life is of potent influence in the production of this abnormal phenomenon, crime in all its phases. Indeed, the underlying condition is a diseased personality which may result from temporary or permanent, constitutional or acquired disorganized mind, which is quite often only a matter of intensity and duration. Here the question of mental responsibility comes up, that is, the patient's knowledge of the *nature and quality* of the act. But this may be easily dismissed by saying that so long as mental responsibility is interpreted in terms of ancient laws, so long this misapprehension will exist, to the detriment of society.

Since, in a broad sense, the criminal is an unsound man, Osborne's attitude toward him is sane and humane, and surely his relation toward criminology is the same as that of Pinel to psychiatry. Both reformers look upon these unfortunate human beings as sick, and attempt to treat them as such. However, Osborne looks upon this huge mass of heterogeneous criminals as one homogeneous class and makes no effort to differentiate types, which is so important in understanding the care and treatment of the criminal.

For convenience, we may divide the criminals into three large groups:

1, Casual, environmental or social; 2, constitutional or habitual; 3, symptomatic.

1. To this group belong offenders who commit crimes as a result of environmental conditions. In all of them, the criminal act is a means of carrying him over through a critical period. For instance, the banker who loses his money in speculation, tries to evade a difficult and embarrassing situation by resorting to some criminal device, or the idle workman steals in order to save his family; or the business man who becomes financially entangled commits arson or other fraudulent

acts in order to help him adjust an intricate and painful situation.

Such offenders are not criminals in the true sense of the word, but they only show transitory antisocial tendencies, which could be controlled or avoided under different circumstances or conditions of society in which they live.

2. The second class of criminals plays a very important role in penology. In all of them there is a definite constitutional defect, which varies in intensity and character. In some instances a strikingly intellectual defect can be demonstrated; then again, well pronounced volitional disturbance is in the foreground. It is lamentable that in the study of the psychology of the criminal too much stress is laid on the intellectual side and little or no attention is given to the emotional and volitional sphere which is of great significance in the proper understanding of the criminal mind.

It is interesting to note that the less ingenious the crime is, the more pronounced is the intellectual deficit. As a matter of fact, idiots, imbeciles, and morons commit gross and brutal crimes, particularly such as are related to crude instincts which the defective cannot control or sublimate by reason of his intellectual paucity; sexual assaults, lust murder, crude theft, robbery, and the like are striking illustrations.

Under the same heading we have a subgroup of offenders who are known to us as constitutional inferiors, especially of the volitional type, and they constitute a large majority of the prison population. In my paper on *Psychic Inferiority* I called attention to this phase of mental abnormality and to quote from it (3):

This form of mental inferiority (volitional form) is one of the most striking in the field of psychopathology. It is lamentable that such individuals come more often under the care and attention of courts than under the observation of physicians. The characteristic feature of this type of psychic inferiority is a reduction of will power, and in some cases the character may show some alteration. They become easily influenced by suggestion, which, however, is not lasting; they are unable to control their impulses, and not infrequently commit gross sexual acts and other crimes; they yield to temptation and are inclined to lie and deceive; they are easily influenced by bad environment, and immoderately "worship at the shrines of Venus and Bacchus"; they frequently come into conflict with their environment and become decidedly antisocial; and, moreover, they are subject to uncontrollable fits of passion. It is rather interesting that these individuals are usually intelligent and educated, and there is no congenital defect in the intellectual faculty. Individuals of this class are frequently known as the black sheep of the family. Without exaggeration it may be said that a large majority of our criminals, tramps, vagrants, prostitutes, chronic alcoholics, habitués of drugs, and the like, come under this class. Many are of good lineage and are not burdened by hereditary taint. It is very important to recognize these types of mankind in the early developmental stages, and every possible effort should be made to adjust them to such an environment as will offer the least temptation in life.

This type of mental degeneracy is often called the moral imbecile, but this term is obsolete in view of our better understanding of the dynamics of psychopathology. Because this class is not retarded intellectually, they are believed to be responsible in the eyes of the law, but in reality, the world *responsibility* is entirely foreign to them.

3. The criminal of the third group suffers from well defined mental or nervous diseases; in other

words, the crime is a symptom of a psychosis or neurosis. Not infrequently the character of the delinquent act characterizes the nature of the affection or vice versa. For instance, suicide, in a great majority of cases, is invariably a sign of disordered mind. The murderers of our Presidents were paranoiacs. The grandiose parietic imbued with the idea of being wealthy, issues bogus checks or forges the name of a millionaire because he identifies himself with him, and is not responsible for the so called crime, yet I know of well defined cases of paresis that were committed to penal institutions because of perpetration of similar delinquent acts. A manic patient during the period of exaltation commits bigamy and is surely not a criminal. In dementia præcox and epilepsy exhibitionism is not a crime, but a symptom of disease. Assault and homicidal attempts and attacks in paranoid states are the usual accompaniments of such an abnormal mind. The sexual offenses in the senile dement are expressions of a disorganized brain.

In the early stages of mental aberration, delinquent acts may occur frequently and for this reason it is important to bear in mind the possibility of psychopathic states when such unprovoked crimes are manifest. In such incipient states patients may be committed to penal institutions and only later does the disease become fully crystallized.

Another important subgroup of this class comprises sexual offenders who are known as "perverts," which term, in the light of our present knowledge of psychopathology, is wrong—its proper designation is "invert." Reference is made to the homosexuals. As a class they are most pitiful because they are so much misunderstood and abused. In reality they suffer from a well defined neurosis in which the infantile sexuality is the determining factor. Nevertheless, these unfortunate members of humanity, instead of being treated for their malady, are unjustly punished, and surely under prison confinement the neurosis becomes more aggravated. There are sexual crimes, such as exhibitionism, sadism, and the like, that are determined by an abnormal sexual life, and although legally the perpetrators are responsible for the act, yet as a matter of fact they should come under the direct supervision of the physician. It is not going too far to say that persons who commit sexual crimes should be thoroughly examined, not with a few dry tests, but along definite psychiatric lines, before sentence is passed. The object should be to rid them of the malady rather than to inflict undue punishment for an act for which they are not mentally responsible.

With this brief outline of the classification of criminals, let us inquire what may be done for the care and treatment of such subjects. Of course the constitutional offenders are the ones that attract our attention, inasmuch as they form the majority of the delinquent army. It would not be amiss to emphasize the fact that the habitual criminal is hardened by the peculiar environment in which he is placed; furthermore, many of them have already acquired ~~abnormal habits that tend to bring about a certain~~ degree of mental deterioration which is not amenable to treatment. On the whole, this class may be likened to poor musicians, because they cannot keep in harmony with the social environment. In order

to be able to accomplish anything along this particular line, we must possess thorough knowledge of the psychological background of criminology and view the criminal from the standpoint of heredity, constitutional make-up, and capacity for adaptation to a given environment.

It cannot be disputed that there is a potential basis in constitutional criminals; indeed Lombroso carried it too far when he accentuated the physical stigmata alone, and the French, too, in laying stress on the social side only. The psychological dynamic phase is of prime importance, in addition to the organic and environmental factors. "The establishment of outward circumstances," says Aschaffenburg (4), "under which a crime is committed, made it possible clearly to perceive a number of causes of crimes, of which I would mention again the influence of the seasons, the economic situation, and popular or national customs. From this it follows that crime is, in the first place, a social phenomenon; every age has the crimes that it produces. But not every one becomes a criminal; an individual or, as Sommer calls it, an endogenic disposition, is necessary for that. This is the true kernel of Lombroso's doctrine, even if the stigmata that he gives are wrongly, or not sufficiently, proved. Every crime is the product of natural disposition and training, of the individual factor on the one side, and the social condition on the other."

Once it is granted that crime is an abnormal phenomenon and that the perpetrator of such act must be diseased, our present treatment of this class must undergo a radical change. One other point must be accentuated, that in all of these constitutional criminals, we invariably find a history of series of crimes which develop along evolutionary stages—from the homogeneous to the heterogeneous. Furthermore, these abnormal manifestations were noted in early childhood. In other words, the juvenile delinquent is the father of the habitual criminal. Did not the "gunmen" reveal such a characteristic criminal history? Aschaffenburg (5) very thoughtfully remarks: "The injury done to social life by year by year is immeasurable; there is scarcely a gleam of hope for the future when you consider that for years the most important and serious crimes have been steadily increasing, that, above all, our juveniles, the hope of the future, so early and unreservedly embrace crime! We see whither we are steering unless energetic action is begun. But this must be done soon, and it must be purposefully done."

It can be readily seen that the problem before us is very difficult to solve, and this is partly due to the inherent intense prejudice against the whole class of criminals, owing partly to the fact that our wise legislators do not see the seriousness of the situation, and partly because the penologist lacks proper psychological insight into this question.

It is not within the scope of this paper to outline the ideal treatment of the deteriorated criminal, but suffice it to say, that a person who has been subjected to a number of repeated attacks of crime, should be declared irresponsible and be placed in an artificial environment fitted to his peculiar mental make up, where his energy may assume a constructive tendency rather than make him a subject of dependency and humiliation.

On the other hand, a more hopeful way of attacking this intricate task would be to turn our attention to the study of juvenile delinquency. Here great care must be exercised in the interpretation of childish crime. Admitting the fact that delinquency is a pathological reaction, we must bear in mind that not infrequently a childish prank may be mistaken for a serious offense, and the culprit judged in terms of adult responsibility. For instance, two young boys were recently arrested by a humanitarian society for killing a pigeon. Such an act should have never come under the jurisdiction of the court, but rather within the sphere of the pedagogue or Sunday school teacher. As soon as we give undue recognition to such an act, the youth considers himself a hero, and with the aid of Nick Carter stories and the like, such an innocent act may form the nucleus for further criminal development. It should not be forgotten that in early mental life conventional ties and tenets, laws or inhibitions, are nonexistent. For this reason, antisocial deeds may be misconstrued, and, in order to avoid serious misinterpretations, psychological methods should be resorted to.

The necessity of thoroughly equipped scientific psychological laboratories in all institutions where the child is studied in normal or abnormal states, is quite apparent. In the juvenile court where such material is found in abundance, it must be properly studied and thoroughly classified. Competent psychiatrists, psychologists, and pediatricists must work in harmony in the investigation of this important problem. Healy, in Chicago, furnishes us with striking examples of what can be done for these unfortunate human beings. However, one other point must be remembered, that every case that comes under the courts' attention should be mentally examined, and in instances where apparently spurious arrests have been made, the child's trial should be held by proxy in order to obviate untoward effects, especially avoiding the accentuation of the ego which is so prominent in the child.

In order to bring about true prophylaxis of mental degeneracy of the criminal type, we must begin with the child in its early development, and in so doing we may indulge in sanguine expectations to arrest the progress of crime in all its forms and furthermore instil humane treatment of the afflicted. The great reform movement of Osborne should receive the sympathy and help of the intellectual world, but at the same time we may lend a hand to assist him in the study of the classification of the criminal from the point of view of individual psychology. In conclusion, Aschaffenburg (6) may be aptly quoted:

Society is responsible to the criminal because some of the causes of crime are inherent in it; it cannot escape the duty of tracing out these causes, and eradicating them where that is possible. The criminal, however, is responsible to society because he lives in it and because his criminal activity injures its primary conditions of life. Hence, he must submit to society's opposing him with all the means in his power.

We have reached the point where the apparently firm foundation of criminal law appears to quake, where a new structure is to be erected, the stones of which have not yet been tried, a part of the material of which has still to be found. But this cannot now or ever be done in the study, nor by means of theoretical abstractions. Only dispassion-

ate consideration that views impartially the phenomena which we call crime, which observes first and then concludes—in a word, only the natural scientific method can smooth the way that leads to a knowledge of crime and of criminals. Not until then will a sure foundation be laid for the proud structure of legal security.

REFERENCES.

1. MORRIS J. KARPAS: Socrates in the Light of Modern Psychopathology. *Journal of Abnormal Psychol.*, August-September, 1915, p. 194.
2. MERCIER: *Crime and Insanity*, p. 25.
3. KARPAS: *Psychic Inferiority*. New York, Medical Journal, March 22, 1913.
4. ASCHAFENBURG: *Crime and Its Repression*, p. 204.
5. IDEM: *Ibidem*, p. 220.
6. IDEM: *Ibidem*, p. 321.

24 EAST FORTY-EIGHTH STREET.

POLLUTIONS IN THE MALE.

By MAX HÜNNER, M. D.,

New York,

Chief, Genitourinary Department, Mount Sinai Hospital Dispensary; Etc.

Under pollutions in the male I include any involuntary semenlike discharge coming out of the penis and not connected with coitus. I have purposely made this definition a very broad one in order to include all discharges which have been classified as spermatorrhea, involuntary seminal emissions, prostatorrhea, defecation spermatorrhea, urination spermatorrhea, and urethrorrhea e libidine sexuali. I have done this in order to simplify the subject, which has been unnecessarily complicated by pathological distinctions which do not exist, except in the case of urethrorrhea which is distinct from the other conditions.

Many authors make a distinction between spermatorrhea and pollutions, but from both a clinical and pathological point of view this is erroneous, and unnecessarily complicates the subject. It may be interesting to examine the discharge for spermatozoa, but no deductions can be made therefrom. When we consider that, except in urethrorrhea, the discharge comes into the urethra through the ejaculatory ducts, and that the seminal vesicles are a storehouse for the spermatozoa in the intervals of coitus, we can easily understand that spermatozoa may be found in any such discharge. Even those who try to make a distinction between discharges with and those without spermatozoa, make the significant statement that many examinations are necessary, and that the absence of spermatozoa from the discharge does not prove that the condition is not spermatorrhea, as in this condition spermatozoa may be absent for a time. They further admit that in what they distinguish as pollutions, spermatozoa may also be present from time to time.

Pollutions may be either diurnal or nocturnal. Pollutions which accompany defecation are called defecation spermatorrhea, while a semenlike discharge coming after urination is called urination spermatorrhea. The term "wet dreams" is often applied to pollutions, especially by the laity, on account of erotic dreams which so often accompany this condition, but such dreams are very often absent. Prostatorrhea is a term applied to a discharge which is supposed to come purely from the prostate, but without inflammation of this organ.

When we consult the various authorities who try to make a distinction between the various conditions above mentioned, we not only find the greatest diffi-

culties in endeavoring to understand the differential diagnosis in the writings of any one author, but also the greatest confusion among the authors themselves. Thus, the very point put down by one authority as the most important differential point in one condition, is mentioned by another authority as most important in another condition. From a long and careful clinical observation of these conditions, however, and a careful study of their pathology, I have come to the conclusion that this complication of terms is entirely unwarranted, and from the standpoint of treatment, entirely unnecessary.

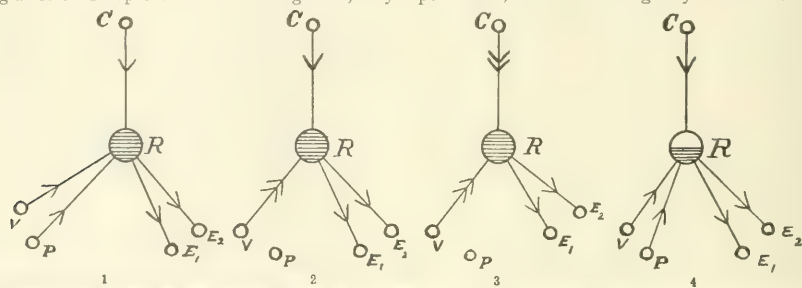
Urethrorrhœa e libidine sexuali, on the other hand, differs from the foregoing, in being purely a secretion of Cowper's glands and those of the urethral follicles and glands, called into action by sexual excitement just as in normal coitus, but without coitus.

ETIOLOGY.

Any factor which either causes a distension of the seminal vesicles, or irritates the prostatic urethra or the glands of Cowper or the urethral glands, may

soon as his seminal vesicles become distended, pollutions appear. It is often this appearance of these pollutions that frightens the patient, so that he returns to his masturbation or indulges in illicit coitus.

Nocturnal pollutions are perfectly normal if they occur at not too frequent intervals, and are not accompanied by a feeling of marked depression. It is difficult to state how many pollutions a person may have to be within normal limits, for the reason that normal sexual passion and desire varies so much. Furthermore a man accustomed to coitus twice a week, and who for various reasons has remained continent, is likely to have more pollutions than one who has been in the habit of indulging only once in one or two weeks. As a general thing it may be said that as long as pollutions are only nocturnal, and occur with erect penis, not oftener than once in ten days, and are not accompanied by a marked feeling of depression, they may be considered normal. Rohleder (15) considers even two nocturnal pollutions a week normal. In considering the number of pollutions, we must not go by the number in any



DIAGRAMMATIC SCHEME OF THE NERVOUS MECHANISM OF NORMAL COITUS, IMPOTENCE, AND POLLUTIONS (AFTER GROAG).

FIG. 1.—C, cerebrum; R, erection centre; E₁, sympathetic ejaculation centre (which causes the expulsion of the secretions of the sexual glands); E₂, spinal ejaculation centre (which controls the striated muscular fibres); P, glans penis; V, seminal vesicles. The single arrow indicates an ordinary impulse; the double arrow, a very strong impulse. The transverse lines in R, in Figs. 1, 2, and 3 indicate that R sends out impulses to E₁ and E₂ only after having been a impulses forced into impulses, while in Fig. 4 we see that R sends them out before it is completely filled with impulses.

caused pollutions. Among such factors may be mentioned ungratified sexual excitement, coitus interruptus, the results of masturbation, excessive horse-back riding, excessive bicycle riding, or inflammations of the posterior urethra. Among the rarer causes may be mentioned rectal worms and epilepsy. Hamilton has called attention to the fact that in rare cases a pollution may also be the expression of an epileptic seizure.

A very frequent cause of pollutions, and one to which little, if any, attention has been paid as an etiological factor, is massage of the prostate with stripping of the seminal vesicles. I have very often found pollutions to appear after this procedure, done for gonorrhœa (expression for diagnostic or therapeutic purposes), or as part of the routine treatment in masturbation or impotence or other sexual neuroses.

Attention should be called to the fact that in giving the etiology I have mentioned the results of masturbation and *not* masturbation itself. As a matter of fact, the patient, while masturbating rarely has pollutions, for the simple reason that he does not give his seminal vesicles a chance to become distended. It is only after he has ceased the habit, and caused a congestion of his prostatic urethra, that as

particular week, but by the average of several weeks. Thus, it frequently happens that a patient may not have any pollutions in seven or eight weeks and then have two or three in one week, or even in one night. This condition may still be normal, as the average for the eight or nine weeks is within normal limits. Diurnal pollutions, as well as defecation and urination spermatorrhea, are practically always pathological.

PATHOLOGY.

In order to understand the pathology of pollutions we must clearly understand the modus operandi of normal erection and ejaculation. The nervous mechanism of normal erection and ejaculation may be represented diagrammatically as follows. As soon as the desire for coitus arises, impulses are sent from C (cerebrum, Fig. 1), to R (erection centre in spinal cord) which sends them through the dilator nerves to the penis until complete erection occurs (i. e. dilatation of bloodvessels of penis, etc.).

Now R (erection centre) receives from P (glans penis during friction of coitus) continuous new impulses which serve to strengthen and keep up the erection. R has also the additional function of keeping back a part of the impulses it receives until its

cells are filled to their utmost tension, and then only to send these impulses to E_1 (sympathetic ejaculation centre, which causes the expulsion of the secretion of the sexual glands) and also to E_2 (spinal ejaculation centre which controls the striated muscular fibres). The impulses that come from P (through friction of the glans penis during coitus) to R may be weaker, in proportion as the impulses that come from V (distended seminal vesicles) are stronger. In other words, with markedly distended seminal vesicles, we can get normal coitus even if there is less friction of the glans penis, for enough impulses are coming from the seminal vesicles to fill up R. As soon as R is so filled up (so completely distended) with impulses from C, P, and V that they overflow to E_1 and E_2 , ejaculation takes place. In other words the erection centre (R) has two functions, first, to receive impulses from the cerebrum (C), the penis (P), and seminal vesicles (V), and in the second place, to hold back these impulses to the proper time and then to send them to the ejaculation centres (E_1 and E_2), so that ejaculation should come at the proper time and not too soon.

Let us now consider the physiology and pathology of pollutions according to the foregoing scheme. This is graphically illustrated in Figs. 1 and 2. The diagrams show that 2 is the same as Fig. 1 except that the impulses from P (glans penis during friction of coitus) are absent, while those from V (distended seminal vesicles) are very strong (indicated by the double arrow).

We begin with an overdistention of the seminal vesicles. As a result of this, impulses are sent to the central nervous system and erotic dreams are formed, which are generally made up of the experiences of the patient. As a result of this dream, impulses are sent from C to R with about the same intensity as in normal coitus (Fig. 2). The impulses from P are absent. From this reason, in order thoroughly to distend the erection centre (R), the impulses that run from V to R (very distended seminal vesicles represented by a double arrow) must be *very* strong in order to cause an overflowing of impulses to E_1 and E_2 and allow ejaculation to take place.

So far this may be perfectly normal, if it does not happen at too frequent intervals. If, however, as a consequence of masturbation or withdrawal or any of the other conditions mentioned in the etiology, either the cells of the cerebrum or the erection or ejaculation centres become hyperirritable, the whole process takes place at the slightest provocation (just as in rapid ejaculation) and it is not necessary for a distention of the erection centre (R) with impulses to allow of ejaculation as in physiological pollution, for R is so hyperirritable that at the slightest impulse from its various sources, it sends impulses to the ejaculation centres (E_1 and E_2) and immediately ejaculation takes place. The ejaculation centres may also become hyperirritable and go off at the slightest provocation. The cells of the cerebrum (C) may become hyperirritable likewise, and send to the erection centre powerful impulses at the slightest suggestion of an erotic thought. Finally, just as in impotence, we may get an exhaustion of all the centres so that they will refuse to respond to any impulse. The pollutions become less and less frequent (with-

out treatment) and at length stop altogether. The patient considers himself improving and finally well, but, as a matter of fact, he is getting worse. Should such a patient at this stage attempt coitus he will find himself impotent. But this will be considered more in detail in giving the symptoms.

The pathology of diurnal pollutions is similar, and is diagrammatically illustrated in Fig. 3. Sometimes in the waking state, in the presence of markedly distended seminal vesicles, strong long continuing lascivious irritations may lead to strong erection and ejaculation. In Fig. 3 we notice the same condition as in Fig. 2, except that the impulses which come from the cerebrum (C) are exceedingly powerful (represented by a double arrow). Groag (3) considers this condition physiological, but I believe that in the waking state there ought normally to be enough inhibitory impulses present to prevent ejaculation. However this may be, there is no doubt that if, as in the former class of cases, the centres become hyperirritable, so that, as sometimes occurs, the mere sight of a pretty woman, or the mere touching of a woman in a crowded car, is enough to bring on an ejaculation, such a condition is to be considered markedly pathological.

That the seminal vesicles play the part described in the foregoing condition, has been proved experimentally, by Tarchanoff, in frogs. If he squeezed out the contents of the seminal vesicles in these animals, they lost all desire for coitus, but if he distended them with sperm from other frogs or even water, the desire immediately returned.

The local pathological condition is similar to that found in withdrawal or masturbation. There may be the same local conditions present in the posterior urethra as is found in these latter conditions. *As stated heretofore, we cannot make a diagnosis of masturbation, withdrawal or pollutions, by merely looking through the urethroscope.* All that the urethroscope reveals is the pathological condition in the posterior urethra, and this condition may be the result of widely different causes. Similarly, any pathological condition in the posterior urethra or prostate or seminal vesicles, whether the result of gonorrhea, masturbation, withdrawal, maltreatment of the urethra, or other condition powerful enough to start reflexes to the cerebrum or erection centres, may be the cause of pollutions.

Finally we must state that the local conditions may be absolutely normal, and still pathological pollutions may take place. It has been stated above that for pathological pollutions to occur, there must be present a hyperirritable condition of the cells of the cerebrum, of the sexual centres, or of the genital organs (congestion, etc., in the prostatic urethra). All these conditions need not be present to cause a pollution, and it not infrequently happens that with a perfectly normal posterior urethra as seen through the endoscope, pollutions may occur. As an example of such a condition we may mention cases where the patient has his thoughts continually upon sexual matters, and is constantly reading erotic literature, or seeking the presence of female companionship, while not actually indulging in sexual intercourse. Such a patient can so excite his cerebrum that pollutions will occur from that cause alone. If this continues for a long time, however,

there generally results also a local congestion of the sexual apparatus in the same way as in masturbation, withdrawal, and similar conditions.

When we come to the pathology of defecation spermatorrhea, we find a marked difference of opinion among the authorities. The earlier writers averred that it was the result of the mechanical squeezing out of the contents of the seminal vesicles by the passage of the fecal mass. Of late, however, there has been a tendency to discredit this theory. Peyer objects to it from the anatomical position of the seminal vesicles, which, he asserts, because of their position between the rectum and the bladder, would be pushed out of the way by the hardened fecal mass, and not be directly pressed upon. Sturgis (18) believes it to be due, not to the pressure on the seminal vesicles by hardened feces, but to the mechanical pressure of the abdominal muscles incident to this act. Rohleder (15) considers the condition to be due to a paralysis of the ejaculatory ducts, and says that defecation spermatorrhea is caused by a mechanical squeezing out of the semen from the seminal vesicles due to weakness and insufficiency of the sphincters of the seminal vesicles and the ejaculatory ducts. He is of the opinion that with normal sphincters the hardest defecation will not be able to cause spermatorrhea. Ultzmann compares nocturnal pollutions to spasms of the bladder, and defecation or urination spermatorrhea to paralysis of the bladder, and says that nocturnal pollutions are really spasms of the seminal vesicles due to overdistention, whereas defecation and urination spermatorrhea are due to a paralysis of the ejaculatory ducts.

I am inclined to disagree with Rohleder and the other authorities just mentioned, in their conception of nocturnal (or diurnal) pollutions on the one hand, and defecation and urination spermatorrhea on the other. My dissent is based entirely upon clinical experience. If nocturnal pollutions were solely the result of contractions of the muscles of the seminal vesicles, or as Ultzmann puts it, spasm of the overdistended seminal vesicles, it would hardly be conceivable that they should recur as frequently as they do, for clinically it is not unusual for them to occur two, three, four, or even more times a week, sometimes three times a night. We should imagine that after one or two emissions the seminal vesicles would be nearly empty, and certainly not overdistended. Then, if overdistention was the only cause of nocturnal pollutions, pollutions would be more common in married men (unless coitus is very frequently indulged in) than in single men, whereas just the reverse is the case. But to my mind the clinical therapeutical result is of most importance. As will be shown later on, in discussing the treatment of the condition, the most severe cases of nocturnal pollutions yield rapidly to the bromides. I have yet to see a case of nocturnal pollution that will not yield (temporarily at least) to this drug. If, therefore, nocturnal pollutions were purely due to a spasm of the seminal vesicles, it is inconceivable that a drug which has no effect whatever upon local muscular spasm, but acts only by quieting the cells of the cerebrum and possibly the reflex centres in the spinal cord (although many

neurologists even doubt this latter action), could so uniformly have such good results.

Another clinical observation which I have made, likewise refutes the theory that a spasm of the distended seminal vesicles is responsible for nocturnal pollutions. In cases of chronic gonorrhea, I have had occasion frequently to massage the prostate and strip the vesicles, either for diagnosis or treatment. As an invariable rule, this procedure, if frequently repeated, will bring on nocturnal pollutions where none had previously existed, and will markedly increase the number of pollutions where they had existed only to a physiological degree. If spasm due to distention of these organs causes pollutions, it should naturally follow that emptying them ought to have just the opposite effect.

I have given the physiology and pathology of pollutions elsewhere, and pointed out that the way distended vesicles act, is not by a local spasm but by reflex action alone, namely, by sending normal impulses to the erection centre, just as pathological impulses are sent thither from a congested posterior urethra, and that as a result of these impulses plus other impulses which the erection centre receives from various sources (cerebrum, penis, etc.), this centre sends impulses to the ejaculation centres which result in ejaculations or pollutions as the case may be. In massage of the prostate and stripping of the vesicles, we irritate these parts and send impulses to the erection centre in the same manner. This pathological theory also explains the beneficial effects of the bromides on pollutions.

In defecation spermatorrhea, I must likewise disagree with Rohleder, and again on purely clinical grounds. When Rohleder says that with normal sphincters of the seminal vesicles and ejaculatory ducts, the hardest defecation cannot bring about a discharge from these organs, and when Peyer tries to prove the same thing from a consideration of the anatomical position of the seminal vesicles, the following clinical evidence may be presented in direct contradiction. I have had occasion, as already stated, to strip the seminal vesicles in cases of chronic gonorrhea either for diagnostic or therapeutic purposes. In most of these cases, no pollutions or defecation or urination spermatorrhea was present; and yet I have never failed to obtain a specimen from the prostate and vesicles for examination. In every case I was able to bring one or more drops (sometimes a large quantity) of the secretions of these organs to the meatus. If, then, in normal persons, with presumably normal seminal vesicle sphincters, by simple pressure on the seminal vesicles with the finger tips in the rectum, we can cause a discharge of their contents, why cannot a hard fecal mass in the same place do likewise? Furthermore, it occurred that in some cases, the slightest touch on these parts would bring forth a very large amount of seminal secretion (proved so by the microscope) where we should imagine that there must exist a very marked paralysis of the ejaculatory ducts or musculature of the seminal vesicles and its sphincters, and yet these patients have not been subject to defecation or urination spermatorrhea or even to nocturnal pollutions. I can neither affirm nor deny that in defecation or urination spermatorrhea there exists an insufficiency of the

sphincters of the seminal vesicles, and certainly the *clinical* evidence is not sufficient to sustain this view. Those that uphold it have brought forth no evidence except their own theoretical opinion. To my mind, it is still an open question whether defecation or urination spermatorrhea is due to a reflex action set up by the act of defecation or urination, or whether it is due to insufficiency of the musculature of the seminal vesicles or ejaculatory ducts, or due to the mechanical pressure of hardened feces or to the mechanical action of the abdominal muscles upon the seminal vesicles. In urination spermatorrhea, it is supposed that the muscular action incident to pressing out the last drops of urine, also presses on the seminal vesicles and squeezes out part of their contents. As stated above, Sturgis (18) inclines to the view that defecation spermatorrhea is due to the mechanical action of the abdominal muscles incident to defecation, and he cites in proof that the same condition may be produced by such acts as coughing and sneezing; but I have never seen such cases.

Some authors believe they have seen through the endoscope, in cases of pollutions, the mouths of the ejaculatory ducts widely dilated, thus proving the paralytic condition of the ejaculatory ducts. I have for several years made endoscopic examinations of the posterior urethra in cases of pollutions, using both the Wossido-Goldschmidt and Buerger instruments, but cannot subscribe to the observations of these writers. I have found the most marked differences in the appearances of the mouths of the ejaculatory ducts, not only in pathological, but also in normal cases, and am certain, that in pollutions, these ducts are found on the average no more dilated than they are in other pathological or even normal conditions. As so often emphasized, one cannot make a diagnosis of pollutions with the endoscope.

The pathology of urethrorrhea e libidine sexuali is entirely different from the other forms of pollution. Here there is simply an overactivity of Cowper's glands and those of the urethra. Normally, at the very commencement of coitus, Cowper's glands, as well as the glands and follicles of the urethra pour out their secretions into the urethra in order to remove the acidity which is generally present on account of moisture from urine, and which would be inimical to the vitality of the spermatozoa. In cases of urethrorrhea, there is an overactivity of these glands, so that the merest act of flirtation, or spooning, or even erotic thoughts are sufficient to cause these glands to pour out their secretions, which then appear at the meatus. The condition is simply due to too great a response on the part of these glands to central stimulation.

SYMPTOMS.

It not infrequently happens, that quacks, for their own selfish purposes, grossly exaggerate the symptoms of normal pollutions. To offset this influence, some reputable physicians have thought it expedient to underrate the seriousness of pathological pollutions, and tell the patients that pollution is of no importance whatsoever, and that the whole trouble is imaginary. Nothing could be further from the truth. Any one who has seen the marked neurasthenic symptoms that accompany severe

pathological pollutions, even in patients with no underlying history of general neurasthenia, and how their general condition improves, and their whole psyche is changed with the cessation of the pollutions, will appreciate that pollution is a very important condition and sometimes a very serious one, which demands our most earnest attention.

In normal cases, the patient experiences during the night an erotic dream, which is accompanied by an erection of the penis and ejaculation. He is generally awakened during the process of ejaculation. Sometimes, however, he continues in his sleep, and, upon awakening in the morning discovers that he has had an emission. In some cases no dream accompanies the ejaculation, or at least is not remembered by the patient. Normally these emissions do not occur on the average more often than once in ten days, and always occur with erection. They are not accompanied by any marked feeling of depression, sometimes, indeed, quite the reverse, with a feeling of contentment.

It often happens that the young man is frightened by this emission, thinking that he is losing his semen, that he will become impotent, and that the condition is due to his "youthful errors" of perhaps very many years before. Sometimes, without consulting a physician, he indulges in illicit coitus, thinking that the onset of the emissions is a sign that coitus must be indulged in. In this way he may become infected with venereal disease.

If he is wise, he consults his physician, who will give him the proper advice. If he is foolish, however, which is more often the case, he will seek out one of the many advertising quack physicians, who will not only confirm all his fears of impotence, "lost manhood," etc., but will frighten him more, call his attention to a normal sediment in his urine, explain to him that his vital fluid is being sapped out of him, etc., and may, and indeed very often does make of him a confirmed sexual neurasthenic, watching himself closely, continually, and exaggerating every little pain or ache. I get these patients in large numbers at my dispensary clinic, after they have been relieved of all their savings by quacks, and it often takes considerable argument and tact to prove to these normal people that they are not going to perdition.

The symptoms of pathological pollutions are somewhat different. The patients have pollutions two or three times a week, often without erection. After the pollutions, they complain of marked nervous symptoms and a feeling of depression to be described hereafter. The pollutions, if untreated, may even increase in frequency, but after a while they diminish and finally cease altogether without treatment. This the patient considers a very good sign, but as a matter of fact it is just the reverse. It means, as explained in the pathology, that the sexual centres have become completely exhausted, and fail to respond to any stimuli. Such patients at this stage will find themselves impotent.

The dreams that accompany pollutions, both normal and pathological, are interesting and instructive. Porosz (11) has called attention to the fact that very often we can tell the course of the disease by the character of the dreams which accompany the pollutions. The dream is frequently

an index of the potency of the individual. In normal cases, in persons who have already indulged in sexual intercourse, the dream is often an exact counterpart of the act of coitus. The patient dreams of courtship and spooning with a female, then the retiring, the preparation for coitus by both parties, the erection, the insertion of the penis into the vagina, the friction, and finally the ejaculation. The time between the commencement of the dream and the ejaculation is a comparatively long one. In pathological cases, as the disease progresses, this time becomes shorter and shorter. The patient dreams of spooning and coitus as before, but the ejaculation occurs at the very first attempts of coitus, and finally the patient only dreams of spooning, and wakes up at once with an ejaculation. Even in normal cases, where two or three dreams occur in one week, the first dream may be a very lengthy one, as the first above described, while the latter ones become progressively shorter.

I have paid particular attention to these sexual dreams, and in many cases have obtained a typical history just like those recited. Often, however, especially in dispensary cases, the patients are too ignorant to give a sensible history of their dreams, and frequently even intelligent patients forget their dreams. The woman in the dream is generally some one with whom the patient is acquainted, often the cousin or sweetheart, or it may be some stranger who happens to have made an impression upon the patient. Sometimes the patient does not dream of coitus at all, but of masturbating. Very often also, the patient does not dream of women at all, but of some other object, the sexual nature of which can be explained by those versed in the Freudian theory.

As a practical point, and one which I do not recall having seen recorded anywhere, I have, for some time past, determined the patient's veracity as to his sexual experience by the nature of his pollution dreams. In my clinic I frequently encounter young adults who come for treatment of pollutions, and upon the routine questionings tell me that they have never indulged in coitus. Inquiring later on as to the nature of their pollution dreams they inform me that they dream of having coitus with a woman. In this case I immediately infer that the patient has had experience in coitus, and almost always can obtain his confession in this regard. With the exceptions later mentioned, one cannot dream of coitus unless one has indulged in coitus. We must be careful, however, in jumping at conclusions and must go particularly into the history of the dream. For instance, I had one young man who told me that he had never indulged in coitus, but in his pollution dreams, dreamed that he had connection with a woman. I asked him to describe his dream, and from his description saw that the man had the most ridiculous notion what the act of coitus consisted of. In other words, this young man, who had really been continent, dreamed of what to his mind was the act of coitus. In another case, upon careful questioning, I was told by the boy that he had seen in the park a couple indulge in coitus, and this picture came to him as a pollution dream. Another young man informed me that he had seen in Paris at a "private" motion picture theatre, the entire act of coitus portrayed upon the

screen. In many cases, the boy's impression of coitus comes from the particular literature he indulges in, or from knowledge obtained from older persons, and in his pollution dreams the act of coitus is according to his knowledge of the subject. So that, while the rule just laid down, that one cannot dream of coitus unless one has indulged in it, is generally true, we must go into all the experiences of these patients in order to draw proper conclusions.

Diurnal pollutions, I consider to be always pathological. They are most generally present in patients who also suffer from nocturnal pollutions. Indeed, it is rare to find patients who suffer from diurnal pollutions only. In these cases, the very sight of a woman, or the rubbing up against one in a crowded car, is sufficient to cause an ejaculation of semen. In the vast majority of these cases, there is very slight if any erection. Sometimes the patient sees fluid appear at his meatus every time he looks at it. This latter represents a much more severe type of pollution than either the nocturnal or the diurnal with erection.

In defecation spermatorrhea, the patient notices that during the straining incident to defecation, a discharge appears and runs out of the urethra. The quantity varies from a few drops to a dram. I must remark here, however, that the patient's word as to quantity of fluid lost in pollutions of all kinds, must be taken with a large grain of salt, as he is generally prone to exaggerate. In mild cases, these losses accompany only severe straining efforts, or the passage of very hard fecal masses, whereas in the more severe cases they appear with every defecation, even when the fecal contents have been artificially made soft and watery by mineral cathartics, and are unaccompanied by straining. As a matter of clinical experience, I have frequently noticed these severe cases of defecation spermatorrhea to be the forerunners of the most obstinate cases of impotence, and conversely, in many cases of impotence that come to me for treatment, I have also obtained a history of defecation spermatorrhea.

In urination spermatorrhea, the patient notices after urination, a seminal discharge. Patients with urination spermatorrhea almost always suffer from nocturnal pollutions at the same time, and very often are afflicted also with defecation spermatorrhea. This represents to my mind, the severest type of pollutions and is, of course, always pathological. As previously stated, it makes no difference whether spermatozoa are found in the discharge or not.

The general symptoms of pathological pollutions vary greatly in intensity. They are especially severe in patients with an underlying neurasthenic tendency. While patients suffering from pathological pollutions are prone to exaggerate the importance of their symptoms, especially if they have read profusely the quack literature on the subject, we must not fall into the opposite error of thinking that they have no symptoms at all, and that their sufferings are only imaginary. I cannot too strongly emphasize the fact that these patients have real symptoms and that at times their sufferings are extremely severe. As in masturbation, we must here also determine whether the symptoms complained of by the patient are really experienced by him, or

whether they are merely being repeated from the quack literature he has read.

One of the symptoms most frequently complained of is a peculiar feeling of lassitude, of diminished energy after a pollution. The patient wakes up, dead tired, without ambition, with no inclination for work, and feels as if he had been up all night doing hard work. He is entirely exhausted and fit for sleep rather than for the duties of the day. This peculiar feeling, which it is very difficult to describe in cold print, is characteristic of pathological pollutions, and is entirely different from the sensations of a chronic masturbator or those of any other form of sexual neurasthenia.

Headache is another symptom often complained of, but, as in all forms of sexual neurasthenia, we must determine by competent authorities whether the headache may not be due to errors in refraction. In fact every symptom of the sexual neurasthenic must be investigated, with the possibility in mind of some coexisting pathological condition to account for the symptom. While admitting that the sufferer from pollutions is liable to many and severe symptoms, we must not fall into the error of blaming everything he complains of on his pollutions.

Among the other more common symptoms, may be mentioned burning of the eyes, discomfort in the inguinal regions, heaviness of the testicles, a feeling of faintness and palpitation of the heart, excessive perspiration, pain down the spine, and tremor of the hands. Loss of memory is frequently complained of, but upon careful investigation it will be found not to exist. Very often, however, there is a temporary weakness of memory due to indiscriminate use of bromides or to an idiosyncrasy for this drug. Exceptionally, we find patients who come for other troubles and whose history shows that they are subject to frequent pollutions, but apparently have no symptoms therefrom and do not bother about them. I have also noticed patients, who have suffered from pollutions for many years, and in whom, at the beginning, the pollutions were accompanied by marked general nervous symptoms, but who, later on, seemed to become immune, as it were, or callous, indifferent, or apathetic, and therefore did not suffer much from them.

In ordinary cases of pollution, the sexual powers of the patients do not suffer much, if at all; yet, from a careful observation of many cases, I am firmly convinced that finally there occurs an impairment and temporary impotence in a large number of cases. However, the condition is not nearly as bad as some authors try to make us believe, and I am certain that in many cases these authors have misjudged or have not thoroughly studied the symptoms and history. It is undoubtedly true that many sufferers from impotence suffer from pollutions also; in fact, the two conditions may be due to the same pathological condition or have the same etiology, but this does not mean that the impotence was the result of the pollutions.

Among the urinary symptoms which often accompany pollutions, but which are often due to the same condition in the posterior urethra which is the cause of the pollutions, may be mentioned frequency of urination, scalding of urination, and a feeling of wishing to pass more urine after the

bladder has been thoroughly emptied. Such a condition as mentioned by Sturgis (18) as shriveled penis due to pollutions, I have never seen.

The symptoms just given are simply symptoms which one hears complained of on going carefully into the history of many cases. I do not by any means mean to infer that any one patient complains of all or of a majority of these symptoms. We may find a few or many of the symptoms in any particular case, as well as any combination of symptoms.

It is interesting to note what symptoms have been put down by some authorities as due to pollutions. Space will not permit me to mention all those which have been ascribed to this condition by one authority or another. Even such unusual symptoms as the following have been ascribed to it: Difficulty in articulation, thickness of speech, burning and tingling at the end of the tongue, impaired taste, epistaxis, catarrhal discharge from the nose, salivation, tinnitus aurium, partial deafness, defective accommodation, temporary hyperesthesia of the auditory nerve, asthmatic breathing, a constant short hacking cough, cardiac palpitation, intermittence in the action of the heart and pulse, angina pectoris nervosa, etc.!

In urethrorrhœa e libidine sexuali the symptoms are somewhat different. In this condition, as I understand it, there is simply a hypersecretion of Cowper's glands and those of the urethra. The patient, after a prolonged act of spooning, or other unsatisfied sexual excitement, will find some fluid just within, or coming out of the meatus. Generally a prolonged period of erection has preceded this event, but there has been no coitus and no ejaculation. There is no force behind this fluid; it simply dribbles out. It is as a general thing not accompanied by any feeling of depression or other general nervous symptom, unless the patient has been frightened by reading quack literature.

DIAGNOSIS OF POLLUTIONS.

The main point is to distinguish between normal and pathological pollutions. The differential points are as follows: Normal pollutions are always nocturnal, whereas pathological pollutions may be either nocturnal or diurnal, and many accompany defecation or urination. Normal pollutions occur on the average not oftener than once in ten days, whereas pathological pollutions occur much more frequently. Normal pollutions always occur with strong erection of the penis, whereas pathological pollutions occur with very weak or no erection. Normal pollutions are generally not followed by a marked period of depression, whereas pathological pollutions are generally followed by such a feeling.

It might seem ridiculous to state that pollutions should not be confounded with gonorrhea, but I have seen such mistakes made in not a few cases. In several instances I have seen careless dispensary physicians prescribe for cases without examination of the genitals, and the mere fact that a patient comes into the dispensary complaining of "running" or "discharge" is sufficient for them, without further examination, to conclude that the patient is suffering from gonorrhea and prescribe accordingly. In my private practice, also, I have

had patients come with diurnal or urination spermatorrhea who had been treated for gonorrhea by some careless physician. As a general thing, the secretion which appears at the meatus in cases of diurnal pollutions or urethrorrhea is entirely different in appearance from that of an acute or even chronic gonorrheal discharge, but aside from this difference in appearance, no physician should treat any urethral discharge without first subjecting it to microscopical examination. Even if no gonococci are found, the other characteristics of the discharge under the microscope are sufficient to differentiate the conditions.

PROGNOSIS.

The prognosis of normal pollutions is, of course, excellent. In pathological nocturnal pollutions, the prognosis is very good also. We must not expect to stop the pollutions entirely in every case before marriage, but we can reduce them to normal limits. We can assure these patients that it is perfectly normal for a continent man to have a pollution once in ten days or two weeks. The prognosis in urethrorrhea is likewise very good under proper treatment. Diurnal pollutions are much more obstinate than the nocturnal variety, but finally yield to persistent treatment. Defecation spermatorrhea is a much more serious condition than the forms previously mentioned, and urination spermatorrhea is the worst of all. Defecation spermatorrhea, which is present only on severe straining or after the passing of hard fecal masses, is hardly more important than nocturnal pollutions, but the variety which comes with every stool, even one watery in character, is very apt to be a forerunner of impotence.

The general prognosis is worse where there is a hereditary tendency to general neurasthenia. It is worse in cases coming on after fifty years of age and accompanied by premature ejaculation or total impotence. The condition represents extreme hyperirritability of the sexual centres, and these centres at this age cannot stand much strain, and the resulting impotence is apt to become permanent.

The more reason there is for a pollution, the less serious it is. Thus, a man who has been continent for several weeks is liable to a pollution, and a man who has been spooning with his girl for hours has also reason to expect a pollution during the night. It is only cases where pollutions occur with little or no sexual excitement, such as merely brushing up against a female in a crowded car, or merely thinking of one, which represents the more serious types.

In considering the seriousness in the prognosis of pollutions, I refer only to the possibility of impotence, and to the persistence of the general neurasthenic symptoms. Pollutions, no matter how severe, never endanger life, and there is not the slightest evidence that they ever lead to insanity or other serious nervous conditions.

TREATMENT

Prophylactic. Boys approaching adolescence should be told of the probability of the occurrence of wet dreams from time to time so that they may not be frightened at their appearance and run to the first advertising quack they hear about. It seems to be the opinion among young adults that the ap-

pearance of a pollution is a sign that their sexual organs are ripe and demand their exercise in coitus. This opinion should be carefully warned against.

Every effort should be made to bring up the young man with as pure thoughts as possible, and to keep him away from suggestive literature and plays. It were well if he would abstain from alcoholics, especially beer, for these stimulate the sexual centres as well as the genitals themselves. He should take as little tea and coffee as possible. Cold bathing in the morning should be encouraged, but hot baths should be taken as little as possible, especially at night. He should empty his bladder before retiring, and arise as soon as he awakens, so as to diminish, as much as possible, the morning erection, which leads to erotic thoughts.

General treatment. Normal men should be told in plain and definite language the significance of pollutions, their harmlessness if not too frequent, and the measures advocated in the prophylactic treatment just mentioned should be enforced if possible.

In patients suffering from pathological pollutions, the measures just advocated under prophylaxis must be enforced. There is little use in treating these patients, if they will not abstain from alcoholics, tea, coffee, and all kinds of sexual excitement. Spooning is especially to be interdicted.

The first thing to be done is to stop the pollutions. Nothing succeeds so well here as the bromides in large doses. I prescribe fifteen grains of sodium bromide three or four times a day, well diluted, after meals. The primary effect is really remarkable; patients with three or four pollutions a week will quickly drop to one in one or two weeks. The psychic effect of this rapid diminution in the pollutions is also well marked. As the pollutions decrease in numbers, the bromides should be given less and less often, until only at bedtime, and finally should be stopped altogether.

At the same time, we must relieve the congestion or other pathological condition in the posterior urethra. For this purpose I have tried various expedients, but have found the instillation of weak silver solution through the Bangs sound syringe to be best of all. Very strong cauterization of the verumontanum, as recommended by some German authorities, I have found to be of no use whatever.

Nor have I found the psychrophore of much use in these conditions, but must admit that I have not tried it often enough to give a final opinion. According to German authorities, it must be employed every other day from five to twenty minutes at a time. Now, in private practice, I have not been able to induce patients to come every other day when suffering from no other condition than pollutions, and in my dispensary class, it takes entirely too much time to give a large number of patients twenty minutes each, every other day, for a long period. In the few dispensary cases in which I have conscientiously given it a trial, however, I have obtained no good results, but as stated above, the experiments have been entirely too few to warrant a decisive opinion. Even the German authorities, who have large experience with this method, say that some cases are made worse by it, and that they cannot tell beforehand whether it will benefit

or harm in any particular case. They also concede that even in cases where it does good, temporary impotence often follows.

In defecation and urination spermatorrhea, the bromides do not act as quickly or as positively as in the other forms. On the theory (which, as heretofore stated, has not been proved at all), namely, that the condition is due to a weakness of the sphincters of the ejaculatory ducts and of the seminal vesicles, as well as to a weakness of the musculature of the seminal vesicles, I have tried strychnine in small and large doses, but without result. The main treatment in these cases is to avoid constipation with its accompanying straining at stool, to avoid the accumulation of hard fecal masses by proper catharsis, and the treatment of the prostatic urethra as above indicated.

In urethrorrhea, it is only necessary to instruct the patients about the harmfulness of spooning, and their discontinuance of such and similar sexual excitements will generally bring about a cure. If necessary, a few silver nitrate instillations in both the anterior and posterior urethra will usually cure the patient.

BIBLIOGRAPHY.

1. S. ENGLANDER: A Review of Posterior Urethrosopy, *Ohio State Med. Jour.*, Nov., 1914.
2. ERNST R. W. FRANK: Klinische Erfahrungen über die Einwirkung des Adiamons auf sexuellen Reizerscheinungen, *Deutsch. med. Wochenschr.*, 40, 1912.
3. PAUL GROAG: Über nervöse Funktionsstörungen der männlichen Sexual Organe, *Ztschr. f. physikalische und diätetische Therapie*, 1912.
4. JOHN A. HAWKINS: Present Status of the Verumontanum in Deep Urethral Diseases, *Tr. Am. Urol. Assn.*, 1914.
5. MAX HUIJNER: Sexual Neuroses, *Reference Handbook of the Medical Sciences*, vi, 1913.
6. EDWARD L. KEYES, JR.: Diseases of the Genitourinary Organs.
7. HENRY H. MORTON: Genitourinary Diseases and Syphilis, 1912.
8. ALBERT E. MOWRY: Some Sexual Disorders in the Male: Impotence and Involuntary Seminal Emissions, *Illinois Med. Jour.*, March, 1913.
9. PAUL ORLOW-SKI: The Effects of Posterior Urethral Inflammation Centering in a Colliculitis, *Urol. and Cut. Rev.*, May, 1913.
10. IDEM: The Inflammation of the Seminal Collicle: Its Direct and Reflex Consequences, *Ibidem*, tech. sup., Jan., 1913.
11. MORITZ POROSZ: The Significance and Explanation of Sexual Dreams, *Ibidem*, Dec., 1913.
12. ALEXANDER RANDALL: The Endoscopic Treatment of Nocturnal Pollution, *Journal A. M. A.*, Jan. 2, 1915.
13. HERMANN KOHLEDER: The Etiology of Spermatorrhea, *Urol. and Cut. Rev.*, tech. sup., April, 1915.
14. IDEM: Die Prophylaxe der funktionellen Störungen des männlichen Geschlechtsapparates.
15. IDEM: Die Zeugung beim Menschen.
16. OSKAR SCHEUER: Uretroskopische Befunde bei Spermatorrhea und Prostatorrhea, *Med. Klin.*, Nov. 5, 1911.
17. FREDERICK R. STURGIS: Notes and Reflections on the Causes which Induce Marital Infelicity Due to the Relations of the Sexes, *Medical Council*, supplement.
18. IDEM: Sexual Debit in Man.
19. ROBERT W. TAYLOR: Practical Treatise on Sexual Disorders in the Male and Female.
20. R. ULTZMANN: Neuroses of the Genitourinary System in the Male.
21. J. WILLIAM WHITE and EDWARD MARTIN: Genitourinary Surgery and Venereal Diseases.

320 CENTRAL PARK WEST.

BRONCHIECTASIS FROM THE STAND-POINT OF THE BRONCHOSCOPIST.

By SIDNEY YANKAUER, M. D.,
New York.

When the surgeon wishes to make a diagnosis of disease in any of the hollow organs, it has become the established practice to examine the interior of these organs with appropriate instruments. The interior of the lungs can also be examined by means of the bronchoscope, but though this instrument has been used for over a decade for the removal of foreign bodies, it has not, up to the present time, been generally employed for the endobronchial diagnosis of chest diseases. This is largely because bronchoscopy is more difficult than other endoscopic procedures, because respiration must proceed unin-

terruptedly through the bronchoscope itself during the entire examination.

The extreme sensitiveness of the mucous membrane stimulates deep inspiration, and the respiratory movements cause a continual displacement of the field of vision. Coughing and expectoration of mucus obscure the illumination and interfere with the observer's vision.

With the perfection of the instrumentarium these difficulties have been sufficiently overcome for the purpose of removing foreign bodies. Yet the removal of an uncomplicated foreign body from one of the main bronchi is a comparatively simple matter. The manipulation has a single direct and previously determined object. For the purpose of endobronchial diagnosis, however, the bronchoscopist must have matured his experience to such a degree that the introduction of the bronchoscope, the recognition of the tracheal bifurcation, the entrance into the right or left bronchus at will, the identification of the openings of the individual secondary branches leading to each of the five lobes of the lungs, have become matters of elementary simplicity.

The endobronchial diagnostician must observe the size and the shape of the trachea, the main bronchi, and the secondary and tertiary branches as far as he can see; he must observe the color and the texture of the mucous membrane in all parts of the bronchial tree; he must note the respiratory and the cardiac pulsatory movements; he must note the size, configuration, and position of the tracheal bifurcation, as well as of the spurs which marks the openings of the minor branches; he must determine the amount and character of any secretion that may be present, and must determine its source.

A suction apparatus has been used for some time for the removal of secretions; when the technic of its employment is understood, it is a valuable aid in diagnosis.

The bronchoscopist must also be skilled in the use of forceps for the removal of specimens for microscopic examination. This is a much more delicate procedure than grasping a foreign body. Specimens should never be taken from the spurs at the openings of the branches; for the mediastinal connective tissue extends into the hilus of the lung, and in the angle between the branches of the bronchi comes close to the surface. When the blades of the forceps are made to straddle the spur, the latter is hidden from view, so that the depth of the cut cannot be accurately gauged. If the wall of the bronchus is penetrated, and the mediastinal connective tissue exposed, mediastinal emphysema results, with a fatal ending. Specimens should therefore be removed only from the lateral walls, and for obvious reasons from places where the mucous membrane is thickened.

It is thus evident that endobronchial diagnosis is both a science and an art, the difficulties of which we are just beginning to overcome. Progress can come only from actual clinical experience, and while it is true that bronchoscopy is not without its dangers, these are not so many but that its employment is justifiable when the disease itself is dangerous. I hope to convince my readers that it is not without useful, valuable, and otherwise unattainable results.

In the majority of patients suffering from bron-

chiectasis, or lung abscesses, bronchoscopy is very well tolerated. In tolerant patients it can easily be performed under local anesthesia; in those less tolerant, under local anesthesia after the previous hypodermic use of morphine, with or without scopolamine. In patients who are not tolerant—in persons with deformed spines and sometimes in persons with short, thick necks—general anesthesia is advisable.

Endobronchial signs and symptoms are neither more nor less pathognomonic than other groups of symptoms, and in classifying them we must bear in mind that an individual symptom may be present in more than one condition. We cannot therefore expect that an endobronchial examination will at once clarify the diagnosis of obscure conditions, but we must consider the endobronchial symptoms in their relation to signs and symptoms otherwise obtained, particularly the radiographic picture and the physical examination.

The endobronchial diagnosis in cases of bronchiectasis will be considered under the following heads: 1. Foreign bodies; 2, benign tumors; 3, malignant growths; 4, syphilis and tuberculosis; 5, differentiation between various forms of the disease itself; finally, 6, endobronchial treatment.

FOREIGN BODIES.

In the literature of bronchoscopy a large number of cases are reported in which a foreign body has remained in the bronchus for a long time. Mention is made of the large quantity of fetid expectoration, and the physical signs and radiographic picture point to an area of consolidation around the foreign body. These cases in their clinical course and physical signs correspond exactly with the cases generally diagnosed as bronchiectasis, but with the one exception that the history of the inhalation of the foreign body is definitely given as the cause of the cough. The statements of the patients, however, are not always clear on this point. For instance, in a case referred to me by Doctor Manheimer, the patient stated that his cough began after he had swallowed some pieces of bone. He further stated that he had recovered these pieces of bone from the stools and presented them to the doctor. Nevertheless, the physical signs of a lung abscess on the right side were clear. The radiograph showed a shadow on the right side in the lower part of the chest. Examination with the bronchoscope revealed the presence of two pieces of bone in the middle lobe branch of the right bronchus, the removal of which was followed by a cure of the abscess.

In a case already reported by Doctor Lilienthal, in which a boy four years old had inhaled some pieces of nut which he was eating, the parents informed their doctor that the cough followed this accident. But the patient's condition with his spasmodic cough and cyanosis so closely resembled an attack of croup that the doctor regarded the parents' story as a mere coincidence and administered antitoxin.

In another case in the service of Doctor Brill, at Mt. Sinai Hospital, that of a man sixty years of age with all the physical signs and symptoms of a lung abscess at the right base, bronchoscopic examination revealed the presence of a chicken bone in the lower lobe branch of the right bronchus, the removal of

which resulted in a cure of the abscess. The patient denied recollection of the inhalation of this bone, even after it was shown to him.

From these cases it is evident that the history of the inhalation of a foreign body may be given with uncertainty by the patient, the accident may have been completely forgotten by him, or the doctor may disregard the story told by the patient as a mere coincidence.

Sometimes a foreign body is discovered by the radiograph, but this can happen only if the foreign body is of such a nature that it throws a distinct shadow in the skiagraph. In a case on Doctor Lilienthal's service at Bellevue Hospital, a boy was admitted with what seemed to be a pneumonia in the left lower lobe. When the physical signs failed to disappear a radiograph was taken which disclosed the presence of a collar button in the left bronchus. In another case, in the Lincoln Hospital, a young woman was admitted with cough and profuse expectoration which had lasted for some time. A radiograph showed an oblong shadow which looked like a foreign body, and with the bronchoscope I removed an iron staple.

On the other hand, the radiographic picture will not show the foreign body at all if it happens to be one which is transparent to the rays, and in these cases the radiographic picture will be exactly the same as the pictures obtained in lung abscesses where there is no foreign body. In the two cases referred to above, in which pieces of bone were removed, the x ray did not disclose the presence of these foreign bodies.

In another case, in the service of Doctor Lilienthal at Bellevue Hospital, a man who was wearing a tracheotomy tube for a number of years, stated that a year ago a piece of the tracheotomy tube had broken off and dropped into his windpipe, and that since that time he had been coughing, so that when he came under observation he had a profuse foul smelling expectoration, such as is characteristic in cases of bronchiectasis. The radiograph did not disclose the piece of tube. Doctor Lilienthal, however, remembered that black rubber is transparent to the x rays, and upon his request a bronchoscopic examination was made. A portion of the tracheotomy tube two inches long was found in the left bronchus.

It is evident, therefore, that the x ray may fail to reveal the presence of a foreign body, so that neither the history nor the radiographic picture can be entirely relied upon for the exclusion of a foreign body.

When a foreign body is found in a bronchiectatic cavity, its removal has resulted in a cure of the suppurative condition, whenever the foreign body remained intact, so that it could be completely removed. But in two cases in which the kernels of nuts, which had been masticated by the patient, were inhaled, and in which the foreign body was removed as thoroughly as possible, lung abscesses developed nevertheless.

Considering, therefore, that the bronchoscope may reveal the presence of a foreign body when other means fail, and that in some of these cases the bronchoscopic removal of the foreign body results in a cure, I do not hesitate to make the statement that every case of bronchiectasis or lung abscess should

be bronchoscoped, if only for this purpose, and that any major operation for this condition is unjustifiable until the presence of a foreign body has been excluded by bronchoscopy.

During the past year a number of cases of lung abscess have appeared in Mt. Sinai Hospital (I believe the number is nine), in which the disease began shortly after the removal of the tonsils under general anesthesia, the operations having been performed in other institutions. I have seen a case of this kind in Dr. Willy Meyer's service in the German Hospital, as well as in private practice. I have bronchoscoped a number of these cases without having found any pieces of tonsil or adenoid tissue in the bronchi, but none of the cases has been examined within a month after the onset of the symptoms. The exact relation between the tonsillectomy and the lung abscess is not clear. Some of the patients stated that they had coughed before the operation, and because of this cough the operation was suggested. Now, any patient operated upon in any part of the respiratory tract is in particular danger of inhalation pneumonia. Any patient anesthetized when he has a cough is similarly in danger. Furthermore, any operation in a field which cannot be kept in a state of asepsis, and in which veins are exposed, is in danger of pulmonary embolus from septic thrombosis of even a small vein. Veins of not inconsiderable size are often exposed, particularly in the posterior pillar, during the tonsil operation. The matter is now being studied by Dr. Morris Manges, who may be able to give us further information on the subject.

BENIGN TUMORS.

Benign tumors may occur in any part of the bronchial tree and may be endobronchial or exobronchial. In a patient of Dr. Emil Mayer's, I removed a granuloma from the lower part of the trachea which had caused physical signs and symptoms closely resembling a lung abscess. In a case of bronchiectasis in the left lower lobe, referred to me by Doctor Manheimer, I found a stenosis of the left main bronchus caused by the pressure of an exobronchial growth. In another case which I saw in consultation with the late Doctor Gleitsman, I found a stenosis of the lower part of the trachea caused by the pressure, upon the left side of the trachea, of a pulsating tumor which was afterward determined to be an aortic aneurysm.

MALIGNANT GROWTHS.

On August 25, 1914, I performed a bronchoscopy on a patient in the service of Doctor Brill, at Mt. Sinai Hospital. The patient stated that in the beginning of June of that year he suddenly began to cough, had a severe chill and a rise in temperature, and profuse expectoration, at times bloody. The physical examination showed dullness from the angle of the right scapula downward with flatness at the base, bronchovesicular breathing, and crepitant rales. The radiograph showed a picture closely simulating that of a lung abscess. Bronchoscopic examination showed a change in the texture of the mucous membrane of the lower and middle lobe branches of the right bronchus. The mucous membrane was darker

in color and had a nodular or granular appearance. A specimen was removed for microscopic examination, which showed the presence of a carcinoma. Consent for operation could not be obtained until two months later, when a thoracotomy was performed by Doctor Wiener. Although the tumor at the time of operation was still small enough to consider the case operable, the patient was so exhausted by his severe febrile condition that the operation could not be completed and the patient died of shock. Had consent for operation been obtained as soon as the diagnosis was made, the patient's chances would have been much better.

Another patient on the service of Doctor Lilienthal, at Mt. Sinai Hospital, gave a history of cough, hemoptysis, and fetid expectoration of five months' duration, with dullness on the left side below the fourth rib, indistinct breathing, decreased fremitus, and a few fine crepitant rales extending to the axilla. The radiographic report stated that a dense uniform shadow extended over the lower half of the left chest. The diaphragm was not visible, and a diagnosis of pleural effusion, probably encapsulated, was made. Upon bronchoscopic examination a similar alteration in the appearance of the mucous membrane of the left upper lobe bronchus was found; a specimen was removed, which proved, upon microscopic examination, to be carcinoma.

In another case in the service of Doctor Libman, a woman, fifty-three years old, stated that for two months she had been suffering from pain in the left chest, cough, and mucoid expectoration. The physical signs showed diminished resonance from the angle of the left scapula to the base, as well as at the left apex, breathing bronchial and distant, with a few subcrepitant rales. The x ray report stated that on the left side in the upper lobe a dense linear shadow extended obliquely upward from the infraclavicular region to the apex. In addition, the lung tissue in the upper portion of the left hilus appeared to be infiltrated. The left lower lobe was poorly aerated so that the outlines of the heart and diaphragm were not distinguished. This area reached to the eighth rib posteriorly, and was probably due to an effusion. The condition in the left upper lobe was somewhat obscure, but was very suggestive of a bronchial carcinoma.

Bronchoscopic examination showed thickening of the mucous membrane in the lower lobe branch of the left bronchus. The upper lobe branch was entered with difficulty, as its lumen was narrowed by a thickening of its mucous membrane, which was nodular in appearance and presented nearly the same appearance that was found in the other two cases of carcinoma. A specimen was removed and the diagnosis of carcinoma definitely established with the microscope.

In the first of these cases the diagnosis of lung abscess was definitely made. In the third carcinoma was suspected, but in none of the cases could the diagnosis have been made with certainty until considerably more time had elapsed, and until the time for operative removal long had passed. If bronchoscopic examination was made early, there is no doubt in my mind that a number of lung cancers would be recognized early enough to permit of successful surgery.

SYPHILIS AND TUBERCULOSIS.

Syphilis of the lung occasionally results in cicatricial stenosis of the bronchus, beyond which an abscess may develop, as has been reported by Schrötter. Tuberculosis, of course, gives rise to numerous cavities, as well as to bronchial stenosis, and I hope to be able to make bronchoscopic studies in these cases in the future.

DIFFERENTIATION BETWEEN VARIOUS FORMS OF THE DISEASE ITSELF.

A valuable field for endobronchial diagnosis, particularly for the purpose of the thoracic surgeon, is the differentiation between the different forms of bronchiectasis and lung abscess. A discussion of the pathological differences between the various forms of the disease is not within the province of my paper. Endobronchially, we can distinguish three groups of cases:

In the first of these there is a dilatation of one or both of the main bronchi. This dilatation can be distinctly recognized through the bronchoscope. It may be limited to the main bronchus, or it may include the beginnings of the secondary branches. The enlarged bronchus contains the secretion, and its walls are covered with a thick layer of glairy, tenacious, and cloudy mucus. With the aspirating device which I shall demonstrate later, it is possible to remove most of the secretion from the cavity, and when it has once been emptied with the suction apparatus, the pus does not reappear during the course of the examination, which lasts from fifteen to thirty minutes.

In the other two groups of cases the main bronchi are not apt to be dilated. In fact, if pleuritic effusion is present, as in a case which I saw on Dr. Willy Meyer's service in the German Hospital, the main bronchus may be considerably smaller than normal. The main bronchus contains secretion, but even when the secretion has been evacuated with the suction apparatus, the pus continues to reappear from the smaller bronchi, from which it can be seen to ooze during the entire examination. From the surgical standpoint it is of the utmost importance to distinguish two classes of such cases; in one the pus is seen coming from all the smaller bronchi on one or both sides, and in one such case seen in Doctor Lilienthal's service, autopsy showed the existence of numerous peribronchial abscesses, each emptying into one of the smaller bronchi; in the other group of cases, after the main bronchus has been emptied of pus and the pus continues to reappear, it can be distinctly seen that the pus originates from a single branch only. We are thus able to distinguish with the bronchoscope cases of diffuse dilatation of the larger bronchi, cases of multiple peribronchial abscesses, and cases of abscesses involving only one part of the lung. The latter group of cases are the most favorable for surgical intervention.

It is not only necessary in such cases to recognize that the pus comes from a single branch only, but also to identify the particular branch from which it comes. This is of special importance because the radiographic picture does not throw sufficient light upon the site of the lesion. It will be remembered that on both sides of the chest the plane of cleavage

between the lobes of the lung runs in an oblique direction, so that when the skiagraph is made with the rays passing through the chest in a sagittal direction, the shadow thrown by the lower part of the upper lobe overlies the shadow thrown by the upper part of the lower lobe, and on the right side the shadow of the middle lobe is entirely superimposed upon the shadow of the lower lobe. The fissures between the lobes vary considerably in depth, and when the lesion lies near the hilus it is impossible for the radiographic picture to localize the lesion in any particular lobe. Inasmuch, however, as the bronchi are terminal organs, dividing and subdividing without communication with each other, the fact that pus can be seen with the bronchoscope to come from one secondary branch only is a definite indication of the site of the lesion, regardless of the radiographic picture or the physical signs. Moreover, in the skiagraph as well as in the physical signs, the surrounding infiltration and the secondary pleurisy are likely to dominate the picture.

The accuracy with which a pulmonary lesion can be located through the bronchoscope is illustrated by the following case: An elderly man, during what appeared to be an attack of bronchitis, coughed up a piece of tissue which was diagnosed microscopically as carcinomatous. There was no pain, nor did the physical signs indicate on which side of the chest the carcinoma was situated, nor was there any other clue on its site. A skiagraph had not been taken. With the bronchoscope it was possible definitely to locate the growth in the middle lobe of the right side, and to outline the extent to which it had involved the bronchus, at least upon its interior aspect. The diagnosis was confirmed by a skiagraph subsequently taken.

To illustrate the accuracy with which changes in the texture of the mucous membrane can be recognized, the following case may be cited, even though it is not a lung case: The patient was referred to the hospital by Dr. Emil Mayer, who had diagnosed a stricture of the esophagus, a short distance below the cricoid. With the esophagoscope it was possible to recognize at this point an area of mucous membrane which was slightly darker in color and thicker than the surrounding mucous membrane, and of a more velvety or finely granular texture. Microscopic examination of the specimen removed from this region showed that it consisted of aberrant respiratory mucous membrane. According to Kaufmann, patches of respiratory mucous membrane characterized by the presence of high cylindrical epithelium instead of squamous epithelium, are, in rare instances, found in the esophagus. This slight difference of texture was distinctly recognizable through a tube eighteen inches long.

Considering the novelty of the endobronchial method in the diagnosis of these conditions, the accuracy of the results thus far obtained, has been most encouraging. For in most cases which have come to operation or to autopsy, the endobronchial diagnosis has been verified.

On the other hand, endobronchial diagnosis, as far as our present knowledge goes, is limited by the fact that bronchoscopy cannot penetrate beyond branches of the third order. When pus is seen coming from one of the smaller branches, we can-

not tell whether the small bronchus has become dilated into a large abscess cavity, or whether a peribronchial abscess, or a localized empyema communicating with a small bronchus is the source of the pus.

To sum up, then, it has been possible with the bronchoscope to recognize and remove foreign bodies, whether or not they throw a shadow with the x ray; to recognize carcinoma of the lung, and to remove specimens for microscopic diagnosis at a stage when the disease is still operable, and long before it could be recognized by any other method; to recognize and treat the results of old syphilitic lesions simulating bronchiectasis; to distinguish between dilatation of the larger bronchi, multiple peribronchial abscesses, and a single abscess in any part of the lung; and accurately to locate the lesion.

TREATMENT.

In cases of bronchiectasis which are not amenable to surgical treatment, therapeutic efforts have been of little benefit to the patient. Attempts have been made to inject medicines into these cavities through the bronchoscope, but with little success. The writer has devised a method of handling these cases which promises to give definite results. I have constructed a double tube which is introduced into the bronchiectatic cavity through the bronchoscope. Through the smaller tube normal saline solution is injected, while at the same time suction is applied through the larger tube. The fluid is removed as fast as it enters the bronchus. By directing the tube to various parts of the wall of the cavity, a thorough irrigation is accomplished. It has been possible in this way to irrigate each lung with about eight ounces of salt water, at one sitting, under local anesthesia. The patients feel the solution enter the chest and can tell when it has been removed. They do not object to the procedure. After two or three such irrigations the foul odor of the secretion disappears, and the amount becomes very markedly reduced. Unfortunately, this beneficial effect does not last more than a few days, so that the irrigations must be repeated. I have done this in three cases, with good results as far as the odor and quantity of secretion are concerned, but none of the cases has been cured. Nevertheless, the result is striking, and it seems well worth while to continue the attempt to treat in this way these very unfortunate patients.

616 MADISON AVENUE.

A CASE OF ECLAMPSIA.

Recovery of Mother and Child,

BY ALBERT COMSTOCK, M. D.,
New York.

CASE. Mrs. L. R., aged twenty-three years, primipara. Family history, three brothers had nephritis, father died of nephritis, mother alive and well. Personal history: Always very well, though very corpulent. Menstruated at thirteen years; always irregular till few years ago; scanty; no special pains.

Patient was a very stout woman, weighing 248 pounds. Heart, lungs normal. Urine normal. Single pregnancy, left occipital anterior fetal head normal. Pregnant seven and one half months. Measurements normal. Patient complained of intense erythematous papular rash over abdomen and thighs, accompanied by great itching. Under

light diet, low protein, and catharsis, with local antipruritics this improved after a few days. Five days later patient complained of swelling of feet and spots before eyes. Examination showed moderate generalized edema. She had passed five ounces of urine in twenty-four hours. This boiled up solid with albumin. Her blood pressure was, systolic 145 and 110 diastolic. Immediately I sent her into the hospital. Her treatment was as follows:

Milk diet. Restricted liquids. No salt, magnesium sulphate saturated solution, two drams for six doses. Pilocarpine, grain $\frac{1}{4}$ every four hours. Continuous hot air bath every three hours. Potassium acetate, bitartrate, and citrate grains one, two, and three respectively, every two hours. The following chart shows the progress made in her case. The fetal heart appeared in no way to be disturbed by either her disease or the treatment.

URINE CHART I.

September 19, 1915, Third Day in Hospital.

Total quantity, 24 hours, 23 ounces.

Alkaline ++++.

Specific gravity 1.030.

Cloudy amber, heavy grayish precipitate.

Albumin ++++.

Sugar 0.

Urea .015.

Microscopical Examination.

Crystals.	Corpuscles.
Ammonium urate.	Red blood cells.
Amorphous simple phosphates.	Pus cells.
Epithelia.	Casts.
Renal convoluted tubular.	Hyaline granular.
Pelvis of kidney.	

The edema disappeared after the second day. Persistent vomiting occurred at several periods, as will be noted, always connected with diminished urea and increased blood pressure. This was treated with water diet and bismuth and cerium oxalate, of each five grains, cocaine half a grain every three hours.

After the disappearance of edema, an increased diet was permitted; she was allowed milk, cereals, clam and oyster broth, custards, and sweet fruits. Her hot air baths were diminished to one hour twice daily. She received no medication.

For a period of one week prior to the birth of her baby she was at home, but her urine record was copious, and urea was normal. Microscopically, epithelium and casts showed much less. During this time the restricted diet was enforced.

On October 11th, there was a marked rise of blood pressure, and labor set in twelve hours later. Her first stage occupied two days, both mother and child doing finely. On the third day she was delivered of a nine pound girl baby. Owing to a considerable protraction of the later phase of the second stage, some slight asphyxia of the babe was noted. This readily responded to insufflation. Two external sutures of silkworm gut were used in the perineum.

For two days following, everything was apparently in splendid condition. Her urine output never fell below fifty-five ounces, and her urea was normal. Her blood pressure maintained at about systolic 135, diastolic 110 to systolic 150, diastolic 115. Lochia were normal.

On the third day, after the patient had complained of slight vertigo, out of a clinically clear sky fell a severe eclamptic seizure. I found her in alternating convulsions and coma. The convulsions were very severe, clonic, accompanied by deep cyanosis, and frothing at mouth. Deep coma followed. She would rouse from this to a mild maniacal state, again relapsing into convulsions and coma. She had in all about sixty convulsions, occupying thirty-six hours. She then fell into deep coma with stertorous respirations, lasting about twelve hours.

During this time the treatment was as follows: Continuous hot air bath, six hours; Murphy drip, 120 minims a minute, of saline; tincture of vera-

trum viride, ten minims at first, then five minims, then three minims hypodermically. Chloroform produced no alleviation of the convulsions. Morphine in half grain doses hypodermically appeared to produce no effect. I did obtain good results, I feel, from an enema of chloral hydrate and triple bromides. During all these three days her blood pressure never exceeded, systolic 160, diastolic 115. Under the hot air she sweated very profusely. She voided urine involuntarily, but it could be easily seen that her output far exceeded the normal. Her bowels moved frequently. The urine showed:

URINE CHART II.

October 20, 1915.

Total quantity, 24 hours, 70 ounces, approximately.

Opaque amber, very slight precipitate.

Specific gravity 1.012.

Acid.

Albumin +++.

Urea .017.

Microscopic Examination.

Crystals.	Corpuscles.
Uric acid, moderate.	None observed.
Epithelia.	Casts.
Renal tubule, convoluted.	Hyaline, rare.
Renal tubule, straight.	
Felvis of kidney.	
Ureter.	

On the third day her temperature rose to 105° F., and her perspiration stopped. Her coma deepened and edema of the lungs was apparently present, though no general physical examination was made. The lochia were normal, the uterus large but firm. I discontinued the hot air, ordered alcohol rubs, and discontinued all medication, rare stimulation ordered, if necessary.

During the night of the third day, her coma rapidly lightened and temperature decreased, and she showed signs of consciousness on the fourth day, taking milk and water through a drinking tube. Previous to this her sole nourishment was water and a solution of lactose and brandy, dropped from a pipette on to her tongue.

On the fifth day, she was entirely conscious. Her face was dull and besotted, her voice thick and

nancy. This amnesia was very clear cut, and dated back to the beginning of her pregnancy.

There was a marked subinvolution of the uterus and her condition in general appeared one in which adeno-therapy should be of benefit. She was accordingly given thyroid gland desiccated one grain and pituitrin one c. c. three times a day. Under this

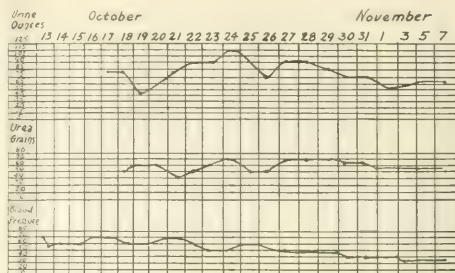


FIG. 2.—October 13th, second and third stages of labor completed; October 14th, normal urine; October 15th, convulsions; October 16th, very severe convulsions; October 17th, coma; October 18th, amnesic and confused, conscious; October 19th, mind somewhat clearer; October 20th, mind clearer; October 21st, mind improving, memory better; October 22d, mental condition very fair; October 23d, mind good; October 24th, normal; October 25th, normal; October 26th, normal; October 27th, normal; October 28th, normal; October 29th, normal; October 30th, normal.

treatment her progress was very rapid; in two days the uterus had contracted to a normal degree, and the improvement in her mental condition was miraculous; she readily recognized the mental condition she had been in, and grew brighter, while her memory improved by the hour. In four days her mind was practically normal.

The child, which had steadily vomited after the first day, in spite of every formula tried, was placed on the breast on the sixth day. The mother's weakened condition, her eclamptic state, and dubious mental condition would seem to make such a step questionable, but the babe stopped vomiting immediately and did well.

The hot air bath, as improvised by the head nurse of the sanatorium and myself, was effective. A piece of stove pipe reached from a point six inches from the floor to the level of the bed; here an elbow led under the bed clothes. The clothes were elevated by half circles of barrel hoop. A common gas stove was placed on the floor under the pipe, and the patient thoroughly tucked in with blankets. A temperature of 200° F. could thus be obtained with ease. I used about 170° F. In this the patient sweated profusely, doing as well as in any expensive apparatus manufactured.

One unusual feature of her urine picture was the continued excessive alkalinity, which invariably deepened before either vomiting or convulsion.

The question as to inducing premature labor was answered, I feel, by the urine record, which was satisfactory in the main, and while it is possible that, had labor been induced, the eclampsia might have been avoided, I do not feel, in view of the blood pressure, total urine and urea, that such a step would have been justified.

The use of thyroid and pituitrin in her case shows, I feel, interesting results. Thyroid has been ad-

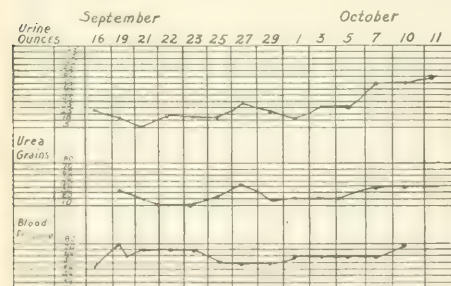


FIG. 1.—September 16th, general edema, vertigo, muscular twitching; September 19th, edema much less, vomiting persistently; September 21st, no edema, spots before eyes, vomiting persistently; September 23d, still vomiting; September 24th, no vomiting; September 25th, no vomiting; September 27th, condition satisfactory; September 29th, vomiting persistently; October 1st, vomiting; October 3d, no vomiting, feels fine; October 5th, condition satisfactory; October 7th, normal; October 10th, normal; October 11th, labor pains.

husky. She suffered with systematized delusions, believing the gas ret to be "twins," the "afterbirth," etc. She laughed in an insane way, and had a complete amnesia of all events succeeding her preg-

vocated for eclampsia, and her condition after returning to consciousness was so precisely like that of hypothyroidism that its use was strongly suggested. The pituitrin was most effective in producing contraction of the uterus, and I cannot but believe that the rapid improvement in her mentality was due, at least in part, to the combined extracts.

I will, in conclusion, append her urine chart as it appears today, nearly three weeks from the date of delivery.

URINE CHART III.

October 30, 1915.

Total quantity, 63 ounces.	Urea .015.
Clear amber.	Albumin, faint trace.
Acid.	Sediment, negative.
Specific gravity 1.011.	

The mother and babe are both doing well. The perineum is nicely healed, the uterus in good position and completely contracted.

1169 FLATBUSH AVENUE, BROOKLYN.

MENINGEAL HEMORRHAGE IN THE NEWBORN.

Complete Recovery; Report of a Case.

By MAURICE J. LIPPMAN, A. M., M. D.,
New York.

Hemorrhage in the newborn may occur anywhere in the body. There are two classes: 1. Spontaneous, or the hemorrhagic disease, in which are included hemophilia, hemorrhage due to the infectious diseases, syphilis, etc. Here the etiology is dependent upon an abnormal condition of the blood which permits its passage through a normal blood vessel, or an abnormal condition of the blood vessel itself, a disease of the endothelial lining, which allows the escape of normal blood. The hemorrhages are most commonly seen from the umbilicus or mucous membrane, and often occur subcutaneously or in the viscera. They are usually multiple and give a high mortality.

2. Traumatic or accidental hemorrhages. These cases depend upon causes connected with difficult delivery. A large variety is met with; from a hematoma of a muscle to a visceral involvement. Cephalhematomas, single or multiple, are often seen in forceps cases; but the most serious and most difficult to manage is the intracranial type. There the hemorrhage may be in the meninges, the dura mater, arachnoid membrane, or pia mater, in their spaces, or in the cerebral tissue itself.

CASE. Mrs. Florence L., aged thirty years, primipara, pelvis moderately contracted, slightly more so on the right side, was in labor for twelve hours, when the pains began to diminish in force and frequency. As the passenger's head, a left occipital anterior, was well engaged, and with sufficient certainty appeared not to be out of proportion to the passageway, pituitrin, in half ampoule doses, was given every thirty minutes. The head was promptly brought down; but, for one and one half hour the persistent and vigorous pains failed to carry the attacking head through the bulging perineum.

Relief came in the form of a general anesthetic, and the application of very low forceps. Great care was used not to lock the handles completely, and the traction was gentle and brief. Soon the parietal bosses were helped beyond the obstruction, the blades removed, and the mother was permitted to deliver herself with conscious effort. A small five and one half pound baby was born without the slightest evidence of external injury. A physical examination proved negative.

Forty-four hours after delivery, the nurse reported the sudden onset of convulsions in the baby. These convulsions were repeated at irregular intervals of from one to three hours, each lasting from one to five minutes. The seizures were rapidly and progressively growing worse. Some were general, others localized; some were clonic, and others were tonic convulsions. There were twitchings of muscles, general tremors, disturbances of respiration, bulging and rolling eyeballs, restlessness, rigidity, crying, refusal of breast and other food, cyanosis, at first light and later marked, and finally apparent stupor at the end of an attack. After the seizure, the baby cried for a few moments, one or another extremity trembled for a while, and then it quieted down to a normal rest. There were no disturbances of pupils or reflexes. The anterior fontanelle was bulging and tense, and the sutures were open. The bowels and bladder acted normally.

TREATMENT.

Twenty-eight hours after the onset of convulsions, and after consultation with Dr. G. R. Pisek, a lumbar puncture was performed. The spinal fluid came out clear, with a slight yellow tinge, under moderate pressure, about twenty-five c. c. in quantity. The fontanelle immediately flattened down, in fact became slightly depressed, so that the edges could be easily palpated. Bromides and chloral were given per rectum, the child was put to bed in a quiet, darkened room and fed at the breast every four hours. Although the action of sucking may have increased the blood supply to the head and thus predisposed to a repetition of the hemorrhage, there were no further signs of bleeding. After the lumbar puncture the convulsions did not reappear. The introduction of a foreign proteid in the form of cow's milk was avoided, although the mother's supply was scant.

The examination of the spinal fluid by Dr. M. C. Pease revealed the presence of morphologically altered red blood cells. There was no visible coagulum. No organisms of any kind were found. The globulin test was positive, owing to the presence of blood. Fehling's test showed normal reduction. The finding of blood in the spinal fluid is not sufficient to make a diagnosis. This may be due to the puncture of a vessel. It is only when disorganized blood, or detritus, is found, that the examination is of value. Finkelstein is reported as having been fortunate enough to obtain this evidence in only one case!

In this case the lumbar puncture served a double purpose. Diagnostically it was very important, but as a therapeutic measure it was invaluable. It acted as a hemostatic agent and as a means of decompression of the nervous centres. The results were prompt in appearance and very gratifying in effect. The convulsions disappeared completely, as if by magic, and left no trace of their presence. The baby took the breast well and vigorously, is behaving normally, and is thriving on complementary feedings of milk, water and dextrimalose. The fear of secondary contractures, spasticities, paralyzes, deformities, possibly epilepsy, or idiocy, has vanished.

Had there been a continuation of this slow bleeding, and a repetition of the convulsions, preparations were made for further treatment—human blood serum injections. Owing to the disappointing results with the older drug methods, this new and very successful method is now being used in all the forms of hemorrhage—blood transfusion, or injections of whole blood, animal serum, and particularly

human serum. It was Welch, of this city, who only recently first brought out the idea of using normal human blood serum, and with brilliant results. It is now recognized as the most useful procedure in cases of hemorrhages of the newborn, especially in the meningeal and cerebral type.

In the Welch method, about thirty c. c. of the serum is injected subcutaneously, and repeated within six hours. These injections may be repeated, if necessary, every six hours for a week, or until positive signs of recovery are noticed. The amount and frequency depend upon the severity of the symptoms and the character of the reaction.

Jarvis advocates the use of whole blood from father or relative, ten to twenty c. c. every four to six hours injected into the buttocks. This method is more applicable to the hemorrhage in the spontaneous variety.

The important points in this case are: 1. The comparatively slight amount of trauma which was sufficient to produce meningeal hemorrhage; 2, the rather delayed appearance of the convulsions; 3, the vast importance of an early lumbar puncture, for diagnosis and for therapeutic effect.

930 FOX STREET.

Lectures and Addresses

AIDS IN DIAGNOSIS.*

By F. D. REESE, M. D.,
Cortland, N. Y.

Before proceeding with the annual address which is due from the president at this time, I wish to thank the members of the society, and the secretary in particular, for their and his hearty cooperation in the work of the society for the past year. We have not accomplished all which might have been desired in the field of medical science this year, but perhaps our labors have been a step in the right direction. As a legacy to the incoming officers we give them the assurance that there is plenty of work during the months to come, and that we pledge them our loyal support.

I shall not tire you with a long message, but wish to emphasize two or three points in the practice of medicine and surgery which will aid in making a positive diagnosis and to illustrate them with reports of cases which have interested me greatly.

The first point I wish to emphasize is the importance of taking and keeping records of our cases, and especially to inquire exhaustively into the family and personal history of each person treated, whether apparently of much or little importance. Many a physician has made vital mistakes in the prognosis and treatment of cases because he has not gone deeply into the history of his patient, taking up the family history, environment, and the onset of the present disease. The day is not far distant when the laity will inquire whether a doctor is considered a thorough, painstaking diagnostician or not, and this is as it should be, and each of us should meet the question with accomplishment.

Good records should be kept, first, because it will make a physician careful, painstaking, and thorough in his examinations. He will be a better physician or surgeon for pursuing this laborious work. It will have a tendency to make him accurate and alert, and he will detect symptoms and observe signs which he would not otherwise be apt to notice. Second, the keeping of accurate records will stimulate the desire to classify symptoms, to give symptoms their real value, and to eliminate those which are mentioned by the patient to deceive, or which emanated from his fertile imagination. How many of you have seen the hopes of a patient fall who has presented his case with pride, as you brush away his detailed report with one word, *unimportant*, and hold him to the one significant symptom, which is the key to the correct diagnosis of his ailment?

Doctor Cabot says that "a correct diagnosis depends upon what enters a doctor's head as possible, and on what his head does to sift the possibilities after they have entered it." Supposing we should have a patient who complains of dyspnea. If we have records enough of cases of shortness of breath we should be able to bring to our aid, if we were not carrying them in our experienced minds already, those diseases which are always accompanied by dyspnea. Then with alertness and accuracy we could come to a conclusion which would be nearly always the correct diagnosis.

For example, three patients came to me who complained of suffering from shortness of breath. One was a man about sixty-five years of age. I examined him carefully, going into his history in detail. He was a grocer by occupation and had suffered from shortness of breath and tachycardia at times for years. His blood pressure was only 115 mm.; pulse, 160 or more, very thready. He was nervous. The urine was of low specific gravity, with phosphates, and with frequent desire to urinate. The heart sounds were somewhat muffled, but there were no valvular lesions, yet the greatest impulse beat was felt two inches to the left of the left nipple; the precordial dullness was over a larger area than normal. On further examination, I found a large growth attached to the liver. He said he had noticed this tumor for more than twenty years. His abdomen was greatly distended, and filled with gas. He was slightly nauseated and the bowels were constipated. When I reached the heart in my examination, I was inclined to think he had myocarditis, and that the dyspnea was due to this; but I changed my opinion when I had completed my examination. The case proved to be one of auto-infection due to a liver whose functions had been interrupted by this growth which he had had for twenty years. The treatment proved this diagnosis to be correct, for after a few doses of medicine, which disinfected the alimentary canal and eliminated its stagnant contents, the marked symptom, dyspnea, for which he came to me, passed away.

Case two was that of a woman sixty-three years of age, native born, widowed about three years ago. She was greatly depressed at the loss of her husband, mourning intensely. She became nervous and complained of shortness of breath. She came to me November 13th; her appearance was that of a

*Annual presidential address read before the Cortland County Medical Society, December 17, 1910.

sick woman. Her family history was negative except that her mother had had scrofula, but lived until she was eighty-four years old. The father died at seventy-four years of rheumatism. She was the mother of one child, with whom she is living in harmony. She had never been strong, but always able to do her work with ease until the present trouble developed. She complained of dyspnea and of pain in the throat on walking. She was nervous and a poor sleeper. Her bowels were fairly active. I did not get a specimen of the urine. I observed throbbing carotids, rapid pulse, with no abnormal heart sounds. I found the thyroid slightly enlarged. She wore glasses, and the eyes were somewhat prominent. My diagnosis was hyperthyroidism, caused by sorrow, to which the dyspnea was due.

Case three was that of a woman of sixty years, who weighed 230 pounds and was five feet, six inches tall. The family history was negative. Her mother lived to an advanced age; her father was killed in the Civil War. She married at fourteen years of age, and is the mother of three buxom living children. As far as I could discover, the functions of her body were normal. She complained of shortness of breath while walking and going up stairs. My diagnosis in this case was overnutrition, due to a well satisfied appetite, with a tendency to eat foods which produced adipose tissue. A regulated diet and ambulatory exercise were the treatment.

These three people suffered from a common symptom—dyspnea—which was caused in each case by an entirely different pathological condition.

Cabot speaks of the prominent symptom as the "presenting symptom," which may be of much or little importance. As you know, there are many difficulties which give dyspnea as a prominent symptom; for example, all forms of acute and advanced nephritis, cardiac and endocardiac disease, blood dyscrasia, nervous derangement, such as hysteria, etc., and debility or weakness; bronchial difficulties of all kinds, croup, diphtheria, and many other diseases.

The value of keeping detailed records cannot be overestimated for reference when we have puzzling cases, and also to hammer into our minds the possibility of a trouble which may give but one manifestation or presenting symptom.

Pain, of course, is a prominent symptom of many difficulties; but localized pain in any region stands for only so many troubles. For instance, pain in the left iliac region stands for perforated gastric ulcer, malignant disease of the bladder, diverticulitis, syphilitic adenitis, ovarian cysts, hernia, varicocele, intussusception, and constipation. Therefore, if you have a patient with pain in this part, you must recall all the possible troubles which would produce pain in the left iliac region. After doing so, it is much easier to arrive at a diagnosis. Keeping good records helps to fix in our minds the prominent symptoms which appear in any region of the body, and to eliminate all such troubles which could not possibly exist there.

The next point I wish to emphasize is the importance of seeking and performing an autopsy every time we are unfortunate enough to have a pa-

tient die. With well kept records of our cases and a perfect knowledge of the post mortem findings, whether they agree with the ante mortem diagnosis or not, will go a long way toward associating in our minds the cause and pathology of a disease with the effects, which are its symptoms and signs. I have never more felt the importance of an autopsy in every fatal case than I have since my own beloved wife passed away. The diagnosis of her trouble was not confirmed by autopsy. She saw a number of physicians who held various opinions of the disease or trouble. If an autopsy had been performed, a mystery which now remains veiled might have been revealed and my mind would have been satisfied.

I hope some day to see a State law enacted, requiring before burial of the dead, an autopsy, which should be performed, free of charge, by an expert county pathologist. I am sure this would give the greatest satisfaction to the friends of the dead, help to raise the standard of medicine and surgery, and eliminate much quackery, which goes now as intelligent medicine with the laity.

I believe that the Cortland County Medical Society could not perform a more charitable act than to secure the passage of a bill through the State legislature, by our representatives in the Senate and Assembly, which would create the office of a county pathologist, and which would require an autopsy by this pathologist before burial is permitted. Such an act, if carried out, would compel the medical profession to sharpen its diagnostic wit by keeping full records of all patients, and also would drive from our land many forms of rotten quackery. As a concomitant of this a correct diagnosis would be made in the majority of cases, or the incompetent practitioner would be required to explain why.

To those who love the practice of medicine and surgery because of what can be done to relieve suffering humanity, I want to say that the field in which we are working is large and broad and deep. It is not a field where cant or strife is tolerated, but one where we are encouraged to put forth our best and most thoughtful and earnest endeavors together. Team work should be our ambition and cooperation should be our slogan.

16 TOMPKINS STREET.

Treatment of Summer Diarrhea in Children.—In the *Journal des praticiens* for June 19, 1915, Girou outlines his experiences with hordenine sulphate. According to an abstract of this article in *Pediatrics* for November, 1915, he restricts the diet to water or glucose water for one or two days and washes the stomach if there is much vomiting. A collargol irrigation of the bowel is given if the stools are very fetid, and the child is purged with calomel or castor oil. Lactic acid, betol, or tannigen follows for an antiseptic action, and the general condition is cared for by baths, friction, or the subcutaneous injection of normal salt solution to combat the loss of fluid. Hordenine sulphate is given in doses of seventy-five mg. for children three months old or younger, and this is increased by twenty-five mg. for each month of age over three months. The drug is given preferably by subcutaneous injection.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVI.—How do you treat the constipation of sedentary men? (Closed.)

CLXVII.—How do you treat rickets? (Answers due not later than February 15.)

CLXVIII.—How do you treat cyclic vomiting of infants? (Answers due not later than March 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXV has been awarded to Dr. Louis Weiss, of Newark, N. J., whose article appears below.

PRIZE QUESTION CLXV.

THE TREATMENT OF OPHTHALMIA NEONATORUM.

By LOUIS WEISS, M. D.,
Newark, N. J.

As a preventive measure, interdict intercourse between the parents, at least during the last three months of pregnancy. As a further precaution, prescribe for the expectant mother daily warm vaginal douches of mild boric acid, sterile water, or normal saline solution. It has been found by experiment, that one ante partum douche does not suffice to make a vagina sterile. It is known that in the practice of midwives, most of whom employ ante partum douches, occur fewer cases of ophthalmia neonatorum than in the practice of physicians, who generally are opposed to such a procedure.

If in spite of this foresight, gonorrheal or some other infection has taken place, have the patient douche the vagina at least twice a day with a one to 10,000 silver nitrate solution. Paint the cervix and vaginal walls with a twenty-five per cent. solution of argyrol or five per cent. protargol twice a week. If the vaginal walls become excessively inflamed through contact, let the patient, in addition to the foregoing, insert every night on retiring, a vaginal suppository of silver nitrate, gr. $\frac{1}{2}$, in cocoa butter or boroglycerin. If necessary, also use a cotton tampon of glycerin, or ichthyol, or liquid petrolatum, or any emollient to keep the inflamed surfaces apart.

Not too much reliance must be placed on the medicines alone, as the greatest antagonist the germs encounter are the healthy tissues themselves. Bathing frequently should not only be allowed, but encouraged. If the urethra and bladder are infected, treat these parts in the proper manner.

At the time of labor scrub the vulva with tincture of green soap and rinse with sterile water. Give an ante partum vaginal douche of several quarts of a

weak lysol solution, and to get between the folds, swab out the vagina thoroughly with cotton soaked in lysol solution.

After having cleared the passage, your attention is next to be given to the delivered passenger, the newly born infant. Wash the eyes with a boric acid solution. Then place into each eye one drop of a two per cent. silver nitrate solution. If inflammation is present, let the nurse, cleansing her hands before each procedure, wash the affected eyes with warm boric acid solution every two hours.

As the inflammation advances, sterile gauze soaked in warm boric acid solution should be comfortably bandaged over the eyes, and kept moist with the solution, and renewed every two hours, or oftener if necessary, to wash the eyes free from the irritating products of inflammation.

One drop of adrenaline chloride solution (one in 1,000) into each affected eye every morning, will diminish congestion and lessen the tendency to corneal ulceration.

If there is slow or no improvement, have an auto-genous vaccine made, or use a gonorrheal stock vaccine to stimulate the antibodies to combat the ophthalmia. More than one hypodermic injection may be required.

The room should be warm and not too light. The infant should not be in a draught. Cold retards, while warmth promotes healing. In every disease, treat the patient. The child should not be fed as much nor as frequently as when well. It is injurious while an acute process is going on. It only adds to the congestion of the affected part, and aggravates the disease. Less food means less congestion, hence quicker recovery. Warm sugar water or plain warm water will bridge over the severest period. The breasts of the mother should be pumped out if indicated, when the baby is not nursing, to insure a fresh supply of milk. As the inflammation subsides, nursing or feeding should gradually be restored. Attention should be paid more to getting the system rid of the disease, than to stuffing the patient with food.

The bowels should be kept open, if necessary, with glycerin suppositories, or warm water rectal injections with or without soap suds, or aromatic syrup of rhubarb in teaspoonful doses once or twice a day. Other mild and equally effective cathartics may be used.

For the restlessness and pain give paregoric, fifteen drops in sugar water. These symptoms are admirably relieved by hypodermic medication directed against the ophthalmia.

Further contagion should be guarded against by cleanliness, and burning the dressings removed from the affected parts. The disease is a serious one, and requires the most painstaking care.

Dr. J. H. Howard, of York, Pa., writes:

Ophthalmia neonatorum is a preventable disease. Preventive treatment begins prior to labor, when in suspected cases douches of bichloride, one to 5,000, or potassium permanganate, one to 1,500, should be administered once or twice daily. Tampons of argyrol, twenty-five per cent., aid greatly in treating these cases.

Excellent results have been obtained from the pro-

cedure introduced by Credé, who advises washing the eyes immediately after birth with sterile water when one drop of a two per cent. solution of silver nitrate is instilled into each eye, neutralizing with salt solution. Care should be taken not to run the solutions from one eye to the other, and in this way contaminate an uninfected eye. I have modified Credé's method in that I use a twenty per cent. silver solution, instilling one drop in each eye and omitting the neutralizing saline. With the silver preparation I have yet to see a case of silver catarrh; this has occurred occasionally with the one or two per cent. silver nitrate solution. It is important that the silver solutions be kept fresh. I prefer to postpone the instillation of silver until I can perform it myself, if necessary waiting until after the third stage. I believe cases where Credé's method has apparently failed are due to nervous probationers or practical nurses failing to open the eyelids and preventing the silver solution from reaching the conjunctival sac. Other solutions recommended are argyrol, five to twenty-five per cent., boric acid, acetate of silver, protargol, ten per cent., and argonin, five per cent. Strict isolation should be observed, all dressings being burned. When one eye only is infected, use great care in protecting the sound eye. Placing the infant on the side corresponding to the diseased eye, wipe the sound eye with pledgets of cotton soaked in warm boric lotion, moving toward the nose, and do not use the same pledget twice. Drop in daily one drop of a one per cent. solution of silver nitrate and continue as long as a trace of infective inflammation remains in the diseased eye. Cover the sound eye with gauze and bandage, or apply a watch glass held in place with adhesive plaster, as directed by Buller. A well fitting monocle will be found serviceable. I believe it is almost criminal to neglect Credé's treatment and I make it as much a routine procedure as severing the umbilical cord. Doctor De Lee states that it might be possible for a child to recover damages at law if it was blinded at birth, and it was proved that the attending physician did not observe the recognized precautions.

Treatment should be directed toward lessening the inflammation and removing as rapidly as possible the accumulating secretions. The infant is placed on the side of the diseased eye, the lids are carefully separated, and the conjunctival sac is well flushed with warm boric acid solution. This is repeated, if necessary, every hour day and night. The following solutions have been used in place of boric acid: Potassium permanganate, one to 2,000; mercury bichloride, one to 5,000; mercury oxycyanate, one to 2,000, and normal saline. Care must be taken not to injure the corneal epithelium and thus lead to corneal infiltration. To prevent corneal complications, ice compresses are made by placing gauze pads on ice and then on the diseased eye; these should be changed every few minutes. A more convenient way is to use small ice bags made out of condoms, which save time and labor. The cold applications should be applied continuously at first, but when the tense swollen and inflamed condition of the lids becomes less marked, reduce to every other hour or every third hour, as too much refrigeration may interfere with corneal nutrition. Continue the cold compresses until the discharge becomes slight and

its purulent character has disappeared. If the exudate is dense, and likely to interfere with corneal nutrition, or corneal ulceration threatens, applications of heat will stimulate circulation and hasten absorption.

With the beginning of secretion the conjunctiva should be swabbed once daily with a two per cent. solution of silver nitrate, which is neutralized with a swab of saline solution, care being taken not to touch the cornea. A three per cent. solution of silver nitrate may be used, if necessary. The eyelids should be everted and painted with a ten per cent. solution of silver nitrate, which is immediately neutralized with saline. When the violent inflammation subsides, irrigate with silver nitrate, one to 500 or one to 1,000.

In all severe cases, or when the first signs of corneal opacity or ulceration appear, it is well to dilate the iris by dropping in a drop of atropine solution, one per cent., three or four times daily. If marginal ulcers appear, use eserine, 0.33 per cent. A certain amount of chronic inflammation may remain, which may be treated with a daily application of protargol, one per cent., or 0.5 per cent. zinc sulphate solution. If the inflammation still persists, use glycerate of tannin, the alum stick, or sulphate of copper.

Corneal ulcers complicating the case may be treated by antiseptic lotions, yellow oxide of mercury, iodine, electrocautery, or paracentesis of the cornea.

In all cases of purulent eye infections of the newborn, secure the services of one or two competent nurses and the advice of an expert ophthalmologist.

Dr. Louis Neuwelt, of New York, observes:

If within two or three days after an infant's birth, a discharge from one or both eyes is noticed, the secretion should be examined under the microscope, and gonococci sought for. Absence of the gonococci denotes a mild catarrhal form of ophthalmia, which responds readily to a treatment consisting mainly of cleanliness and protection from light. Saturated solution of boric acid is an efficient cleanser. It should be applied as described later. The lids should be prevented from adhering by applying boric acid ointment. A nongonorrheal, catarrhal ophthalmia will clear up in a few days.

Should gonococci be found in the smear, the infant's sight is at stake. A baby with a gonorrheal ophthalmia is preferably treated in a hospital.

Usually these babies are in a poor general condition, and everything must be done to improve their malnutrition. Wherever possible they must be breastfed, and not weaned. Careful instruction should be given to the nurse in regard to the frequency of treatment, because too frequent or too vigorous treatment does more damage than benefit. The frequency varies between every half hour and every three or four hours, depending on the severity of the case. The baby's weight should be carefully watched and all necessary measures taken to increase it.

If only one eye is infected, precautions must be taken to prevent infection of the other eye. The baby should always lie on that side of the body cor-

responding to the eye already infected. Its hands and arms should be confined to prevent the spread by their means. Instill one or two drops of argyrol or protargol into the healthy eye, two or three times a day, as a prophylactic. The burden of prophylaxis lies heavily upon the shoulders of the attending nurse.

Prophylaxis. If the birth canal is suspected of being infected by gonococci, the mother should be instructed to use one or two daily vaginal douches, first with a boric acid solution, and then with a solution of bichloride of mercury, one to 5,000. Immediately before delivery, a vaginal douche of a solution of lysol (one per cent.) should be used. At the onset of labor, wash the vagina with the lysol solution. As soon after the child's birth as possible, instill one or two drops of a two per cent. silver nitrate solution into each eye; the excess is washed away with a piece of cotton soaked in boric acid or salt solution. This should be done in every case, whether the birth canal is infected or not. In infected cases isolation should be promptly established, avoiding contact with other children and the rest of the family, and a special nurse placed in charge. Soiled dressings should be burned.

Local treatment. In the specific form of ophthalmia, as shown by the presence of gonococci, the eye must be protected and exposure to light avoided. The eye is cleansed from pus from every twenty minutes to every three hours. The lids are everted and wiped clean with a pledget of cotton soaked in saturated solution of boric acid. Wash the conjunctival sac with the same solution squeezed from a pledget of cotton, and then instill several drops of a twenty-five per cent. solution of argyrol, wiping away the excess. Where there is much swelling and redness, iced compresses to the eye are comforting. These iced pads should not be used continuously, as soon as the redness and swelling begin to diminish. A good plan is to lay the pads on for ten to twenty minutes every hour for the first twenty-four to thirty-six hours, provided that the child is in good condition and the inflammation subsides. Avoid injuring the cornea, by cleansing gently. Injury to the cornea is seen by the argyrol stain. In the later stages, when there is not a sufficient reaction, silver nitrate solution helps. In severe cases, showing corneal involvement, atropine (one or two grains to the ounce) is used, two or three times daily, to dilate the pupil. When the case reaches the chronic inflammatory stage, daily applications of a one per cent. protargol, or a 0.5 per cent. zinc sulphate solution are helpful.

No patient should be discharged as cured of ophthalmia neonatorum, until there are at least two negative smears from the secretions, at intervals of twenty-four hours.

(To be continued.)

Contemporary Notes.

Government Support of Chemical Research.—It seems evident, remarks the *Pennsylvania Medical Journal* for January, 1916, that if we are to have chemical industries in this country, the Federal government will have to undertake the responsibility

for some of the research which private individuals cannot carry out alone. One suggestion which invites serious consideration was made at a conference between Secretary Lane and the representatives of American chemical manufacturers. This was that the best way to develop in the United States a coal-tar product industry would be for the government to establish a plant to make the acids and other products needed by the war and navy departments. This plan could be highly recommended if the government were conducted upon a real civil service system. Such a plant could also be used as an experiment station for chemical processes. We cannot seriously expect private persons to undertake the whole cost of vast works and lengthy researches the benefits of which they may not live to see. Government assistance to research, therefore, seems necessary. In addition, some of our philanthropists might consider the possibility of establishing foundations for chemical research.

The Small Value of Academic Degrees.—There are too many physicians who depend upon the letters following their names more than upon their study and understanding of medical science, remarks the *Texas Medical Journal* for January, 1916. Degrees and titles have never yet assured success. They only indicate that a professional man has reached the point where he ought to be able to advance, provided he applies himself diligently enough.

Proceedings of Societies.—Those of our readers who appreciate the care with which we edit and prepare for publication this important department of the *NEW YORK MEDICAL JOURNAL*, will enjoy the comments of the *Journal of the Indiana State Medical Association*, in its January 15, 1916, issue, on similar reports which it publishes. Says the periodical in question:

One of the readers of the *Journal* makes inquiry as to the number of doctors who actually read the well prepared society reports published in every number of the *Journal*. He calls attention to a fact that we have long recognized, that for the most part the society reports are full of meat which ought to furnish splendid mental food for a large number of doctors who really need such nourishment, but he has discovered that among his acquaintances the ones who really need the nourishment most are the ones who are not taking it. He has not stumbled on anything new, for most of us know that the weak medical man along with the grossly incompetent doctor is the one who does not read medical journals, does not attend medical societies, and does not do postgraduate work of any kind. He is in a rut where he finds contentment, though he seldom fails to look with envy on his more fortunate confrères who are successful because they are progressive. However, for the benefit of those secretaries who, at no inconsiderable expenditure of time and energy are preparing such excellent medical society reports for publication in the *Journal*, we desire to say that their reports are read and appreciated by the class of men whose good opinion is sought. In other words, the best and busiest men in the profession do read medical journals, and they are not overlooking society reports that contain up to date and progressive ideas.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 5, 1916.

THE CHILD AND THE SCHOOL.

At the present time, there is probably no word more prominently brought forward than preparedness. There are, of course, many ways in which the term may be used, but in no other way should it loom so large in this country as when applied to the training of school children. From the age of five or six to possibly that of seventeen or eighteen years, children are being prepared for their future, at least that is the supposition. But when we examine closely into the daily lives of our children, more and more doubt is raised as to whether they are really being fitted for what is to come.

In the vast majority of schools the curriculum is so crowded that there is hardly time to do much more than touch upon the many subjects that are put before the struggling mind. The frequent result is that the finished article has a smattering of useful and useless information, with the latter better remembered.

Necessary as the arrangement of the studies is, there is another side, however, that is slowly coming into its own, and which is of primary importance, i. e., the development of a healthy body. Many parents, most teachers, and practically all school boards calmly disregard most of the attempts made by physicians to inculcate a few simple rules of hygiene. Why they are unwilling to admit that normal

mental development is almost impossible unless there is a normal body, remains one of the mysteries. Rather than have them miss school, the children are sent under all circumstances of health and weather conditions, and it is not until the child's health actually breaks down that attention is aroused. In such instances it is the parents who are largely at fault, but they are by no means most to be blamed. The responsibility for the preservation of the child's health rests mainly upon the school authorities. They make school attendance compulsory, but except in a few cities, they pay no further attention to the child. If there is authority to regulate attendance, there is surely authority to enforce a few rules that will make for good health.

There may be elaborate methods of ventilation that are most efficient if skilled labor is employed in running them. Most of us, however, can well remember sitting in rooms that had plenty of windows and light, yet suffering from the heat and overused air. It does seem strange that since there is no charge for fresh air, so little of it is used.

If we are really interested in preparing the rising generation to be useful citizens, it is about time that more attention was paid to its physical well being while in school. A little has been done, and is being done, but there still remains much for the physician and hygienist to accomplish.

A SOURCE OF ANTHRAX INFECTION.

Considerable interest was recently aroused by the publicity given to a fatal case of this disease which occurred near New York city. Much speculation was raised as to the probable source of infection, and various theories were offered. The occurrence of the disease in domestic animals is well known, and it is from them that human cases usually arise. It is commonly supposed, however, that it requires more or less direct exposure to infected animals or to the raw products derived from them, such as wool, hides, and fur, for the infection of man. An unsuspected source of infection has been recently discovered by Reginald R. Elworthy (*Lancet*, January 1, 1916), and his discovery is the subject of an interesting and illuminating report.

In all, three human cases of anthrax infection occurring in the region of the face and neck constituted the extent of the human epidemic. The first case terminated fatally, the others in recovery. The site of the pustules suggested the direction of the investigation undertaken to determine the source of infection and led directly to the discovery of the fact that the disease was transmitted by means of cheap shaving brushes. The brushes actually used by the victims as well as several others obtained

from the same source were examined culturally and yielded living anthrax bacilli. The nature and virulence of these organisms was proved by animal inoculation.

The brushes were traced back to the manufacturer, and his materials were subjected to examination with the result that anthrax was found in material called goat hair, but which contained hair from a variety of animals. This hair was of Chinese origin.

Perhaps the most interesting revelations of this study are two: First, that the material entering into the manufacture of shaving brushes is capable of carrying living anthrax bacilli and of giving rise to human infection with this virulent organism; and, second, that the cheap brushes, which are commonly supposed to be made of vegetable fibre, often also contain animal hair and may, therefore, also be potential sources of infection.

THE THERAPEUTIC RESULTS OF ARMY SURGERY IN THE PRESENT WAR.

Colonel Hausen, surgeon in chief of the Swiss army, in a recent important address before the Central Medical Society of Switzerland, put forth his observations made in many visits paid by him in recent months to the French and German military hospitals.

A well known fact is that for some months at the beginning of the war emphysematous gangrene and tetanus were prevalent, but these infections are much less common now. Prophylactic vaccination for tetanus done as soon as possible after receipt of the wound, has given excellent results. The decrease in cases of emphysematous gangrene has been favored by prompt and complete disinfection of the wound, and in many cases by a rapid transportation of the wounded to the rear. In the treatment of gangrene antiseptics has brilliantly affirmed its superiority over asepsis and, generally speaking, it may be that in war surgery antiseptics plays a greater part than in times of peace.

Epidemic cerebrospinal meningitis has occurred sporadically from time to time, but radical general hygienic measures have easily kept the disease under control. The value of the therapeutic use of serum cannot be estimated with certainty as yet, but in the French army the results have been most happy. Smallpox has been observed, but it is mild in degree and the number of cases is small, thanks to vaccination.

Typhoid, dysentery, and cholera have appeared epidemically at certain points. The former has been met with in all the armies, even in the Swiss, and the same may be said of dysentery; the ma-

jority of cases do not result from ameba, but from infection from Shiga's bacillus. Cholera has appeared only in the oriental theatre of the war. Antityphoid vaccination has been resorted to in the English, French, and German armies and apparently the results have been good, and although the morbidity has not been greatly diminished, it has certainly been otherwise with the mortality. Besides, it seems that this vaccination produces a much milder run of the disease and does away with serious secondary complications, but as yet we have no precise data as to the duration of the immunity conferred.

As to cholera, prophylactic vaccination appears to give more positive results than in typhoid, and in the treatment employed on the German eastern front good results have been obtained by the simultaneous use of *bolus alba* and atropine. However, for these three diseases hygienic measures are the most important, both before and after.

Typhus fever has caused great ravages at the eastern front, particularly in Serbia. The only means of efficaciously combating the affection is by destruction of pediculus vestimenti by careful cleansing of the body, and disinfection by steam of all objects that are not harmed by it, while for those which are perishable, dry sterilization is used. It is most important to have plenty of clean underwear and frequent facilities for bathing. In the Swiss army sulphur vapors have been found quite efficient in the treatment of scabies and pediculi. Venereal disease is best handled through an extremely severe police control.

Mental affections have not been as prevalent as had been feared early in the war. Patients afflicted with psychoses should be placed in insane establishments as soon as possible, and so far, this has been accomplished satisfactorily. On the other hand, nervous affections, hysteria, neurasthenia, and other neuroses may well be cared for in sanitary establishments of the army. Their number is considerable.

THE WIDAL REACTION.

The Widal reaction, despite certain limitations, at one time enjoyed high repute as a definite, laboratory diagnostic procedure, and doubtless deservedly so. In more recent years, however, it has steadily declined in favor, giving place to cultural methods, especially blood cultures, but also cultures of urine and feces. The cultural methods, as laboratory technique has developed, offer not only more definite information, but also, when applied to the blood, permit an early diagnosis. The Widal reaction, on the contrary, appears so late that it is never much more

than confirmatory, however valuable such confirmation may sometimes be.

With the advent of prophylactic vaccination against typhoid fever, and its wider application among the general population, the Widal test becomes of even more limited usefulness. Indeed, if not used with knowledge, it may even now lead to erroneous conclusions; for it has been shown conclusively that the administration of the antityphoid vaccine is very generally followed by the production in the blood of the inoculated patient of specific agglutinins for the typhoid bacillus, and such patients, of course, will give a positive Widal reaction.

The important question at once arises as to how long after inoculation this positive Widal reaction persists. There is some disagreement on this point. Most observers report its comparatively early disappearance, but cases are recently reported in which the Widal reaction remained positive for as long as forty-eight and fifty months after inoculation. Naturally, in such circumstances, a positive Widal reaction in any person who has once been inoculated with the antityphoid vaccine, is practically valueless for purposes of diagnosis.

For the present, then, we must use this reaction with circumspection; and we shall probably be safe in regarding the Widal reaction, like the tuberculin reaction in adults, as of value in diagnosis where inoculated persons are concerned, only when it is negative. If laboratory facilities are available, the blood culture method is vastly to be preferred, especially in early cases. This procedure is not difficult and gives prompt and precise information in almost all early cases.

THE DANGEROUS FLY.

It will not be long before the fly season is again upon us, with its now obvious train of infections. The time to fight the fly pestilence is in its incipency; a fly killed early in the warm weather prevents the hatching of millions of descendants.

Some day, perhaps, we shall discover a method of preventing house and stable flies altogether. Meanwhile, our best means of protection seem to lie in keeping them away from our dwellings, and above all, from our food. The best of screening gives way at some point, and the fly has a fatal facility in searching out the tiniest crevice through which to begin his invasion. Moreover, doors have to be opened occasionally for the benefit of the human inhabitants of a house; this gives entrance to a veritable army of disease breeding insects. It is necessary, therefore, to undertake extermination of the full grown fly, an unscientific procedure, but allied to our methods of practice in which too often therapeutics tardily replaces prophylaxis.

Fly papers of various kinds offer apparently the best and quickest means of destruction. The poisoned paper is old fashioned, unsightly, and dangerous. The flies die all over the room, and domestic animals, even children, may be attracted by the poisoned syrup and drink it with fatal results. The so called sticky papers, while not esthetic objects, are efficacious beyond cavil. Not only is the fly killed inevitably, but he is held fast in hundreds for subsequent burning, while the millions of germs carried on his legs and body are rendered innocuous.

COLD AND COLDS.

In medicine and hygiene we have been riding the wave of bacterial discovery, and have been carried often to forgetfulness of factors which lie underneath the truth of infection itself. This has been especially the case with regard to common colds. Bacteria have been held up so insistently as the cause of colds that factors back of bacteria have been hidden and ignored, and the very term "cold" has come to seem a misnomer.

It is true that bad air and crowding and dust are to be given some credit in the matter of "cold" production, but the first most unscientific term is practically meaningless. If it means anything it means air that smells bad, and the foul odor of air has never been proved to have any bad effect upon the body. As for crowding, people are brought in as close if not as frequent proximity in summer, at Chautauquas, ball games, religious services, political gatherings, moving picture shows, etc., as they are in winter, and yet colds belong to the season of cold weather. There is far more dust in one month of summer than in the whole of winter. What few colds affect us in summer are always traceable to careless exposure to a heat extracting draft, or to the effects of sitting or lying upon a cold stone or upon the ground. If colds are so produced in warm weather, why should they not be frequent in the season of cold and of great variation in temperature between indoors and out?

Superheating has been blamed as a factor in the causation of colds. It is a cause, and that it is adds proof to the guilt of cold, for we use artificial heat only because we are cold, and superheating renders us, of necessity, more sensitive than we should otherwise be to succeeding exposures to lower temperatures.

Of prime proof that cold opens the door for the bacteria that finally produce the bodily changes we name "colds," is the fact that prolonged exposure to cold and wet markedly lowers the resistance to bacterial invasion. Even animals which under ordinary conditions are immune to certain infections, come

down with the disease when forced to stand in cold water for a time.

Constipation, overeating, fatigue, mental depression, anything, in fact, which reduces the vital powers of the body will help to render the body more open to bacterial attack, but always it is cold, especially when combined with wet, which opens the portals. The germs which have once been at work in the production of any disease, become more vicious as they pass from one victim to another, so that colds tend to become more contagious as the winter advances; but always, with spring, as the mercury approaches the higher levels, colds melt away—although bacteria flourish best in warm climates—and are a thing of the past until the mercury again begins to sink.

The moral of this is, that to avoid colds we should avoid anything which may render us more sensitive to cold, we should keep ourselves comfortably warm and, while making the best of cold, beware of that feeling of chill which comes with too long exposure to cold, combined with dampness.

A CHANGE OF NAME.

Beginning January 1st, the *Journal of Advanced Therapeutics* is published under new management with the same editorial staff, and the name hereafter will be the *American Journal of Electrotherapeutics and Radiology*. It is the only journal in this country which is devoted to physical therapeutics, including the uses of the x ray and other physical measures. It will be the policy of the journal, as in the past, to maintain a scientific standard, representing modern progress in every department included in the field covered. It is the official organ of the American Electrotherapeutic Association, and is edited by Dr. William Benham Snow.

News Items.

The Hamilton-Fertig Pure Drug Bill at Albany.—A bill has been introduced in Albany under which "all manufacturers of medicines or drugs will be required to file their formulas and advertising matter with the State Commissioner of Health, who must be a competent physician."

Homes for Children in New York.—There are eighty institutions of this class in the five boroughs of New York. A recent survey of these made by the department of health showed that fifty-six per cent. of the children living in them had some physical defect. The treatment of these defects was satisfactory, more than two thirds having been entirely remedied, and only 5 per cent. untreated. The managers of these homes seem quite ready to carry out recommendations of the department of health.

New Medical Journal in Vermont.—*Vermont Medicine* is the name of the new journal published in Rutland as the official organ of the Vermont State Medical Society. The first issue appeared in January and consisted of twenty-eight pages of reading matter and ten of advertising matter, bound in an attractive light blue cover. Dr. A. Stuart M. Chisholm, of Bennington, is editor in chief, and the publication committee consists of Dr. James M. Hamilton, of Rutland; Dr. Charles F. Dalton, of Burlington; and Doctor Chisholm.

The Frederick A. Packard Lecture of the Philadelphia Pediatric Society will be delivered on Tuesday evening, February 8th, by Dr. Charles M. Campbell, of Baltimore, his subject being the Neurotic Child. The lecture will be given in the College of Physicians Building, Twenty-second and Chestnut Streets, and the profession is invited to attend.

Cincinnati Academy of Medicine.—Dr. Charles T. Souther was elected president of this organization at the annual meeting held Monday evening, January 3d, and other officers were elected as follows: Dr. D. T. Vail, first vice-president; Dr. J. E. Pirrung, second vice-president; Dr. W. R. Abbott, secretary; Dr. A. G. Drury, treasurer, and Dr. Arch I. Carson, librarian.

Appointments at the Philadelphia General Hospital.—Four additional visiting physicians have been added to the staff of the psychopathic section of the neurological division of the Philadelphia General Hospital, as follows: Dr. S. D. W. Ludlum, Dr. Samuel D. Ingham, Dr. A. C. Buckley, and Dr. S. F. Gilpin. Dr. Clarence W. Schaeffer has been named visiting laryngologist to the tuberculosis department of the hospital.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, February 7th, Wills Hospital Ophthalmic Society, Philadelphia Clinical Association, Academy of Surgery, Blockley Medical Society; Tuesday, February 8th, Pediatric Society; Wednesday, February 9th, County Medical Society; Thursday, February 10th, Pathological Society; Friday, February 11th, Northern Medical Association.

The Illness Census.—On Saturday, February 19th, a large corps of nurses from the Department of Health of the City of New York will call on every family living in Health District No. 1, and obtain accurate information concerning the number, age, sex, and occupation of every member of the household, and the nature of any illness among the families and details necessary to make a complete illness census. This information will be tabulated and studied and eventually published in the bulletin of the department.

The Hospital for Deformities and Joint Diseases will hold a regular clinical meeting in the dispensary building, 41-43 East 123d Street, New York, on Tuesday evening, February 8th, at 8:30 o'clock. The following papers will be read: Differential Diagnosis of Knee Joint Conditions, with a Description of the Sayre, Frauenthal, and Other Knee Splints, by Dr. Samuel A. Jahss; Painful Feet—Skin Lesions, Nail Lesions, Diseases of the Veins and Arteries, Diseases of the Nerves, Infection of the Foot, by Dr. Harry C. Stein. Dr. Charles Rosenheck is chairman.

Suicide in the United States.—According to a preliminary announcement with reference to mortality in 1914, issued a few days ago by the Bureau of the Census, the number of suicides reported in the United States during the year 1914 was 10,933, or 16.6 in 100,000 population. Of this number, 3,286 accomplished self destruction by the use of firearms, 3,000 by poison, 1,552 by hanging or strangulation, 1,419 by asphyxia, 658 by the use of knives or other cutting or piercing instruments, 610 by drowning, 225 by jumping from high places, 89 by crushing, and 85 by other methods.

Health Officer of the Port of New York.—It is reported that Dr. Leland E. Cofer, Assistant Surgeon General, United States Public Health Service, has been nominated as health officer of the Port of New York. Doctor Cofer was assigned to the State's service by President Wilson after the recent death of Health Officer O'Connell, to remain in charge, pending the transfer of the quarantine supervision from the State to the Federal Government. A bill, providing for the transfer of authority, has been sent to the Legislature.

Massachusetts Society of Examining Physicians.—Dr. F. W. Anthony, of Haverhill, was elected president of this society, at the annual meeting held on the evening of January 26th, and other officers were elected as follows: First vice-president, Dr. Frederick J. Cotton; second vice-president, Dr. Timothy Leary; third vice-president, Dr. L. Vernon Briggs; secretary, Dr. J. H. Stevens; treasurer, Dr. John Phelps; directors, Dr. Francis Donahue, Dr. Frank Allard, Dr. Francis Hanley, Dr. Harry Hartung, and Dr. E. B. Lane. Addresses were delivered by Dr. Franklin J. White, Dr. William M. Conant, Dr. Walter B. Cameron, Dr. Walter J. Dodd, Dr. Avial W. George, and Dr. Irving J. Walker.

Philadelphia County Medical Society Warring on Drug Addicts.—The following resolution was adopted at the business meeting of the Philadelphia County Medical Society held January 19, 1916:

WHEREAS, All authorities agree that the treatment of drug addiction without more control than is possible with an ambulant patient is futile, and

WHEREAS, Illegitimate use is being made by drug habitués of prescriptions obtained from physicians under the pretense of taking the reduction cure, therefore

It is Resolved, That the Philadelphia County Medical Society urges upon its members to refrain from prescribing narcotic drugs to habitués unless the habitués be under competent supervision or unless the physician be satisfied from personal knowledge of the habitué that no improper use will be made of such prescriptions.

And that this resolution be printed in the *Register*.

Mary Putnam Jacobi Scholarship.—*Presse médicale* for January 13th publishes the following announcement: The association of women physicians of New York offers a scholarship of \$800 to a woman physician to continue her studies. This year the scholarship will be awarded by preference to a foreigner to continue her studies in the United States. Candidates must furnish certificate of health; reference of ability; degrees and honors received; copies of publications; outline of work to be published during the period of study. The holder of the scholarship shall agree to keep the association informed of the progress of her studies and provide two reports, one in the middle of the year, the second at the time of publication of the work resulting from the labor performed during the course of study. Inquiries should be addressed to the President of the Association, Annie D. Daniel, M.D., 26 Gramercy Park, New York.

New Officers of the College of Physicians of Philadelphia.—At the annual meeting of the College of Physicians, held on Wednesday, January 5th, the following officers and committees were chosen to serve during the year 1916: President, Dr. Richard H. Harte; vice-president, Dr. William J. Taylor; censors, Dr. James Tyson, Dr. W. W. Keen, Dr. George E. de Schweinitz, and Dr. Thomas R. Neilson; secretary, Dr. Francis R. Packard; treasurer, Dr. John B. Roberts; honorary librarian, Dr. Frederick P. Henry; councillors to serve until 1919, Dr. Hobart Amory Hare and Dr. James P. Hutchinson; committee of publication, Dr. G. G. Davis, Dr. Thomas S. Westcott, and Dr. Walter G. Elmer; library committee, Dr. William J. Taylor, Dr. George W. Norris, Dr. Astley P. C. Ashhurst, Dr. Francis X. Dercum, and Dr. Charles W. Burr; committee on Mütter Museum, Dr. Henry Morris, Dr. George P. Müller, and Dr. George Fetterolf; hall committee, Dr. John K. Mitchell, Dr. Thomas H. Fenton, Dr. B. Alexander Randall, Dr. E. Hollingsworth Siter, and Dr. J. Norman Henry; committee on directory for nurses, Dr. Thomas G. Ashton, Dr. Frederick Fraley, and Dr. Arthur Newlin.

A High Death Rate in New York.—Despite the warm, springlike weather last week, the death rate of New York continued high. According to the department of health, this was due to the pneumococcus and his friend the gripe bacillus, two visitors who have long overstayed their welcome. Figures compiled by Registrar Guilfoyle showed that during the week just closed, 1,812 persons died in the city of New York compared with 1,760 during the previous week, and 1,460 during the week ending January 30, 1915. The death rate for last week was 16.46 compared with 13.64 for the corresponding week of last year. The acute, infectious diseases caused fewer deaths last week than during the corresponding week of last year. The deaths from influenza, bronchitis, pneumonia, heart disease, and Bright's disease were considerably higher; 435 persons died of influenza, bronchitis, and pneumonia during the past week, while only 261 deaths were reported from these causes during the corresponding week of 1915. As has been the case during the past several weeks, the highest mortality occurred among the adults of the population, the death rate of children under one year and under five years being lower than during the corresponding week of 1915. The difference of 2.82 in the weekly rate is equivalent to an increase of 310 deaths. The death rate for the first five weeks of 1916 is 16.47 compared with 14.64 for the corresponding period of 1915.

A comparison of last week's deaths from gripe, bronchitis, and pneumonia, with the number in the week previous, shows that these diseases are decreasing, though somewhat more slowly than had been expected. In fact, the deaths from pneumonia showed a slight increase last week.

Civil Service Examination for Assistant Homoeopathic Physician.—The New York State Civil Service Commission will hold an examination on February 26th for the position of assistant physician, homoeopathic, in the State Hospitals of Gowanda and Middletown; salary, \$1,200, increasing \$100 each year to \$1,600, with maintenance. The examination is open to men and women who are licensed medical practitioners in the State of New York, who have graduated from a registered medical school, and who since graduation have had one year's experience on the resident medical staff of a general hospital or as medical intern or clinical assistant in a State hospital or other institution, or who have been engaged for three consecutive years in the practice of medicine. Unmarried candidates are preferred.

Resolutions on the Death of Doctor Barrows.—At a meeting of the Executive Committee of the Medical Board of Bellevue Hospital, held on Wednesday, January 26th, the following resolutions were adopted:

The members of the Medical Board of Bellevue Hospital record with sorrow the death of their associate, Dr. Charles Clifford Barrows. Doctor Barrows for more than twenty years was connected with the gynecological department of the hospital, in which he rendered untiring, skillful, and faithful service to the sick poor of the city. His achievements in surgical operations, and his devotion to the best humanitarian interests of his patients, won their gratitude and respect, while his geniality and kindness endeared him to all those whose privilege it was to be associated with him.

It is resolved that this record be entered upon the minutes of the Medical Board of the Hospital and that a copy be sent to the family of Doctor Barrows, and to the *NEW YORK MEDICAL JOURNAL* and the *Medical Record*.

JOHN B. WALKER, M.D.,
Secretary, Executive Committee,
Medical Board.

The Medical Society of the Missouri Valley.—The twenty-eighth semiannual meeting of this society will be held in St. Joseph, Mo., Thursday and Friday, March 23d and 24th, under the presidency of Dr. John P. Lord, of Omaha. The arrangements for the meeting are in the hands of a committee, of which Dr. Floyd H. Spencer is chairman, and the Buchanan County Medical Society will be the host. The scientific program will comprise twenty-five papers and two orations by men prominent in the profession. Invitations have been extended to the presidents of all the State societies within their province as well as to representatives of the United States Public Health Service. Hotel Robidoux will be headquarters and the sessions will be held in this hotel, as well as the banquet on Thursday evening at 6 o'clock. Those desiring to read papers should send their titles to the secretary at once, as the number will be limited to twenty-five and the papers will be placed on the program in the order in which they are received. Dr. Charles Wood Fassett, of St. Joseph, Mo., secretary of the society, will be glad to furnish additional information regarding the meeting.

Associated Physicians of Long Island.—The fifty-fourth annual meeting of this organization was held in Brooklyn, Saturday, January 29th, under the presidency of Dr. Guy H. Turrell, of Smithtown Branch. An interesting feature of the program was the report of a special committee which had been appointed to investigate the matter of national defense. Dr. William B. Brinsmade, chairman of the committee, read the report, which took the form of a resolution, which advocated the inculcation of the principles of military discipline among students in all schools, colleges, and universities in the country, and recommended a course to be prescribed in medical schools which would give the students a knowledge of military hygiene, hospital management, surgery, and medicine. The resolution proposed that a committee be formed to devise ways and means of forming units under government supervision for teaching how to organize a military hospital. It also advocated increases in the army and navy and compulsory military service on the Swiss plan.

Dr. Joseph C. Bloodgood, of Baltimore, delivered a lecture on *New Problems in the Diagnosis and Treatment of Lesions Within the Abdomen*, illustrated with lantern slides. The Comparative Value of the Various Cardiac Stimulants was the subject of a paper by Dr. Glenworth R. Butler, of Brooklyn. Dr. Richard Derby, of New York, read a paper on *Modern War Surgery*, in which he gave an account of some of his experiences in Europe. Officers were elected as follows: President, Dr. Dudley D. Roberts; first vice-president, Dr. J. Carl Schmuck; second vice-president, Dr. Lefferts A. McClelland; third vice-president, Dr. George Hulse; secretary, Dr. James Cole Hancock; treasurer, Dr. Edwin C. Moore.

HEMADENOLOGY:• A NEW SPECIALTY.

THE INTERNAL SECRETIONS—THEIR FUNCTIONS AND BEARING ON DISEASE AND THERAPEUTICS.

By CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.,
Philadelphia.

(Twenty-first Communication.)

DUCTLESS GLANDS IN INSANITY (Continued).

In our preceding communication (NEW YORK MEDICAL JOURNAL, November 13, 1915) we considered dementia præcox. I urged therein the pathogenic importance, where cortical lesions were absent, of premature arrest of the functions of the thymus and the resulting deficiency of nucleins supplied by that organ to the brain cells. The catatonic stage was attributed to a toxemia due also to untimely deficiency of thymic nucleins, these bodies carrying on inadequately, in such cases, their share of the antitoxic process, in which the thyroid, parathyroids, and adrenals also take part. Such cases, when not too far advanced, were shown to be amenable to treatment.

Of all the various forms of insanity, dementia præcox is probably the only one, apart from the types of idiocy previously reviewed in these columns, in which a single gland plays so important and leading a role. This is readily explained by the intimate connection of this gland with development. Yet, as is well known, diseases of the ductless glands are often attended with psychoses. What are the relations between them? Might these organs, at least to a limited extent, not take part in the pathogenesis of ubiquitous mental disorders—those met with in phalanxes, so to say, in our asylums for the insane? In view of the fact that as Dercum (1) states, the symptoms of insanity "may be and indeed, most frequently are, attended by few or no demonstrable changes in the brain, its membranes, or its vessels," we have every reason to believe that the undoubted influence of the ductless glands on metabolism must exert a marked influence over that of the brain. Indeed, when we realize—from my viewpoint at least—that they are in reality the main organs which sustain the chemical phase of this process, we may almost venture the thought that the absence of their functions in the prevailing views concerning the genesis of several widespread mental disorders, is responsible for the obscurity surrounding their pathology, a state of things which at best compromises the therapeutic results to be attained. Before showing that such may actually be the case, we shall review briefly the mental disorders witnessed in the course of diseases of the major ductless glands—those concerning which enough is known to afford a basis for safe deductions.

DUCTLESS GLAND PSYCHOSES.

Thyroid psychoses. Both deficient and excessive activity of the thyroid apparatus may give rise to mental disorders.

As regards deficient activity, as typified by

myxedema, the English Myxedema Committee found, in the course of its extensive investigation, that nearly one half of the cases of myxedema, aside from cretinism or infantile myxedema, presented mental disorders of some kind. The types most frequently observed were *melancholia* with a marked tendency to delusions and hallucinations. Interpreted from my viewpoint, this disorder is primarily due to slowed metabolism in the brain cells, the thyroid product being necessary, we have seen, to sensitize the cellular phosphorus to the action of oxygen. The muscular layer of the arteries being also the seat of slowed metabolism, these vessels are relaxed and cerebral anemia results. The *acute* or *chronic mania* observed represents but a morbid progression of this process. The brain cells are not only the seat of defective metabolism, but the arterioles supplying them being relaxed, these cells receive an excess of blood laden with toxic wastes, because the antitoxic functions of the thyroid apparatus are more seriously impaired, the myxedematous process being farther advanced. *Dementia*, third in the series, occurs in patients who live long enough to reach this condition—an incurable weak mindedness following the preceding acute psychosis—a final deterioration of the mental mechanism.

That the hypothyroidia of myxedema is the true cause of these mental disorders is well shown by the fact that they disappear under thyroid medication, reappear when the latter is discontinued, and disappear again when the treatment is resumed.

In respect to excessive activity, *Graves's disease*, as is well known, is frequently accompanied by mental disorders, and again, curiously enough, by *melancholia* and *acute mania*. This paradox can be explained only by adopting my conception of the mode of action of the thyroid product, viz., that it sensitizes and thus renders more amenable to oxidation, the phosphorus of tissue cells. In *melancholia* we are dealing, in virtue of this action, with exaggerated consumption of tissue phosphorus (nucleins, lecithins, etc.); Ludwig and Cyon's depressor nerve being thus overstimulated, a marked decline of the general blood pressure results. *Melancholia* is thus produced, as it is in myxedema, by deficient oxidation of the cerebral cells and cerebral anemia. In the *acute mania* of Graves's disease, we also find again a toxemia as cause owing to the excessive catabolism of the phosphorus laden nucleins, the toxic wastes including phosphoric acid. Here again, also, the toxemia occurs concomitantly with general vasodilatation—that produced by the overstimulated depressor nerve. Indeed, this vasodilatation may be readily recognized in the peripheral tissues, the capillaries of which are engorged owing to the dilatation of the arterioles which admit blood into them. Hence the fact that in these cases of mania the face is flushed, the skin, throat, and tongue are dry, while

*Hemadenology comes from the Greek αἷμα, blood αἰδῶ, gland, αἰδῶς, disease, meaning therefore (as the epitheladenology, hemadenology, and other names applied to reproduce the approximate of our knowledge of the ductless or blood glands.

the usual throbbing of the arteries is very marked. Dermographia is also unusually prominent, the line left by the instrument or nail on the skin remaining visible nearly one minute. Restlessness, excitability, jactitation, boisterousness with tendency to violence, are prominent features of these cases. The pulse is usually rapid—in accord with Marey's law concerning the influence of vasodilatation on cardiac rate—and the temperature somewhat above normal. That the brain also is the seat of congestion has been shown by Savage, Schenck, and others. The toxemia adding its pathogenic influence to this condition, we have a repetition of the cause of the maniacal phenomena noted in myxedema.

There is no doubt that it is the thyroid secretion which produces these psychic disorders, since cases have been reported, by Boinet (2), Ferranini, and others, in which they were brought on by the use of thyroid in excessive doses, and disappeared when the remedy was stopped.

Adrenal psychoses. The mental disturbances that diseases of the adrenals awaken may be exemplified by those witnessed in *Addison's disease*. What psychic phenomena occur in this disorder may be divided into two clearly defined syndromes. The first of these is a functional psychasthenia which in some cases suggests *melancholia*. In a case described by H. W. Miller (3), for example, the patient, a woman of forty-seven years, became fretful and discouraged, and showed diminution of volitional impulses and incapacity for mental effort. Besides, however, she dwelt on the belief that a dog had bitten her, that a searchlight was being played upon her back, etc. In most instances the cerebral disturbances are limited to those of profound depression, with indifference and apathy, hallucinations, etc. The familiar influence of the adrenal secretion upon the blood pressure brings us again to "cerebral anemia resulting from vascular hypotonicity," as Langlois (4) words it, as the cause of these mental phenomena. Yet, low blood pressure, so commonly witnessed in other diseases, fails to evoke such profound depressive phenomena and loss of will—abulia—as it does in Addison's disease. To the hypotonus should be added, therefore, the deficient oxidation of cortical neurons, all nerve cells receiving, from my viewpoint, a supply of adrenoxidase, to sustain, as in all other tissue cells, metabolism therein.

A true *acute mania* is also observed occasionally, which has been attributed by Chauffard, Sergeant and Bernard, Laiguel Lavastine, and others to what they term "Addisonian intoxication." The patient abandons his apathy and becomes cross and fault-finding. Delirium sets in with shouts, hallucinations, and excitement, the patient running about nude and resisting his attendants. Muscular spasms appear, leading up to convulsions, with oscillation of the head and a fatal asphyxia.

The "Addisonian intoxication" explains only in part the pathogenesis of these cases, the character of the poison being left obscure. We are dealing, not with exaggerated activity of the adrenals, but with the opposite condition, some organic disease—tuberculosis, tumors, etc.—of these organs, through which their secretory activity is markedly reduced. Now, as shown by Abeloos and Langlois, the adrenal secretion is endowed with antitoxic properties by means

of which the blood is kept freed of tissue poisons. While from my viewpoint this is but one of the class of poisons converted into eliminable end products by the adrenals in cooperation with other glands, the fact remains that we are again brought to realize that mania, as provoked by the hypoadrenia of Addison's disease, is also the result of an intoxication. Not only does the parallelism with the mania witnessed in the hypothyroidia of myxedema, apply to toxicity traceable to slowed metabolism, but again do we find the passively dilated arterioles due to the deficiency of adrenal secretion, and the cerebral cells thus receiving an excess of arterial blood laden with toxic wastes.

Pituitary psychoses. It is difficult in the present state of our knowledge to differentiate with precision the symptoms due to overactivity of the pituitary from those evoked by its deficient activity. Tumors of the organ may produce either condition, the onset of a malignant tumor, for example, being attended by symptoms of overactivity and, when the destructive process is sufficiently advanced, by those of the opposite condition. Again, we are confronted with a variety of tumors which further complicate the problem. Thus, *acromegaly* may be caused by sarcoma, adenoma, cyst, angioma, and simple hypertrophy, some of which depress activity from the start, while others, as in hypertrophy, enhance it by adding to existing normal tissue. Another embarrassing feature is that pressure upon neighboring cerebral structures by either of these growths may elicit almost any symptom referable to the brain. We can adopt only with circumspection, therefore, the mental phenomena met in this disease as factors for deductions.

Hinsdale (5), in his analysis of 130 cases, refers to "depression of spirits" and to "impulses of suicidal or homicidal nature" having been recorded by Osborne, Pick, and Haskovec. Yet, the marked and humiliating deformities and the severe headache might well account, as he says, for these symptoms, even though they recall salient landmarks of melancholia. Launois and Cesbron (6) state that true psychoses occur with extraordinary frequency in cases of tumor of the hypophysis, and cite Schuster's (7) opinion that psychic disturbances are met with in almost one half of pituitary tumors. But this proportion cannot be taken as indicating that which actually prevails in the general aggregate of cases of pituitary tumor, since his observations were made in an asylum for the insane. A conspicuous example of this class mentioned by Launois and Cesbron is Cromwell's giant porter in whom mania developed. Fröhlich, and Cestan, and Halberstadt (8), who have studied the many cases recorded in literature under the heading of "amaurotic insanity" due to pituitary tumors, found that the mental disorders encountered were, the various forms of delirium, delusions of persecution, mystery, and the maniac depressive psychoses.

REFERENCES.

1. DERRIN: *Clinical Manual of Mental Diseases*, p. 10, 1913.
2. BOINET: *Revue neurologique*, p. 364, 1909.
3. H. W. MILLER: *American Journal of Insanity*, Jan., 1907.
4. LANGLOIS: *Sajous's Acromegaly*, 1898.
5. HINSDALE: *Analytic Cyclopaedia*, 7th edition, i, p. 329, 1912.
6. LAUNOIS and CESBRON: *Sajous's Analytic Cyclopaedia*, 7th edition, i, p. 95, 1912.
7. SCHUSTER: *Psychische Störungen bei Hirntumoren*.
8. CESTAN and HALBERSTADT: *Revue neurologique*, p. 1480, 1904.

(To be continued.)

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Fifth Communication.

BELLADONNA.

Within very narrow limits, and when used with wise discrimination, belladonna is an exceedingly useful medicine. The principle inculcated in that statement is one that might well be set up as a standard governing the use of all drugs of great potency.

From a therapeutic standpoint, the most interesting thing about belladonna is its power of making unstripped muscle tissue less responsive. This result is assumedly effected by a paralysis of the nerve terminations at the myoneural junctions. Under this inhibitory action of atropine, the involuntary muscles pass from a condition of partial tetany into a state of passive relaxation, the reflex arc from the sensory stimulus having been interrupted at the neuromotor termination. No further stimuli getting into the muscle tissue, contraction ceases and passivity supervenes.

The indications for this selective action of atropine are found in conditions, like intestinal, renal, and biliary colic, where a foreign body within the particular canal sets up so marked an irritation of the sensory area as to result reflexly in strong, even painful contractions of the muscle coats, the circular tunic in particular. The increased tension thus produced heightens the sensory irritation, especially where calculi are the provocative factors, and there is immediately formed a vicious circle that admits of little surcease from physical distress, or even from agonizing pain.

To secure these desirable results, belladonna is administered when calculi of disproportionate size are engaged in the ureters or bile ducts. The drug terminates the spasmodic contractions of the muscular tunic, thereby permitting progress of the stone along the duct. This phenomenon seems to indicate that the action of belladonna is such that while the circular fibres are more or less inhibited, the co-ordination between the longitudinal fibres and some at least of the circular fibres constituting the peristaltic wave, is not similarly affected.

Resembling the foregoing, though somewhat less constant, is the effect produced by belladonna in some cases of asthma, relief here being obtained by cessation of the spasm of the bronchial muscles. The drug acts in a similar way when the musculature of the intestines is reflexly stimulated into sharp paroxysmal contractions by the presence, within the tube, of marked irritants, whether they be of medicinal or dietetic origin. Hence the rationale of adding extract of belladonna to purgative pills, which combination permits of gradual absorp-

tion of the active principle of the drug and a much longer continuance of specific action than would be possible were the pure alkaloid administered.

Atropine may be recommended, somewhat guardedly, as a temporary expedient in acute depressions of the brain and medullary centres, in which conditions the transitory stimulant action of the drug on these points of vital activity may easily prove a life saver. Large doses, however, are distinctly dangerous, inasmuch as the secondary depression, which atropine in excess produces, may supervene before the already weakened centres have sufficiently recovered to bear the additional strain. Instead, then, of relying entirely on atropine in opium poisoning and analogous cases, it would be better to administer not over 1.3 mg. (grain 1/50) of atropine and combine with it 0.3 gm. (grain v) or more of caffeine.

The use of atropine in ophthalmology relates to a special application, and need not at this time be considered.

Treatment of Cerebrospinal Meningitis.—Sir William Osler, in the symposium on this subject in the *Practitioner* for January, 1916, says that the prophylactic use of antimeningitic serum is still on trial; we do not know enough to recommend it or to discourage it. On our present knowledge specific therapy combined with lumbar puncture is the rational treatment, combating sepsis by means of the one, and the pressure effects of local exudates by the other. All are agreed as to the value of withdrawal of fluid from the spinal meninges, but on the value of specific therapy there is a grave difference of opinion. Its use is based on sound experimental data, yet the results often are disappointing. Many of the serums used are inert. There should be a supervision by experts of the different serums on the market, so that we may be certain that they correspond to the strain of organisms present in an epidemic.

A. Gardner Robb agrees with Osler's view that many serums are inert; he had obtained a supply from the Rockefeller Institute with which he was getting much better results. He recommends a general anesthetic for lumbar puncture, unless obviously unnecessary, or for some reason contraindicated. The best doses for any age, infant or adult, have not yet been worked out, but he always gives the full dose of twenty c. c. or more, and repeats it frequently until definite improvement is shown. He is sure that he often uses more serum than is necessary, but he has as yet no means of estimating the risk of withholding it in cases not distinctly improving.

H. D. Rolleston says that failure of the injected serum to reduce the mortality was not due to its having been given too late, yet it had been disap-

pointing. Serum rashes were noted in twenty per cent. of the cases, but may have been more frequent; in a few cases there were also arthritic pains. No severe anaphylactic symptoms were recorded. Optic atrophy was not noted in any instance, though in one case forty-two grains were given. He regards lumbar puncture as palliative rather than curative, relieving symptoms due to increased intrathecal pressure.

Michael G. Foster holds that frequent drainage of the cerebrospinal fluid during the persistence of the symptoms is a satisfactory form of treatment, at all events until a more potent serum is available. He agrees with Robb that the operation should be performed under a general anesthetic.

J. F. Gaskell reports a prolonged case which ceased to show further signs of illness after five c. c. of his own serum had been injected intrathecally. This form of treatment was tried because the agglutinating power of the man's own serum had been found to be much higher than that of any of the artificial serums. The effect may have been merely a coincidence.

Treatment of Mercuric Chloride Poisoning.—S. W. Lambert and H. S. Patterson, in the *Archives of Internal Medicine* for November, 1915, describe a treatment gradually formulated as the result of caring for ten consecutive cases of varying severity, all of which ended in recovery. In early cases the first indication is to administer the whites of several eggs and then wash out the stomach thoroughly. When the patient is in hospital, the stomach contents are expressed and examined for mercury by Vogel's method, which consists in separating the mercury from its albuminous combinations in the organic material and then subliming it in a sealed tube to form an amalgam on a small piece of dentist's gold. The stomach is next thoroughly washed and a pint of milk introduced. Urine passed spontaneously or obtained by catheter is also examined for mercury. If the first gastric lavage fails to allay the nausea and vomiting, it is repeated after an hour. The following routine is begun as soon as the gastric condition will permit: 1. Every other hour eight ounces of the following mixture is given:

R Potassii bitartratis, }	.....ãã 3i.
Sacchari, }	
Sacchari lactis, }	3ss;
Succi limonis, }	3i.
Aquæ bulliata, }	Oi.
M. Fiat solutio.	

At every alternate hour eight ounces of milk is administered. 2. A one dram to the pint solution of potassium acetate is given by colonic drip enteroclysis day and night without interruption, provoking copious diuresis. 3. The stomach is washed out twice daily. 4. The colon is irrigated twice daily, to wash out any of the poison therein eliminated. 5. A daily sweat in a hot pack is given. In cases in which a single dose of the poison has been taken, the treatment may be stopped after two negative urine examinations on successive days. For the less severe cases, a week's treatment may suffice. When large or successive doses have been taken, or where a kidney lesion preexisted, or where treatment has begun only several days after the poison has been taken, longer periods of treatment, up to three

weeks, are required. With one exception, all the authors' cases came under treatment within twenty-four hours. In cases which have reached the stage of anuria (usually on the fourth day) before treatment, favorable results are not always to be expected, in spite of the reestablishment of urination under treatment.

Radiant Light and Heat in Therapeutics.—An editorial writer in the *American Journal of Electrotherapeutics and Radiology* for January, 1916, asserts that radiant light and heat is to fill an important field in future therapeutics. In the European military hospitals the great value of the measure for the relief of suffering has been recognized, and a large number of fifty candle power therapeutic lamps have been ordered and are now in use. Radiant energy from luminous sources is capable of producing heat in the deeper tissues of the body, especially through the agency of the infrared rays, which have the greatest penetrating power and relieve conditions in tissues into which the luminous rays cannot penetrate. Reflexly, moreover, an influx of an extra amount of blood takes place in the tissues under treatment. The resulting hyperemia increases local nutrition and phagocytosis, and therefore constitutes a useful therapeutic agency in a large variety of conditions.

Magnesium Chloride Solution in the Treatment of Infected Wounds.—A. Pinard, in *Bulletin de l'académie de médecine* for November 23, 1915, describes the results obtained in the Bégin military hospital by the use of magnesium chloride solution, originally recommended by Delbet and Karajana-poulou, in infected wounds. A solution containing exactly 12.1 grams of the anhydrous salt in 1,000 grams of water had been found greatly to increase the phagocytic power of the leucocytes, both *in vitro* and *in vivo*. In the present series of tests, carried out in a series of over 100 cases, all infected, and including a number of cases of amputation and compound fracture, the more readily obtainable crystalline magnesium chloride was used in a solution containing eighteen grams of the salt in 1,000 grams of sterile water. All antiseptic solutions were discarded. The wounds were irrigated with the magnesium chloride solution, then covered with a thin layer of sterile absorbent cotton impregnated with the same solution. Wounds with copious suppuration or presenting recesses in muscular or bony tissues were dressed twice daily in the first five days, then once daily. All drains were removed, and small counter openings made only when the pus was discharged with difficulty. The results were strikingly good. Suppuration quickly diminished in the succeeding few days and epidermic growth from the margins of the wounds was unusually rapid. No cauterization of fleshy granulations was ever required. Suppuration in bones yielded with like rapidity, provided that all cavities were irrigated. The temperature always returned to normal when proper irrigations were begun. In a case of inflamed thigh stump, two subcutaneous injections, each of eighty c. c. of the solution, at the margins of the reddened segment of limb brought rapid relief. In a case of wound of the knee joint with multiple patellar fracture, free fetid suppuration, and a tem-

perature of 104° F., thorough daily irrigation of the joint and all its synovial recesses with the magnesium chloride solution until the latter returned clear was substituted for the otherwise necessary arthrotomy. In nine days suppuration ceased. On the whole, the results were far superior to those procured by the ordinary antiseptics. The magnesium chloride solution is neither irritant nor toxic.

Local Anesthetics.—Granville MacGowan, in the *California State Journal of Medicine* for January, 1916, says that a local anesthetic to be valuable must not of itself be a cause of pain, either before its action is established or after it has ceased. None of the drugs are used pure, but all need to be dissolved in fluids isotonic with the juices that bathe the body cells, such as a 0.9 per cent. solution of common salt. Cocaine, the first local anesthetic to be discovered, has been abandoned because of its disadvantages except in eye and nasal surgery, and sometimes in urethral operations where the newer and safer anesthetics are inactive. Tropacocaine is the ideal agent for spinal anesthesia. Beta eucaine does not differ widely from cocaine; as a protoplasmic poison it produces the same symptoms, but the dose required is greater. It is slightly less powerful as a local anesthetic, does not diffuse so well, and is more irritating. Its solutions are stable and can be sterilized by boiling. Acoïn is a dangerous poison, and is decomposed readily by alkalis. Holocaine anesthetizes the eye without dilating the pupil, producing dryness of the cornea, or preventing bleeding. Chloreton or anesol is very irritating. Orthoform, anesthesin, subcutin, propesin, and zyloform are all slightly soluble powders with anesthetic properties when brought in contact with exposed nerve filaments or endings. They are used upon the skin in dusting powders or salves, in the rectum or vagina as suppositories or salves, and are also useful in the nose, throat, and intestinal tract, especially the stomach. The most efficient of the group is anesthesin, over which the others possess no advantages. Stovaine has been recommended for spinal anesthesia, but is irritating and painful for infiltration anesthesia. In a one per cent. solution it is useful as a local anesthetic when used by instillation for an instrumental examination of the urethra and bladder. Alypin is a close relative of stovaine, is readily soluble in watery solutions, is less active and more irritating than cocaine when used hypodermically, and its toxic symptoms are similar to those of the latter. Novocaine is but feebly poisonous, its watery solutions up to ten per cent. are not irritating; it may be sterilized and resterilized without marked effect upon its anesthetic properties, which are greater than those of any other drug used for local anesthesia, when combined with suprarenine, with the exception of cocaine. It can be applied pure to the cornea and to freshly denuded surfaces without causing pain or subsequent edema. For infiltration anesthesia isotonic solutions of one half, one, two, and four per cent. are the most useful; greater concentrations are not necessary and should not be used, even though it is only feebly toxic. Hydrochloride of quinine and urea in watery solutions of from 0.25 to one per cent. causes the for-

mation of a fibrinous exudate in tissues infiltrated with it, which delays the healing of wounds. Tetanus has been observed after this salt has been used. Its one valuable quality is the length of time its anesthetic effects last, sometimes for many days, on account of which it may be used to inhibit pain in intense and persistently localized neuritis, and in blocking the sensation of itching in circumscribed and chronically thickened patches of eczema. Crile uses it as a part of his anociassociation. All of these drugs are incompatible with the physiological action of adrenaline, with the exception of cocaine and novocaine. The only one that is relatively nontoxic, nonirritant at the time of use and afterward, soluble in water, capable of sterilization by heat, and not antagonistic to adrenaline is novocaine, but for application to unbroken mucous membranes stovaine and the nitrate of alypin are superior to it.

Sodium Sulphate in Dysentery and Infantile Diarrhea.—W. J. J. Arnold contributes a memorandum to the *British Medical Journal* for January 8, 1916, in which he says that he regards infantile diarrhea as closely allied to bacillary dysentery and therefore amenable to the same treatment. This consists in an initial dose of castor oil, to be followed by from five to fifteen grains of sodium sulphate, every two or three hours, for a child under one year old. Milk should be withheld for several days. This treatment has reduced the mortality from infantile diarrhea in the author's practice to an almost negligible factor. In bacillary dysentery in adults, the best results are to be obtained by giving dram doses of sodium sulphate every hour or two. The intervals should be lengthened as the tenesmus decreases and blood and mucus disappear, but the drug should be kept up for some time after both blood and mucus have entirely disappeared. Amebic dysentery responds well to the same method of treatment, but emetine should be given if amebae are found at the end of the treatment.

Treatment of Morphine Habit.—In a letter to the *Journal A. M. A.* for January 15, 1916, H. E. Goetz says that the worst bar to successful treatment is the existence of nephritis, the next is heart disease, and then disease of the respiratory tract. The presence of a painful, chronic disease which cannot be eradicated, absolutely precludes success. When the patient is suited to treatment, this should be begun by giving three compound cathartic pills with ten grains of blue mass and grain 1/15 of strychnine sulphate. This dose should be repeated, in six hours, without the strychnine, and, at the end of another six hours, two ounces of castor oil should be given. During this period of treatment the patient's usual dose of narcotic should be given. Shortly after the dose of castor oil, a dose of three grains of luminal should be given, and twelve hours later, three compound cathartic pills. Then, at the end of the second day, the cathartic pills and strychnine should be repeated. From the eighteenth hour of treatment on, three grain doses of luminal should be given, every six hours, until the patient will sleep if undisturbed, and when the patient is sufficiently under the influence of the luminal the morphine

can be withdrawn. This is usually at about the sixtieth hour. After the last dose of compound cathartic pills, at the end of the second day, morning doses of two ounces of magnesium sulphate should be given before breakfast until the twenty-eighth day. One grain doses of sparteine sulphate, every six hours, act to produce diuresis and have given good results. The luminal should be continued for about six days, after which the patient will usually be so narcotized as to sleep for four more days if undisturbed. During this time the catheter should be used and feeding should be by stomach tube with large volumes of liquid. A pint of hot coffee, a quart of milk, and two ounces of sugar should be given every six hours. From about the end of the second week Bland's mass with arsenic is ordered, and electric baths to increase the elimination are given thrice weekly. During reconstruction good food, exercise, massage, shower baths, and amusement are needed to restore the patient to prime physical and mental condition.

Gunshot Fractures of the Extremities.—Robert B. Greenough, Robert B. Osgood, and Beth Vincent give their experiences with these fractures at the front in the present war in the *Boston Medical and Surgical Journal* for January 13, 1916. Their conclusions are that early and thorough operative treatment is indicated in gunshot fractures received under the present conditions of trench warfare. The removal of missiles, foreign bodies, and detached bone fragments, and thorough drainage are important. Complete immobilization in extension as a rule is best obtained in a base hospital by plaster dressings put on under an anesthetic. Frequent and painstaking dressings, with or without irrigation, and the maintenance of free drainage are of great importance in overcoming sepsis. Prophylaxis is better than corrective treatment in the avoidance of ankylosis of joints and contractures of muscles and tendons.

Treatment of Cardiospasm.—After extensive discussion of the etiology and diagnosis of cardiospasm (*Journal A. M. A.*, Jan. 22, 1916), I. W. Held and M. H. Gross say that primarily the treatment should be directed toward the removal of any reflex cause, such as disease of the tonsils, middle ear, abdominal organs, etc. Since the majority of cases are due to functional disorder of the vegetative nervous system, particularly vagotonia, the treatment deals particularly with this group. Systemic measures are essential, and hydrotherapy, change of climate, physical and mental rest, and psychotherapy should all be employed. Feeding is of the greatest importance, and often with the patient's confidence it is possible to get him to eat almost all kinds of food, thus proving to him the absence of organic obstruction. In the majority of cases, however, great care in feeding is required. The food should not be irritating, should be semisolid and nourishing, and include butter, cream, cooked cereals, cream soups, finely minced vegetables, eggs, scraped or minced meat, and toast, which should be allowed to dissolve in the mouth before being swallowed. Neither food nor drinks should be given too hot or too cold, and condiments should be prohibited.

Dry swallowing should be encouraged. Change to more solid diet should be made gradually. Table-spoonful doses of olive oil before meals sometimes aid the swallowing of food. Atropine is the most useful drug and should be given hypodermically in doses of 0.5 to one mgm. two or three times daily until its full effects are secured. After considerable improvement has been obtained 0.5 mgm. doses twice weekly may be continued for a month. Doses of fifteen to thirty mgm. of extract of belladonna may be given in the form of suppositories where hypodermic injections are undesirable. When indications demand, the bromides, valerian, and such tonics as iron and anesthesin, or arsenic may be ordered. If the treatment outlined fails of relief after about a week, resort should be had to mechanical dilatation with a stomach tube or sound.

The Simpson Light.—This is described in considerable detail by W. Douglas Harmer and E. P. Cumberbatch (*Lancet*, Jan. 8, 1916), who have employed it in the treatment of several types of skin diseases. It consists of an arc light the poles of which are composed of ores containing the tungstate of iron and manganese. From these electrodes the proportion of ultraviolet rays is greater than from any other form of light and the range of wave lengths is also greater. Clinical experience with the light showed it to be of value in the treatment of lupus, certain forms of cutaneous syphilis, rodent ulcer, eczema, and various wounds. Administration must be carefully limited and controlled.

Use of Radium in the Treatment of Recent Local Fibrosis.—Laborde, at a meeting of the Société de chirurgie, Paris (*Presse médicale*, August 5, 1915), reported a case in which the well known property of radium of reducing fibrous tissues such as keloids was availed of for the removal of a band of recent cicatricial tissue in the forearm, coupled with neuritis of the median nerve. Gratifying results were obtained, the fibrous tissue disappearing completely in a few weeks, the extensor function of the fingers being restored, and the neuritis of the median, previously pressed upon by the scar tissue, being so reduced that the preexisting pain was relieved.

Abortive Treatment of Herpes zoster.—Artault, at a meeting of the Société de thérapeutique, Paris (*Presse médicale*, August 5, 1915), recommended the application of a blister over the points of exit of the spinal nerve roots in cases in which the appearance of herpes zoster is anticipated. As a result of this procedure, the vesicular eruption will in many instances be prevented.

Treatment of Gonorrhea in Women.—A. M. Judd (*Long Island Medical Journal*, Jan. 1, 1916) advises for the acute cases rest in bed, light diet, and care to prevent the spread of the infection up the genital canal. In chronic cases the silver salts have much vogue. The treatment of the urethra may be materially aided by the endoscope, and infection of Skene's glands are best removed by actual cautery. The same is true of the glands of the vestibule. Bartholinitis may respond to the use of the silver salts, but it may be necessary to dissect the glands

out entire for a complete cure. Linear cauterization at intervals gives the best results in cervical gonorrheal infection, and endometritis is best treated by curettage with the application of iodine or silver to the freshly exposed surface. Only one cure was secured by the author in twenty-one cases.

Simple Thoracotomy in the Empyema of Infancy.—Duran Arrom, in *Revista de Ciencias Medicas de Barcelona* for November, 1915, enumerates four surgical methods of treating empyema, namely, simple puncture, Bulán's syphon drainage, simple thoracotomy, and rib resection. Of these the operation of choice in children is simple thoracotomy with introduction between the ribs of both rubber and glass drainage tubes.

Treatment of Uterine Carcinoma by the X Rays.—Guggisberg and Steiger report in the *Korrespondenz-Blatt für Schweizer Aerzte* for December 25, 1915, three cases of inoperable carcinoma of the uterus in patients, thirty-two, seventy-three, and seventy years of age, treated very successfully with the x rays. In all the subjective symptoms were greatly relieved, while the tumors were much decreased or disappeared. It is not said that the patients were cured, but the great relief afforded was such that the treatment may be called successful.

Treatment of Hemoptysis.—Alvis E. Greer, in the *Texas Medical Journal* for February, 1916, advises lung compression by nitrogen, 400 to 500 c. c., introduced into the pleural cavity near the bleeding area. The bleeding area is determined by the sudden appearance of bubbling rales over an area of diminished breath sounds. Cases most suitable are early cases of hemoptysis in lung tuberculosis. A very active focus on the opposite side may contraindicate operation. In the presence of myocardial disease, caution should be used. Oxygen is not as good as nitrogen because it is absorbed rapidly.

Radium in Arteriosclerosis.—C. Everett Field, in the *Medical Record* for January 22nd, recommends the administration of radium in this condition by means of emanation, inhalation, radioactive drinking waters, solutions of radium salts for drinking, emanation baths, and, by intravenous or subcutaneous route, the bromide or chloride of radium. It has absolutely no toxic effects and the dose in high blood pressure is governed by the chronicity of the case and the involvement. In a series of 100 cases, the average systolic pressure was 190 and the average reduction was forty mm.

Electricity in Goitre.—Edmund Myers (*Northwest Medicine*, Jan., 1916) holds that about ninety per cent. of all forms of goitre are amenable to benefit from proper electrical treatment. For hypothyroidism cataphoresis with potassium iodide is recommended. This should be applied with a small felt electrode wet with fifteen to twenty drops of a saturated solution of the iodide and connected to the negative pole of the battery. From three to ten milliamperes should be used, introduced gradually, and about ten minutes' application should be made to

each of the lateral lobes and to the isthmus at each sitting. The sittings should be repeated weekly. The statement is made that 100 per cent. of cases of hypothyroidism are curable by this treatment. Hyperthyroidism is best treated electrically by exposure to properly gauged doses of x rays. In some cases in which the response to radiation of the thyroid alone is not satisfactory, the ovaries should also be exposed, since they often share in the general disturbance.

Organotherapy.—Frank R. Starkey (*Northwest Medicine*, Jan. 1, 1916) states as fundamental principles of this form of therapy that the preparations used must be made from animals which have not been castrated; that the glandular substances must not be given singly, for in nature their supply is grouped, the pituitary, thyroid, parathyroid, and sexual glands all being interdependent. The suprarenal gland need not be used because its action is ephemeral and because its place is taken by the pituitary. Lastly, the glandular preparations should never be given *per os*, since they are materially altered by digestive processes. Intramuscular administration is the only suitable method.

Sensitized Shiga and Flexner Vaccines in Chronic Bacillary Dysentery.—On account of the difficulty of curing such cases, vaccines were tried, but the not infrequent serious consequences resulting from the use of dysentery vaccines led Leonard Rogers (*Brit. Med. Jour.*, Jan. 1, 1916) to try the effects of sensitized vaccines. The vaccines were stock ones of Shiga or Flexner strains sensitized with the Lister Institute antidyenteric serum. The single doses of these vaccines never exceeded 100 million. In most cases the results were very satisfactory, and the sensitization seemed to obviate the dangers associated with the use of the ordinary vaccines.

Treatment of Heartburn.—Estill D. Holland, in the *Medical Fortnightly* for January 15, 1916, says that if heartburn is due to a constitutional subnormality, the cause should be treated in conjunction with the stomach trouble. The stomach should be washed out every second morning with a quart of water containing two drams of sodium bicarbonate, and one half dram of bismuth subgallate. An antacid should be taken one to two hours after meals, at bedtime, and when the patient feels heartburn. Water in small quantities, at frequent intervals, as it dilutes the gastric juice, allays inflammation and washes out the stomach. Four to six ounces should be taken at a time, beginning one hour after meals and continuing up to one half hour before the next meal. Coffee or tea is allowed only once daily; no greasy or fried food should be given.

Recent Advances in the Treatment of Cancer.—Isaac Levin (*Long Island Medical Journal*, Jan. 1, 1916) states that a high estimate shows that about fifteen per cent. of all cases of cancer can be cured by surgical measures. On the other hand, there are two other methods which probably give even better results, particularly if used in combination with sur-

gery; first, the destruction of the cancer cells specifically by thermal coagulation. Diathermy has the advantages of not opening up tissue spaces with the increase in the dangers of metastasis, and of destroying the cancer cells *in situ* without damaging the normal tissue cells. It is applicable in the treatment of inoperable cases. The second method is that of irradiation by radium or x ray. This method has about the same advantages as diathermy, with the additional one of being able to reach and destroy the minute deposits of metastatic cancer cells not accessible to either the knife or diathermy. The best results seem to be obtained by a proper combination of these three methods, for each has its limitations and each is possessed of certain advantages over the others.

Treatment of Septic Wounds with Equal Parts of Ichthylol and Glycerin.—C. W. Duggan, in the *Practitioner* for January, tells how he paints the surrounding skin, as well as the whole surface of the wound, with a mixture of equal parts of ichthylol and glycerin, or applies it on lint or gauze. On changing the dressing he avoids washing the surface of the wound with lotion, dries it with a swab of cotton, and occasionally dabs the surface with alcohol, as he believes that the drier the wound is kept the quicker it heals. If the dressing adheres to the edges of the wound, he detaches it with freshly boiled water. It is not necessary to remove the ichthylol from the skin at each dressing.

Treatment of Nephritis.—Cadis Phipps makes the following points in the *Boston Medical and Surgical Journal* for January 20th. Any rigorous system of diet may, but should not be, so strict or continued so long as to be harmful in the individual case. More freedom in the allowance of protein than is recommended in the "textbook" nephritic diet may be of apparently great advantage. Thyroid extract has perhaps a great value in the treatment of nephritis, one of the commonest, and at the same time one of our most hopeless diseases. If given carefully the administration of this drug is safe, and thyroid medication in nephritis should receive more attention than has heretofore been accorded it.

Management of Cardiac Cases from the Out Patient Department Standpoint.—According to Mark H. Wentworth (*Boston Medical and Surgical Journal*, January 20th), the most important drug in the treatment of cardiac affections is digitalis. Its chief effects are seen in dilated hearts whose myocardium still retains some reserve power. It has no effect on a normal heart, or on one that has a valvular lesion, but is perfectly compensated and undilated. In the severest forms of cardiosclerosis and fatty degeneration it may stimulate the fibres to the limit of their powers and so do harm. We must not push the drug beyond the first stage of its activity, slowing of the pulse, and increase of its size, and must avoid the onset of the second stage, arrhythmia. As it begins to act only after twenty-four hours, is cumulative, and as hearts vary in susceptibility, the dose is uncertain and the effect must be watched carefully. It is contraindicated in cases of heart block, and in cases where the heart muscle has

been diminished by myocardial changes. Strychnine is particularly valuable in cases of disturbed respiration following extreme heart failure, whether digitalis is used or not. The most important use of camphor is in shock, when it is best used as camphorated oil in twenty to forty-five minim doses. Caffeine is more valuable than either strychnine or camphor in shock and collapse, but its use is often accompanied by palpitation, sleeplessness, and even nausea, vomiting, and delirium, which occur easily in cases of heart disease. Aconite is useful in fevers when the heart needs slowing, but the heart muscle needs no stimulation. It is of value in many cases of tachycardia, especially those of nervous origin. The nitrites are ideal in many cases to relieve the work of the heart over short periods where the blood pressure is not already too low to admit of their use. Nitroglycerin must be used with the utmost caution, as susceptibilities vary greatly. Where bed treatment is required, the diet is all important. It should be light, just enough to keep up nourishment without causing a sense of fullness, or of allowing gas to form. An excellent diet for severe cases in children, which can be modified to suit the individual, is as follows:

- 8 a. m.—Cereal, soft egg, toast, coffee, 6 ounces.
- 10 a. m.—Milk, six ounces; soft egg, crackers.
- Noon—Soup, chicken, potatoes.
- 4 p. m.—Milk, 6 ounces.
- 6 p. m.—Milk, 6 ounces; soft egg, crackers, prunes.
- 9 p. m.—Milk, 6 ounces; bread.

In the less severe cases it is well to have the patient lie down for at least fifteen minutes after each meal, and for a full hour morning and evening.

Drainage of the Cerebrospinal Fluid in Nervous Syphilis.—In the belief that a reduction of the pressure in the subdural space might lead to the passage of antisyphilitic remedies from the blood into the spinal fluid, Sherman F. Gilpin and Thomas B. Earley (*Journal A. M. A.*, Jan. 22, 1916) tried the procedure in three cases, one of tabes, one of paresis, and one of tabetoparalysis. All three patients were greatly benefited by combined mercurial inunctions and repeated spinal puncture with the removal of from twenty to forty c. c. of fluid about once weekly.

Paratyphoid Fever.—Harold Wiltshire, in the *Practitioner* for January, says that the prophylaxis, general management, and treatment of paratyphoid are the same as for typhoid fever. He failed to get much if any benefit from the use of hexamethylenamine or quinine. The results obtained from vaccines depend on the particular kind of vaccine employed; sometimes they are excellent, sometimes doubtful, but a good strain of vaccine is the best agent we have for the treatment of the disease, and the only one by which we can hope to shorten its course.

The Value of Blood Transfusion.—W. M. Mills gives a résumé of several methods of transfusion and concludes by stating the indications (*Journal of Kansas Med. Society*, Jan., 1916). Brilliant results follow in cases of acute hemorrhage, extra-uterine gestation; gastric ulcer, and similar conditions; in severe shock; and in some cases of chronic

hemorrhagic disease. A large proportion of cases of pellagra have been cured, good results have been secured in a certain number of cases of toxemia of pregnancy, and gas poisoning has been markedly benefited by the administration of fresh blood. The procedure has not given good results as yet in acute infections, or in the majority of leucemias, and but temporary benefit has followed in hemophilia and pernicious anemia.

Obesity. Albert Warren Ferris, in the *Medical Record* for January 22nd, while laying stress on diet, considers hydrotherapeutic measures as indispensable, especially the hot brine bath followed by a cool spray, three times a week. Important also are exercise, massage, passive motion, Swedish movements, and the sinusoidal current. All these cause combustion of fat and production of water, which is lost as perspiration.

Treatment of Corns.—The surface of the corn should be removed daily with a suitable instrument, after soaking the foot in hot water for fifteen minutes. External applications will do the rest. Of these the following have been found most efficacious, according to a writer in *Journal des praticiens* for October 9, 1915:

1. Painting with a solution of ferric chloride, or tincture of iodine. Neither causes pain, but both stain. Cover the corn carefully and in from eight to ten days it can be detached by scratching. Soft soap mixed with alcohol and spread on a piece of soft flannel may be used as a dressing to be kept on all night, or a slice of lemon may be bandaged in place every night.

2. Salicylic collodion, one part in ten, should be applied daily. Either of the following may be used:

℞ Acidi salicylici, .....	.5i;
Extracti cannabis indicæ, .....	.5ij;
Etheris, .....	.5ss;
Collodii, .....	.5i.

M. Fiat pigmentum.

℞ Acidi salicylici,	gr. xlv;
Acidi lactici }	ãã gr. xx;
Resorcini, .. }	
Collodii, .....	.5i.

M. Fiat pigmentum.

℞ Cupri subacetatis, .....	.5i;
Olei terebinthinæ, .....	.5iss;
Ceræ flavæ, .....	.5vi.

M. Fiat emplastrum.

℞ Cupri subacetatis, .....	.5i;
Olei terebinthinæ, .....	.5ij;
Picis, .....	.5ss;
Ceræ flavæ, .....	.5i.

M. Fiat emplastrum.

These plasters should be applied every night. The corn often, and may be removed by scratching. If bleeding should occur the point must be touched with tincture of iodine.

Soft corns may be treated in the same way, but a better plan is to apply plenty of the following powder:

℞ Aluminis, ... }	
Acidi tannici, ... }	ãã gr. xlv;
Zinci oxidi, .....	.5ij;
Talci, .....	.5i.

M. Fiat pulvis.

Proceedings of Societies.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Twenty-eighth Annual Meeting, Held at Cincinnati, December 13, 14, and 15, 1915.

The President, Dr. BACON SAUNDERS, in the Chair.

(Continued from page 238.)

Salpingitis Secondary to Appendicitis.—Dr. JAMES E. MOORE, of Minneapolis, said that a number of years ago his attention was first called to the possibility of appendicitis being the cause of salpingitis by the following case: A single woman, aged thirty years, was brought to Minneapolis for operation with a diagnosis of salpingitis. She was taken to a gynecologist who firmly believed that the only cause of salpingitis was infection from the gonococcus, and in the absence of any evidence of infection in the vagina, and the presence of an imperforate hymen, concluded that it was impossible for the patient to have salpingitis, and discredited the attending physician's diagnosis. The patient was then brought to the speaker, who found that she gave a history of repeated attacks of inflammation in the lower abdomen and pelvis; by rectal examination a solid mass could be made out in the pelvis. The vagina was healthy and the hymen intact. There was no history of disease or unnatural discharges from the vagina at any time. The diagnosis of salpingitis was confirmed, although the possible cause was not understood. Operation was performed and evidence of repeated attacks of appendicitis was found. The appendix was closely adherent to the right ovary and tube and both tubes were distended with pus. The appendix and tubes were removed, and the patient was fully restored to health. It was evident that infection had not extended to the uterus, because it was left behind and had never caused symptoms. This led to the conclusion that the case was one of salpingitis secondary to appendicitis. This occurred many years ago, at a time when facilities for careful bacteriological examinations were lacking, so that there was no means of knowing what bacteria were present. Since that time the speaker had observed a number of cases that had confirmed his conviction that some cases of salpingitis were due to an infection from the peritoneal side caused by an appendicitis. These cases demonstrated that infection of the Fallopian tube might occur from the peritoneal end, and that when it did, it was usually due to appendicitis. It should be accepted as an established fact that a certain small percentage of cases of salpingitis were due to appendicitis, so that, when looking for possible causes of a pelvic inflammation, they might use this fact into consideration.

Pseudomucinous Cysts of the Appendix and Ruptured Pseudomucinous Ovarian Cysts.—Dr. JAMES E. MOORE, of St. Louis, reported two cases of pseudomucinous cysts of the appendix, one case complicated by a ruptured pseudomucinous ovarian cyst. The uncomplicated case was present in a young man, aged twenty-five years, who had undergone a drainage operation for acute suppura-

tive appendicitis, thirteen months previously. There had been at intervals a mucopurulent discharge from the sinus, which had persisted since the first operation. The patient had suffered several attacks simulating acute appendicitis, and had lost weight rapidly. He had had temperature of 100° F. and local signs of acute appendicitis. Operation revealed a clubbed appendix with a constriction one inch from the tip. A smooth walled spherical tumor, which proved to be a pseudomucinous cyst, had pushed its way through the wall of the appendix. Between this tumor and the tip, the lumen was patent for the distance of one cm. Between the tumor and the cecum, the lumen was patent and undergoing an acute inflammatory process, accounting for the acute symptoms. The appendix and distal loop of ileum were surrounded by omental sac and bathed in pseudomucinous exudate. The appendix was removed, the pocket sponged, and treated with three per cent. iodine. The sinus was dissected and the wound closed without drainage. Recovery was uneventful.

Case II was one of ovarian cyst, capacity four litres, which had evidently ruptured several weeks before the operation, with no definite symptoms, except general abdominal tenderness and rapid loss of weight. About two litres of pseudomyxomatous material was removed from the abdominal cavity, large masses having adhered to the abdominal viscera. The appendix was seven cm. long and 2.5 cm. in diameter. The wall was translucent, smooth, tense, and fluctuating. There was a small opening near the tip, from which gelatinous material exuded. The contents of the ovarian tumor and appendix proved to be pseudomucin.

The pathological mass was removed, the abdomen thoroughly irrigated with saline, and closed without drainage. The patient had a right side inguinal hernia which was repaired under local anesthesia on the tenth day. He was discharged from the hospital thirty days from the date of his entry. He had since steadily improved in health.

There was no record of malignant complications following ruptured pseudomucinous cysts of the appendix, but the danger was far greater in those of ovarian origin. No diagnosis of the condition was made before operation. Protection against such tumors lay in early exploration of all surgical abdominal lesions.

Ulcer of the Jejunum.—Dr. ROBERT C. BRYAN, of Richmond, said that his experience in surgery of the stomach, and with one case of ulcer of the jejunum, hardly justified the presentation of a symposium of classical features which might be dignified with the title, "diagnosis of ulcer of the jejunum." Keen stated that if more attention were given to oral sepsis and to the gastric condition in hyperchlorhydria, relapse of ulcer might be prevented. Apparently ulcer of the jejunum was found associated with other pathological states of the upper alimentary tract. Since so little was known and understood about primary ulcer of the jejunum, it might be said that these associated conditions should be more readily diagnosed by the routine laboratory procedures, and when so worked out and accounted for, the remaining untoward expressions might be laid at the door of a suspected ulcer of the jejunum.

Gastroenterostomy being one of the causes of jejunal ulcerations, they should hesitate to perform the operation for primary ulcer of the jejunum. In appropriate cases, excision, resection, or enterectomy was apparently the operation of choice.

The Estimation of Resistance Prior to Surgical Operations.—Dr. A. C. SCOTT, of Temple, Texas, stated that many puzzling situations could be cleared up and an occasional disaster averted were they systematically to enter into their records something which tended to group and emphasize the various elements of lowered resistance, and to pit the net remaining resistance against the factors involved in each operation, being mindful that in every surgical operation there were two contesting forces, one tending to destroy life, and the other engaged solely in an effort to save it.

For the purpose of illustration, he would select three factors which might enter into an operation, any one severe enough to result fatally in a person possessing normal resistance. He referred to hemorrhage, trauma, and inhalation anesthesia, each of which had been measured experimentally. Other factors more difficult to measure were fear, pain, and muscular effort. The physiological effect of each of these factors was modified by the time consumed. On the side of resistance they had an unlimited number of factors concerned in lowering the standards. They seldom appeared singly and often many of them would be combined in a single patient. They might be roughly classified as follows: Constitutional weakness from inheritance and environment; previous debilitating diseases of any character; recent trauma by either injury or operation; starvation, drug habit, and psychic depression. The maximum or ideal resistance was illustrated in a fully developed adult whose breeding habits and environment had been conducive to the acquisition of a complete, well balanced, and functionally perfect organism.

The ill effects of the anesthetic were rapidly multiplied as the patient's resistance was lowered from various causes. This applied to all the operation factors. Resistance being progressively lowered, each factor of the operation which tended toward fatality was increased in varying proportions as the fatal percentage was approached. Perhaps the most uniformly marked deleterious effect of each operation factor was to be observed in cases whose resistance was decidedly lowered from some form of toxemia.

In no department of medicine was the team work of an efficient staff of examiners and laboratory workers of more value than in estimating a patient's resistance prior to contemplated surgical procedures. The importance of systematic examination to note the things which might lower resistance, was parallel to that of an examination made for diagnostic purposes.

Sarcomata in Unusual Situations.—Dr. HUBERT A. ROYSTER, of Raleigh, stated that among his records he had found six cases in which sarcomata were discovered in unusual locations, either growing from tissue rarely the seat of such growths or exhibiting other characteristics out of the ordinary. The first was fibrosarcoma of the sheaths of the musculospiral and median nerves; the second, rhab-

domyosarcoma of the trapezius; third, fibrosarcoma of the breast; fourth, single celled sarcoma of the abdominal wall; fifth, lymphangiosarcoma of the coccygeal region; sixth, myxosarcoma of the buttocks.

Treatment of Lymphosarcoma with Radium.

—Dr. HOWARD A. KELLY and Dr. CURTIS F. BURNAM, of Baltimore, pointed out the differences between lymphosarcoma and Hodgkin's disease and the various leucemias. They drew attention briefly to the life history of lymphosarcoma, beginning as a local infection and growing more or less rapidly, metastasizing, and finally invading the lymphatic system, more or less, of the whole body, and invariably causing death in a period of from several months to a couple of years. Surgery had always stood impotent in the presence of lymphosarcoma, even in such an accessible region as the neck, and when situated in the breast or abdomen it was, of course, even beyond the dream of surgical relief. It was Nicholas Senn who, in 1903, opened up the great question of the ray therapy of these affections.

A series of twenty cases was presented, all but two identified by a microscopic examination of the tissues. Most of the patients were in an extremely advanced stage of the disease, and twelve had been operated upon, and these, with one exception, were sent as a last desperate hope with rapidly recurring masses in the neck. Out of that group of twenty, thirteen or sixty-five per cent. were apparently cured. Six patients had died of the disease, five of that group had been operated upon, and all had advanced cases but one. On the basis of this experience they believed that lymphosarcoma ought not in the future to be operated upon, but should be subjected to radium therapy at the earliest possible moment. The results were found to improve if the cases were obtained early, and they confidently expected to increase their percentage of recoveries from sixty-five to ninety per cent. or over.

The amounts of radium used varied from 441 mgs. to 2,000, distributed over different areas for several hours, and repeated at intervals of weeks or months. While in the early cases the diseased area alone was treated, in the later cases the entire lymphatic system of the neck, axilla, and torso had been included. There were several instances of primary extensive lymphosarcoma of the mediastinum. Those responded just as readily as those more superficially placed.

In view of those results and the rescue by radium of this most distressing malady from the realm of the incurable, all future cases should have the benefit of a thoroughgoing radium treatment at the earliest possible moment.

Subcutaneous Dermic Fistula in the Treatment of Ascites.

—Dr. WALTER C. G. KIRCHNER, of St. Louis, related his experience with the Oberst operation, employing certain modifications of technique. The speaker's cases were not especially well suited for a successful trial of the method, but in one of four cases a satisfactory result was obtained, there being no return of the ascites. In this case the ascites resulted from alcoholic cirrhosis of the liver. The operations were readily performed under local anesthesia. In principle, the operation consisted in the employment of a pedunculated portion of the

skin from the abdomen, which was buried subcutaneously in such a manner that a flap projected into the abdominal cavity. Thus no substance foreign to the body is used in providing continuous drainage.

Conservative Pelvic Surgery.

—Dr. FLOYD W. McRAE, of Atlanta, had done conservative operations on 338 women. Of this number he had been able to get reports to date from only ninety-three—thirty-two of whom had reported pregnancies. Practically all had gone to full term and been delivered of healthy children. One woman had had three children, another two; another had had three or more induced abortions. Another was delivered of a living child by Caesarean section on account of uremic convulsions. Neither mother nor child was in good health. He had written the 198 patients with whom he had not kept in touch, and hoped to receive definite information to incorporate in his paper before publication. Of the 338 women, seventeen had had subsequent operations done by him or other surgeons. He had included in this record only the women whose pelvic organs were left in a state compatible with future pregnancies. It did not include women whose tubes or uterus had been removed, or where partial hysterectomies had been performed precluding pregnancy.

In his work he had resected cystic ovaries, preserving all healthy stroma, suturing accurately with fine catgut. He had endeavored so to separate adhesions, imbedded ovaries, and tubes as to leave the least possible area of raw surface; hanging up prolapsed ovaries, plicating the ligaments, so readjusting uterus, tubes, and ovaries, as to approach as nearly as possible the normal arrangement. A very large majority of those women had been relieved of their suffering and restored to all the privileges and enjoyments of healthful womanhood.

Gangrenous Abscess of the Lung.

—Dr. D. F. TALLEY, of Birmingham, reported a case of gangrenous abscess of the lung in a young married woman after the birth of her first child. It was now more than ten months since the operation was performed and the patient was in perfect health. All cases of abscess and gangrene of the lung should be opened and drained, unless the abscesses were multiple and inaccessible. Tuffier cured two cases by lung compression, by tucking in fat and omentum intrapleurally over the diseased area, but this method seemed inadequate for most cases, as there was need for actual drainage, and there might be a sequestrum of necrotic lung that must come away before the abscess could close.

Fracture of the Femur.

—Dr. ALEXIUS McGLANNA, of Baltimore, reported fifty-five cases of fracture of the neck of the femur that had come under his personal observation in the past eight years. Of that number, thirty-six recent fractures and seven old fractures were treated, and twelve patients were not treated. In all cases full abduction, with downward traction and inward rotation, was the position obtained in reduction. The full abduction was assured by fixation of the pelvis by abducting the sound leg, and the inward rotation by lifting the trochanter forward. Impaction was separated in six cases, and in the seventh was not disturbed, because the impaction occurred with abduction of the thigh. This was an unique observation. Various

forms of fixation were used, from firm plaster of Paris cast to loose tying up of the thighs. Direct extension by ice tongs was used in three handicapped patients, one of whom died. Nailing the fracture was done twice. For the old cases, bone graft was used once, nailing twice, removal of head once, subtrochanteric osteotomy twice, freshening fragments once. Of the recent patients, four died, and in one the fracture failed to unite. One of the old cases resulted fatally, and one patient still walked on crutches seven years after treatment.

Treatment was refused by two young adults with vicious union. Ten patients were not treated on account of feeble-mindedness, circulatory, pulmonary, renal, or nervous symptoms. Two were living several years after the injury, aged eighty-eight and ninety years respectively. Delirium tremens and evidence of drug addiction, or uremic manifestations, made the prognosis grave. Loss of control of bladder or rectum seemed to indicate an inability to stand fixation. The effect of the healed fracture on earning capacity was noted in ten cases, the average loss being fifteen per cent. after a period of disability lasting from six months to one year and three months, with an average close to one year. The occupation of these patients included hotel manager, restaurateur, farmer, housekeeper, seamstress, laborer, tailor, motorman, and market driver.

Treatment of Fractures.—Dr. W. P. CARR, of Washington, D. C., related his experience and results in 7,000 cases treated in the Emergency Hospital, and compared his results obtained by conservative methods which experience had proved safe and efficient, with those of other surgeons using other methods. He concluded that fractures were not generally treated as well as they were twenty years ago for the following reasons: 1. There was generally too ready resort to amputation; 2, too ready resort to open operation; 3, a faulty method of operating was too apt to be chosen. He believed this condition of affairs had been brought about by a too great dependence upon the x ray before reduction and fixation, and too little use of it afterward, and a consequent neglect of surgical anatomy and muscular action in various fractures.

He strongly condemned operation of any kind when not really necessary, and believed it to be necessary in comparatively few fractures. When operation became necessary, he advocated the use of one or two wire loops to prevent shortening, and condemned any method looking to rigid fixation in alignment. He thought there was a generation of younger surgeons coming in who, under the teaching of Mr. Lane and others high in authority, or through a misapprehension of their teaching, had made it their practice to operate upon nearly every fracture coming into their hands, and that it was their duty to teach that this was not necessary, except in unusual cases, to urge a greater study of surgical anatomy and of nonoperative methods, which in nearly all cases should be tried for a week or so before operating. If, at the end of a week, it was found by measurement, palpation, and x ray examination, that they could not maintain good position of the fragments, there was still time to operate, and to better advantage than at first. The patient lost no time for preparation of the tissues,

for union had been going on during the week, and they were also in better condition to resist infection. The only indications for operation were for reduction in those cases where it could not otherwise be done, to prevent shortening, or to prevent muscular action from tilting or pulling some short fragment into bad position. Operation of any kind should never contemplate the prevention of angular deformity or rotation which could be perfectly controlled in other ways, preferably by casts. He emphasized the importance of getting extension and counterextension in applying casts in nonoperative cases, and the application of the cast in a manner to prevent rotation.

Cysts of the Appendix.—Dr. JOHN T. MOORE, of Houston, during the present war had operated upon a patient with a cyst of the appendix of the pseudomyxomatous type. They would be inclined to think that cysts of the appendix ought to be of very frequent occurrence, but if they judged from his own experience and that of the reported cases, the condition was not very common. According to Castle, in an analysis of 13,158 post mortem examinations, twenty-nine cases of cystic appendix were found. Two conditions seemed to be necessary to cyst formation: 1. A partial or complete blocking of the lumen; 2, the contents must be sterile or almost sterile. The lumen might be only partly blocked to allow a sufficient pressure to destroy the lining epithelium. But with a communication with the intestines the material was apt to become infected, and thus lead to the formation of a pus appendix, with necrosis of its walls. Such cases were too acute to allow cyst formation.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Injuries of the Eyes, Nose, Throat, and Ears. By ANDREW MAITLAND RAMSAY, M.D., F.R.C.P.S. (Glasgow), Ophthalmic Surgeon, Royal Infirmary, Glasgow, Major R. A. M. C. (T. F.), J. DUNDAS GRANT, M.D., F.R.C.S. (Eng.), Late Major R. A. M. C. (Post Office Rifle Volunteers); King George Hospital, London, Lord Knutsford's Special Hospital for Officers, H. LAWSON WHALE, M.D. (Camb.), F.R.C.S. (Eng.), Captain R. A. M. C. (T. F.); Formerly No. 13 General Hospital, British Expeditionary Force, Overseas; The County of London War Hospital, Epsom, and CHARLES ERNEST WEST, F.R.C.S. (Eng.), Aural Surgeon to, and Lecturer on Aural Surgery at St. Bartholomew's Hospital, Captain R. A. M. C. (T. F.). London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. 160. (Price, \$1.)

This compact little guide, one of the Oxford War Primers, naturally deals largely with wounds of the head which directly or indirectly involve the special organs and regions mentioned. In the small space of such a work it is obviously impossible to give full consideration to the various aspects of traumatic affections. Accordingly, we find the main weight laid, as it should be, on treatment, and in second line, on diagnosis. Even when so limited, the subject can receive only the most sketchy consideration. Still, there is much valuable information in the little volume, which is further enriched by reports of illustrative cases from the field of battle, and by a reference to recent more extensive treatises on special military surgery.

Injuries of Joints. By ROBERT JONES, Ch. M., F. R. C. S. (E. & I.), Director of Military Orthopaedic Hospital, Liverpool, Consulting Surgeon to Queen Mary's Convalescent Auxiliary Hospitals; Major R. A. M. C. (T. F.), Oxford War Primers. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. 189. (Price, \$1.25.)

The first chapter is devoted to a general outline of the underlying principles in injuries in and about joints. The value of bandaging and massage and the various movements, voluntary, involuntary, and passive, are considered; also the relation of pain and stiffness to the diagnosis and treatment. A series of rules helpful in deciding whether a joint should be moved or not is given, and the various causes of stiffness and limitation of movement are enumerated. An interesting chapter on the contraction of scar tissue and compound injuries about joints follows with a description of ischemic paralysis, its diagnosis, and treatment. Dislocations, fractures, and injuries of the joints of the extremities and of the spinal column are considered fully and in detail, their diagnosis and treatment receiving special attention. Throughout the text there are numerous valuable practical hints, and a sufficient number of illustrations help to make the little book more attractive and useful.

The Stretcher Bearer. A Companion to the R. A. M. C. Training Book, Illustrating the Stretcher Bearer Drill and the Handling and Carrying of Wounded. By GEORGES M. DUPUY, M. D. Stretcher-Bearer Ambulance Section of C (Norwood) Co., Lambeth Battalion V. T. C. Oxford Medical Publications. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. xi+138. (Price, \$1.)

This little volume consists of a series of pictures illustrating the various maneuvers with the stretcher. The carrying of the stretcher to the injured, the placing of the injured on the stretcher, and the crossing of trenches, etc., are shown in detail. How the work is done when there are only two or three stretcher bearers in place of four is also shown. The transfer of the patient to the ambulance and the care of the wounded, showing the various bandages used for different parts of the body; splints for fractures, and the carrying of the wounded without the aid of the stretcher by one or two men; and a carefully illustrated description of both Schaefer's and Sylvester's methods of artificial respiration complete the volume.

Speaking of Operations. By IRVIN S. COBB, Author of Back Home, Europe Revised, etc. Illustrations by TONY SARG. New York: George H. Doran Company, 1915. Pp. 64. (Price, 50 cents.)

To those immediately concerned in a laparotomy, that is the patient and the surgeon, the operation is a serious matter. One patient at least, however, seems to have discovered various humorous aspects of the operation and has made a breezy little booklet of his experiences, before, during, and after an operation for the removal of the appendix. The description given of a popular surgeon's office methods is both accurate and amusing. The illustrations are excellent.

Transactions of the American Otological Society. Forty-eighth Annual Meeting, Clifton Hotel, Niagara Falls, Ontario, Canada, June 3 and 4, 1915. Volume XIII. Part III. New Bedford, Mass.: Mercury Publishing Company, 1915. Pp. 1+106+13.

The volume at hand contains the names of the members of the American Otological Society, and the minutes and the scientific program of the forty-eighth annual meeting. The papers read at this meeting seem to have been unusually interesting and instructive. The subject of sinus thrombosis, presented by Day, was freely discussed. Papers on the various affections involving the labyrinth by Hubbard, Shambaugh, and Wilson, are worthy of note. The work by Randall and Jones on the ear tests of Barany in locating cerebellar and other encephalic lesions, is commendable and should encourage further study in this comparatively new field. Methyl and ethyl chloride with ethyl bromide as an anesthetic for short operations or preliminary to the administration of ether was strongly recommended in a paper by Hubert. The numerous contributions added further interest to the program.

Interclinical Notes.

Dr. William Alderson, of the British Royal Army Medical Corps, writes in *Leslie's* for January 13th, of *The Silent Death*, i. e., of the mortality through asphyxiating gases. When these were first used, less than a score out of one lot of 528 men attacked, escaped with their lives. Vivid descriptions are given by personal sufferers from the gases, who, says the doctor, were "like fish on land." The latest delightful invention is the "weeping shell," which is thus described: "It is a lightly cased shell, fired under a reduced charge and containing a strong solution of a liquid similar to ammonia or vitriol. Its effect is just the same as if liquid ammonia of full strength were dashed into a person's eyes. The shell is generally timed to break about ten feet above and slightly in advance of the enemy's trench or attacking force. As the liquid sprays downward it burns any portion of the body it touches and if received in the eyes causes total blindness with most agonizing pain; if in the lungs it sears them out and quickly causes death, and if on other portions of the body eats its way to the bone. . . . As the chaplain of one of the regiments almost entirely annihilated at Ypres last May said, with tears rolling down his cheeks as he was forced to watch his 'boys' dying by scores on the Ypres-Poperinghe road from the effects of gas: 'War! Glorious war! Not one of these men even saw an enemy; they had no chance to fight man to man, but were killed like poisoned rats in a trap. I am a Christian and try to live up to my creed, but I cannot help but believe that there must be a special hell awaiting the man responsible for the use of this terrible weapon.'"

* * *

Commerce and Finance for January 5, 1916, publishes a letter from a lady who is serving in the American Ambulance Hospital of Paris; it says, in part:

"The situation here is one hard to explain. I never have seen anything or any time when the mourning was as universal as it is here. Every other woman you meet on the street is in mourning, having either lost their loved ones in the Marne or at Champagne.

We have between five and six hundred patients and the majority were in the battle of Champagne which must have been a terrible experience. The majority of the men are under thirty-five.

The hand grenade has done more to leave its mark than any other weapon. Our patients are mostly face cases. The wounds will leave the victims horribly disfigured. Many have lost their sight.

Doctor Hayes, the best surgical dentist in Paris and an American, has done some wonderful work in transplanting bone from the leg or arm and building up the jaw torn away by shrapnel and German bullets. Then, when this has healed, he fits in a frame of teeth which are wired to the jaw and serves as well and look as well as their natural teeth would.

The general spirit throughout the hospital is one of charity and kindness. A great deal of credit should be extended to the French and American women living here who come day after day and give their service. In a great many cases they are as capable as trained nurses."

* * *

The following amusing but instructive letter from a physician motorist appears in *Leslie's* for January 6th:

"I had a call up the Yahk Valley (N. W. Montana) where the road descends sharply 300 to 400 feet down a very steep grade; moreover the road is very rough and very narrow, and for some miles affords no room to turn. I was taken out in a car from the local garage. We went there all right—no trouble at all outward bound.

Facilis descensus Averni
Sed revocare gradum
Hic labor, hoc opus 'erat'

That was the rub.

The tank was about half empty on the return journey and the fuel would not feed forward to the carburetor owing to the very steep grade. By backing three or four miles we might have turned around and 'backed up,' but night was coming on and we hadn't time. The garage man confessed himself beaten. We were at least seven miles from a team of horses.

From the garage man's point of view we were hopelessly

and helplessly stuck. He tried running up the hill, but it was far too long and too steep to promise success.

I got out my hypodermic outfit and a piece of the tubing from my stethoscope and I stuck the needle into the little vent airhole in the filler plug. Then I took the piston out of the syringe altogether and fitted the end of the rubber tubing on the syringe. Then, holding the needle of the hypodermic firmly in the hole, I started blowing. As soon as the gasoline reached the carburetor that car took the hill like a mad thing. When I stopped for want of breath the car took a rest also. The driver got to shouting, "Keep it up, keep it up," I took my lips away from the tubing long enough to tell him to 'go to —, who's doing this,' and then continued blowing again.

But for that contraption and the good guesses of a think pan behind it we would have been there yet.

All such cars ought to have some contrivance to make the gasoline feed forward in such cases when the tank runs low. This pointer may prove useful to others.

P. S. By the way, I got no fee from that case. That's probably what made me mad enough to start blowing the car home.

R. W. A."

* * *

A posthumous story of Siwash College by George Fitch will fill readers of the January, 1916, issue of the *Red Book Magazine* with mingled feelings of amusement and regret. Too Many Crooks, by Opie Read, is actually an amusing murder mystery, into which a physician makes a very short intrusion. Philo Gubb, the now celebrated correspondence school detective, deals with a Carnival of Crime, which shows how hard is the way of the reformer when confronted with clever malefactors. James Oliver Curwood, in a serial story entitled *The Grizzly*, again displays his remarkable talent for enlisting sympathy for a lower animal when it is brought to battle against man. The Thirteenth Commandment, by our old friend, Rupert Hughes, is quite up to his standard, and what more need we say?

Meetings of Local Medical Societies.

MONDAY, February 7th.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, February 8th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Federation of the Medical Economic Leagues of New York; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society; Onondaga Medical Society.

WEDNESDAY, February 9th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery.

THURSDAY, February 10th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Cayuga County Medical Society.

FRIDAY, February 11th.—New York Academy of Medicine (Section in Otolaryngology); Society of Ex-Interns of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York; Society of Alumni of St. Luke's Hospital.

SATURDAY, February 12th.—New York Association of the Medical Reserve Corps of the United States Army.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the fourteen days ending January 26, 1916:

Blue, Rupert, Surgeon General. Reappointed by the President and confirmed by the Senate as surgeon general of the Public Health Service. **Carter, H. R.**, Assistant Surgeon General. Directed to proceed to Washington, D. C., January 24, 26, and 29, 1916, to deliver lectures on yellow fever and malaria before the student class at the Hygienic Laboratory. **Clark, T.**, Surgeon. Detailed to present an address on school sanitation at a meeting of the Conference of Charities and Correction of Maryland, at Annapolis, Md., January 25, 1916; also detailed to attend a conference on mental hygiene to be held at Indianapolis, Ind., February 4, 1916, and to attend a meeting of the Indiana Sanitary and Water Supply Association at the same city, February 4-5, 1916. **Ernst, Edward J.**, Assistant Surgeon. Continued on duty at the Marine Hospital, San Francisco, Cal. **Fauntleroy, C. M.**, Passed Assistant Surgeon. Reassigned to duty at Honolulu, Hawaii, effective January 3, 1916. **Freeman, A. W.**, Epidemiologist. Detailed to attend a meeting of the Nebraska Public Health Association, at Omaha, January 25-26, 1916. **Frost, W. H.**, Passed Assistant Surgeon. Directed to report at the Bureau for conference in regard to the investigations of the pollution of streams. **Gorman, Peter J.**, Assistant Surgeon. Continued on duty at the Marine Hospital, Chicago, Ill. **Harrub, Calvin N.**, Sanitary Engineer. Ordered to proceed to Washington, D. C., and report at the Hygienic Laboratory for duty in studies of coastal waters. **Hommon, H. B.**, Sanitary Engineer. Detailed to attend the meetings of the Indiana Sanitary and Water Supply Association and the Indiana Engineering Society, at Indianapolis, Ind., February 3-5, 1916. **Kerr, J. W.**, Assistant Surgeon General. Directed to represent the Service and act as chairman at the conference of State Health Authorities, to be held in Salt Lake City, Utah, February 2, 1916; also to stop en route at Chicago, Ill., and represent the Service at meetings to be held by the Councils on Medical Education and on Health and Public Instruction of the American Medical Association, February 7-8, 1916. **Mullan, E. H.**, Passed Assistant Surgeon. Directed to report at the Bureau for duty on board of commissioned officers to examine applicants for appointment as assistant surgeons. **Pierce, C. C.**, Senior Surgeon. Directed to make headquarters at Laredo, Texas, and to take charge of operations for the prevention of the introduction of typhus fever from Mexico. **Rucker, W. C.**, Assistant Surgeon General. Detailed to represent the Service and act as secretary at the conference of State Health Authorities, to be held in Salt Lake City, Utah, February 2, 1916; also to stop en route at Chicago, Ill., and attend the meetings of the Federation of State Medical Boards and the Association of American Medical Colleges, February 7-8, 1916. **Sayers, R. R.**, Assistant Surgeon. Relieved from duty on coast guard cutter *Seneca*, and ordered to report at the Marine Hospital, Stapleton, N. Y. **Schereschewsky, J. W.**, Surgeon. Detailed to attend, in connection with investigations of industrial hygiene, a meeting of the National Safety Council, at Chicago, Ill., January 24, 1916. **Slaughter, W. H.**, Assistant Surgeon. Granted two days' leave of absence on account of sickness, December 11-12, 1915. **Spencer, R. R.**, Assistant Surgeon. Directed to proceed to such points as may be necessary for the investigation of the sanitary condition of the Great Lakes. **Stiles, C. W.**, Professor. Detailed to attend at Indianapolis, Ind., the meeting of the Indianapolis Medical Society, February 1, 1916, and the Indiana Sanitary and Water Supply Association, February 3-5, 1916. **Stimpson, W. G.**, Assistant Surgeon General. Detailed as chairman of a board of commissioned medical officers convened at the Bureau, January 24, 1916, for the examination of applicants for appointment as Assistant Surgeon, vice Assistant Surgeon General W. C. Rucker.

sick. **Trotter, F. E.**, Surgeon. Reassigned to duty at Honolulu, Hawaii, effective February 19, 1916. **Warren, B. S.**, Surgeon. Granted one day's leave of absence, January 14, 1916. **Watkins, J. A.**, Passed Assistant Surgeon. Directed to proceed to Washington, D. C., for conference, regarding studies of the steel industry. **Weisman, Charles**, Sanitary Chemist. Relieved from further duty in New York City, and ordered to report to the officer in charge of industrial investigations, Pittsburgh, Pa. **Weldon, L. O.**, Assistant Surgeon. Granted five days' leave of absence on account of sickness, from January 7, 1916. **Wildman, H. V., Jr.**, Assistant Surgeon. Relieved from duty at the Marine Hospital, Stapleton, N. Y., and ordered to report to the commanding officer of the coast guard cutter *Seneca*. **Wynne, R. E.**, Assistant Surgeon. Granted one day's leave of absence on account of sickness, January 8, 1916.

Appointments.

Dr. Edward C. Ernst and Dr. Peter J. Gorman commissioned as assistant surgeons.

Promotions.

Assistant Surgeons Robert H. Hetterick and John A. Watkins commissioned and promoted to the grade of passed assistant surgeons.

Boards Convened.

Boards of commissioned medical officers convened for the examination of applicants for appointment as assistant surgeons, January 24, 1916, as follows: Marine Hospital, Chicago: Detail for the board, Surgeon J. O. Cobb, chairman; Assistant Surgeon R. R. Spencer, recorder; Marine Hospital, New Orleans, La.: Detail for the board, Surgeon R. H. von Ezzdorf, chairman; Assistant Surgeon S. L. Christian, recorder; Marine Hospital, St. Louis, Mo.: Detail for the board, Surgeon M. J. White, chairman; Assistant Surgeon H. C. Yarbrough, recorder.

Board of medical officers convened for the reexamination of an alien residing near Tacoma, Washington. Detail for the board, Surgeon B. J. Lloyd, chairman; Assistant Surgeon D. S. Baughman, member; Acting Assistant Surgeon F. R. Underwood or F. J. Schug, recorder.

Coast Guard retiring boards convened for the examination of certain members of that Service, who may be directed to present themselves before the board; boards to convene at call of the President, as follows: Marine Hospital, Detroit, Michigan. Senior Surgeon H. W. Austin and Surgeon H. W. Wickes, members. Marine Hospital, Buffalo, N. Y. Surgeon C. H. Gardner and Acting Assistant Surgeon H. Sichertman, members. Marine Hospital, Chelsea, Mass. Surgeon B. W. Brown and Assistant Surgeon O. H. Cox, members. Marine Hospital, Baltimore, Md. Surgeon C. W. Vogel and Assistant Surgeon R. L. DeSaussure, members. Marine Hospital, New Orleans, La. Surgeon R. H. von Ezzdorf and Assistant Surgeon S. L. Christian, members.

United States Army Intelligence:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the week ending January 29, 1917.

Ashford, Bailey K., Major, Medical Corps. Left New York City for Rio de Janeiro, Brazil, on the *Voltaire*, address until about April 15th, care of Ambassador of the United States, Rio de Janeiro, Brazil. **Brechemin, Louis**, Colonel, Medical Corps. Granted three months and twenty-five days' leave of absence, to take effect February 1, 1916. **Fox, James S.**, Captain, Medical Corps. Reports departure from Fort Preble, Maine, on two months' leave of absence, address New York Post-Graduate Medical School and Hospital, New York. **Freeman, Paul L.**, Captain, Medical Corps. Left Walter Reed General Hospital, Takoma Park, D. C., and ordered to report to the commandant of the Army Medical School, Washington, D. C. **Miller, Reuben B.**, Major, Medical Corps. Will sail for the Philippine Islands on the transport leaving San Francisco, Cal., on or about July 5, 1916. **Newton, Ralph W.**, First Lieutenant, Medical Reserve Corps. Granted four months' leave of absence to take effect on the arrival at Fort George Wright, Washington, of the successor to Major James S. Wilson, Medical Corps.

Births, Marriages, and Deaths.

Married.

Ambler-Elgar.—In Ford City, Pa., on Tuesday, January 18th, Dr. Jesse E. Ambler and Miss Helen Marguerite Elger. **Burrell-Dodge.**—In Medford, Mass., on Tuesday, December 28th, Dr. Harry Cutter Burrell and Mrs. Emma Lottie Dodge. **Dowd-Comerford.**—In Chicago, Ill., on Friday, January 14th, Dr. Richard E. Dowd, of Kenilworth, Utah, and Miss Honor D. Comerford. **Hankey-Walker.**—In Kittanning, Pa., on Wednesday, January 19th, Dr. E. H. Hankey, of Pittsburgh, and Miss Mary E. Walker. **Hanson-Burris.**—In Butte, Mont., on Wednesday, January 12th, Dr. Ralph Hanson, of Spokane, Wash., and Miss Kathryn Burris. **Regli-Kelly.**—In Oakland, Cal., on Wednesday, January 19th, Dr. Joseph Regli, of San Jose, and Miss Anna Rebecca Kelly. **Varno-Woodhouse.**—In Montreal, Canada, on Monday, January 10th, Dr. Henry G. Varno, of Thompsonville, Conn., and Miss Jessie Woodhouse.

Died.

Brashear.—In Beallsville, Pa., on Sunday, January 23d, Dr. H. W. Brashear, aged seventy-one years. **Bucher.**—In Richmond, Va., on Sunday, January 23d, Dr. William H. Bucher, aged eighty-two years. **Carlin.**—In Denver, Colo., on Sunday, January 16th, Dr. Patrick V. Carlin, aged sixty-one years. **Collins.**—In Washington, D. C., on Sunday, January 16th, Dr. Edward J. Collins, aged sixty-seven years. **Cornell.**—In Knoxville, Iowa, on Wednesday, January 19th, Dr. Corwin W. Cornell, aged sixty-six years. **Drake.**—In Boston, Mass., on Friday, January 21st, Dr. Arathena B. Drake, aged eighty-seven years. **Durrett.**—In Fairmont, W. Va., on Wednesday, January 19th, Dr. James J. Durrett, aged forty-four years. **Ensminger.**—In Farmington, W. Va., on Friday, January 14th, Dr. Jacob E. Ensminger, aged seventy-three years. **Eveleth.**—In Gloucester, Mass., on Monday, January 24th, Dr. Edward S. Eveleth, aged seventy-five years. **Gibbs.**—In Washington, D. C., on Saturday, January 15th, Dr. Benjamin F. Gibbs, aged fifty-seven years. **Goodwin.**—In Whitman, Mass., on Monday, January 24th, Dr. Tirzah E. Goodwin, aged sixty-four years. **Gray.**—In Pleasant Garden, N. C., on Friday, January 14th, Dr. Clayborn Gray, aged eighty-six years. **Harvey.**—In Griggsville, Ill., on Monday, January 17th, Dr. Luther J. Harvey, aged sixty-five years. **Hamburg.**—In New York, on Friday, January 21st, Dr. David J. Hamburg. **Hasson.**—In Peoria, Ill., on Sunday, January 16th, Dr. Edward Hasson, aged thirty-six years. **Hufnagel.**—In Washington, D. C., on Sunday, January 16th, Dr. Henry M. Hufnagel. **Jewett.**—In Providence, R. I., on Tuesday, January 18th, Dr. Henry M. Jewett, aged fifty-six years. **Langdon.**—In Nutley, N. J., on Saturday, January 22d, Dr. Royal Langdon, aged forty-nine years. **McCreight.**—In Philadelphia, on Saturday, January 22d, Dr. Charles McCreight, aged forty-two years. **Malone.**—In Jamaica Plain, Mass., on Monday, January 10th, Dr. John Malone, aged fifty-three years. **Nelson.**—In Grove City, Pa., on Tuesday, January 18th, Dr. Ernest F. Nelson, aged forty-six years. **Neumann.**—In Philadelphia, on Tuesday, January 18th, Dr. Mary Neumann, aged fifty-nine years. **Noble.**—In Detroit, Mich., on Thursday, January 20th, Dr. Alfred I. Noble, of Kalamazoo, aged fifty-five years. **Parker.**—In Cave City, Ky., on Sunday, January 16th, Dr. George T. Parker, aged thirty-four years. **Peeples.**—In Wrightsdsale, Pa., on Monday, January 24th, Dr. J. A. Peeples, aged eighty years. **Reynolds.**—In Kennett Square, Pa., on Saturday, January 22d, Dr. Conrad S. Reynolds, aged fifty-nine years. **Shaw.**—In Philadelphia, on Friday, January 21st, Dr. John Harvey Shaw, aged thirty-two years. **Smith.**—In Texarkana, Texas, on Tuesday, January 18th, Dr. Charles A. Smith, aged sixty years. **Smith.**—In Lock Haven, Pa., on Sunday, January 23d, Dr. Francis S. Smith, aged eighty-six years. **Steele.**—In Detroit, Mich., on Sunday, January 16th, Dr. Charles H. Steele, aged sixty-five years. **Stockdale.**—In Rural Valley, Pa., on Sunday, January 23d, Dr. Thomas Franklin Stockdale, aged sixty-three years. **Strickland.**—In Maclelland, Fla., on Saturday, January 14th, Dr. John W. Strickland, aged fifty-one years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 7.

NEW YORK, FEBRUARY 12, 1916.

WHOLE No. 1941.

Original Communications.

RECENT DEVELOPMENTS IN THE TREATMENT OF LEPROSY.*

By VICTOR G. HEISER, M. D.,

New York,

Director for the East, International Health Commission, Rockefeller Foundation.

In view of the unsatisfactory experience in the treatment of leprosy for so many centuries, one naturally approaches the subject with considerable hesitancy. The long list of drugs and treatments which have been used, are the best evidence that no satisfactory remedy has been found. Not only nearly every imaginable drug, but in addition, poisons and venoms, vaccines, serums, x ray, diathermy, and almost every other conceivable means have been employed with the hope of discovering a cure. The question of treatment is further complicated by the fact, that spontaneous and apparent cures take place from time to time, also whenever lepers are placed in more hygienic surroundings, marked improvement in the disease frequently takes place. In view of this history of leprosy and our experience in the Philippines, we have naturally been very loath to report any leper as cured, and we do so now only with considerable reserve.

It is irresponsible to report a cure in a chronic, slow, intractable malady such as leprosy, without taking into consideration the foregoing important factors. In our experience in the Philippines, at one time the x ray seemed to warrant the belief that a cure for the disease had been found. Some cases remained negative, both microscopically and clinically, for a period of about a year, but later all relapsed. Nastin did not prove of value, after repeated trials, even when used over long periods of time. Salvarsan has been reported upon favorably. When it is remembered, however, that over fifty per cent. of our cases of leprosy have given positive Wassermann reactions, it will be apparent why improvement may occur in leper patients when salvarsan is administered. Many of our lepers also suffer with frambesia or yaws. The Wassermann reaction is positive in this disease, and it yields readily to salvarsan. Furthermore, there is much reason to believe that frambesia occurs in three stages, like syphilis, and that in the third stage the lesions and deformities are often mistaken for those of leprosy. In view of the foregoing, it would appear doubtful whether salvarsan is of any value in

uncomplicated leprosy. Vaccines have apparently caused improvement in some cases. But in our experience in the Philippines, they have not stood the test of time. In brief, the limits of this paper make it impossible even to attempt to enumerate all the methods which have been employed in the treatment of leprosy.

But of all the means recorded, chaulmoogra oil is constantly mentioned in the history of the disease as being of value. Dyer's treatment was tried in Manila with considerable success, but on account of the great nausea produced when the oil was taken by mouth, few patients could be induced to follow up the treatment for more than a few months. After considerable experience we estimated that about one patient in 300 could take the treatment continuously for the required period of two years, on account of the extreme nausea.

For a time it appeared that the use of antileprol, which is said to be ordinary chaulmoogra oil from which the emetic principle has been extracted, might solve the problem, but the results were unsatisfactory. In order to overcome the nausea difficulty, various preparations of the oil were tried. Emulsions of different kinds were prepared; capsules were coated with various substances with the idea of having them pass through the stomach unaltered to be digested in the small intestine; the oil administered in the form of enemas was tried; but none of the foregoing means was successful. Other drawbacks appear to have been the prolonged period required to produce noticeable effects, with the result that patients became discouraged and failed to continue the treatment.

Chaulmoogra oil. In recent years there has been much discussion in literature with regard to various preparations of chaulmoogra oil found on the market, and it is quite possible that the variable results, which have been reported when it was used by mouth in the treatment of leprosy, were due to the different kind of oils used. However, when it is given hypodermically, in the mixture with camphor and resorcin, so far as we have been able to observe, there has been no great difference between the several oils. True chaulmoogra oil is a product of the seeds of *Taraktogenos kurzii*. Some authors state the oil extracted from *Gynocardia odorata* ought to be called false chaulmoogra oil. In the Philippines we have been using both the foregoing so called false and genuine oils, and when used in our hypodermic mixture there is apparently no difference in therapeutic effect. There is, however, not sufficient experience to speak definitely upon this point. Dyer reported the crude oil to be more efficacious than the refined oil, and after actual ex-

*Read before the Medical Association of the Greater City of New York, January 17, 1916.

periment at the San Lazaro Hospital in Manila, we came to the same conclusion.

DIAGNOSIS.

It is not the purpose of this paper to discuss the various clinical features of leprosy, nor to dwell upon the different diseases that have prob-



FIG. 1.—Case 1, February 21, 1912.

ably been mistaken for leprosy in Biblical and other literature. The diagnosis in our cases depended upon definite clinical entities, which are now recognized by most authorities as being pathognomonic of leprosy, and in every case these clinical symptoms were confirmed by demonstrating the leprosy bacilli of Hansen, in material taken from the lesions.

It may not be out of place, however, briefly to call attention to the symptoms upon which we have come to place much reliance in the Philippine Islands in making a diagnosis. In addition to the macules, tubercular swellings, anesthesia, characteristic ulcerations and deformities, a description of which may be obtained in textbooks, we find the earliest and most constant symptom observed is a nasal ulcer, situated on the septum at the junction of the cartilaginous and bony portions. For instance, at Culion, this ulcer was noted in 799 out of 1,200 cases, or seventy-five per cent. Even when an actual ulcer cannot be found, the terminal results of an ulcer on the septum may be demonstrated, and careful scarifications made at the junction of the scar tissue of the former ulcer with the healthy surrounding tissue, often reveal leprosy bacilli. My experience in the examination of more than 10,000 lepers in Louisiana, Hawaii, the Philippines, Australia, Federated Malay States, Straits Settlements, India, Ceylon, Egypt, and other countries, tends to confirm the importance and constancy of this sign. A perusal of the literature of leprosy will show that certain writers have attacked its con-

stancy, but a careful reading of such literature will show that these writers have made the mistake of assuming that nasal secretions were meant. This is an error. So far as I am concerned, I never referred to nasal secretions. To find the leprosy bacilli depends upon a scarification made with an ordinary scalpel or other instrument, at the junction of the ulcer with the healthy tissue, and a microscopical examination of the blood stained serum which results from such a scarification.

Hypodermic treatment. A review of the literature shows that the oil has been used hypodermically but in our experience it usually failed to be absorbed after it had been injected. In order to overcome this difficulty, it was suggested that chaulmoogra oil be combined with ether or camphor. Our experience showed that camphor was the most satisfactory, and with its use the absorption difficulty disappeared. It then occurred to Doctor Mercado, the house physician at the San Lazaro Leper Hospital, to combine the camphor with the resorcin prescription of Unna. This mixture was prepared as follows:-

R Chaulmoogra oil, 60 c. c.;
Camphorated oil, 60 c. c.;
Resorcin, 4 grams.

Mix and dissolve with the aid of heat on a water bath and then filter.

In order not to lengthen this paper unduly, a typical case from each of two series is briefly described, with photographs.

CASE I. P. S., aged thirty-five years, male, married, Filipino; occupation, fisherman. Admitted to the San



FIG. 2.—Case 1, August 19, 1912.

Lazaro Hospital, February 12, 1912. Became a member of the first series, February 21, 1912. Family history: Mother died of pulmonary tuberculosis thirteen years ago. Father living and well. Had one child aged seven years, one aged three years, one brother, and three sisters, all living and well. Personal history: Had eaten rice and fish three times daily ever since he could remember, and in addition he

had had the average diet; meat usually once a week. Did not remember having had any other disease.

Present illness began two years prior to admission with the appearance of spots on his nose, which later turned into a lump. After this, similar spots appeared on the forehead and cheek. There was considerable numbness along the external borders of the little finger of the left hand. He also complained of loss of appetite. Present condition: At the time treatment was begun, in February, 1912, there were three distinct, hard, shiny, round, reddish macules on the forehead. Over both molar bones there were masses beneath the skin. The upper edge of the right ear was reddish, hard, and shiny. On the apex of the left elbow there was a small, red macule. The little finger of the left hand was reddish and hypertrophied. The *alae nasi* were indurated and black in appearance. Contraction of fingers of left hand, most marked in the little finger. Loss of sensation on outer border of left hand.

Diagnosis: Hypertrophic leprosy, microscopically confirmed by the Bureau of Science.

We began treatment by injecting into the buttocks two c. c. of the chaulmoogra oil mixture every eight days. The dose was gradually increased until on April 19, 1912, he was given five c. c. every three days. On February 21, 1913, the dose was gradually reduced to two c. c. On October 13th, the dose was gradually increased to ten c. c., and since February 14, 1914, he receives five c. c. and ten c. c. on alternate weeks. A portion of the dose is frequently injected into the infiltrated lesions.

Description of lesions during treatment. After some months, gradual improvement set in, and by October, 1913, the macules began to disappear and the lesions were no longer raised above the surface. The general condition improved. On April 15, 1914,

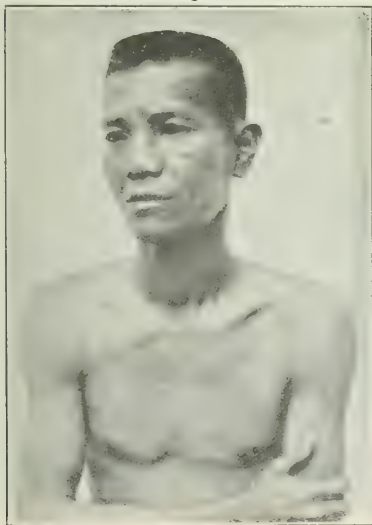


FIG. 3.—Case 1, April 15, 1914.

all tubercular infiltration had practically disappeared, including the large tubercular mass in the nose and forehead. The contraction of the fingers of the left hand had disappeared. Tested with a needle, the skin of the left hand was hypersensitive. He ate and slept well, and there was abun-

dant evidence of marked improvement. Figs. 1, 2, and 3 show the stages of improvement.

The record of the microscopical examinations is as follows:

Date	By whom	Result
February 12, 1912.....	Dr. Mercader and Dr. Gaff	Positive
December 4, 1912.....	Bureau of Science	Positive
May 19, 1913.....	Bureau of Science	Positive
May 27, 1913.....	Bureau of Science	Positive
April 15, 16, and 25, 1914.	Bureau of Science	Negative

Result: Leprous deposits almost completely absorbed and outward signs of leprosy almost disappeared.



FIG. 4.—Case II, May, 1913.

CASE II (belongs to the second series). S. J., of Paco, Manila, aged thirty-three years, female, Filipina; occupation, cigar maker. Admitted to the San Lazaro Hospital, September 30, 1913. Family history: No hereditary records of leprosy. Present illness: began four years ago with reddish spots on both cheeks and on chin, nose, and lower eyelids. Later reddish spots appeared on the upper extremities, right trunk, and fingers. Present condition: When treatment began the left eye was partially closed by leprosy infiltrations. There were lepromata on the chin. There were many nodules over the chest, face, and arms. Very extensive lesions over the right elbow joint resembling psoriasis. Many of the macules were anesthetic.

Diagnosis: Nodular or hypertrophic leprosy, with macules.

Treatment was begun May, 1913. Injections of the standard formula, beginning with one c. c., were given every three days until a maximum dose of ten c. c. was reached. On April 15, 1914, the blood was examined, and disintegrated bacilli were found. There was considerable clinical improvement. By February, 1915, leprosy bacilli could not be demonstrated after repeated examinations. Figs. 4 and 5 show the case before and after treatment.

DEVELOPMENT OF THE TREATMENT.

The treatment of leprosy by the hypodermic use of a chaulmoogra oil mixture, as described in the United States *Public Health Reports* for October 16, 1914, is now being tried in the Straits Settlements, Federated Malay States, India, Hawaii, Ceylon, and in a number of institutions in the United



FIG. 5.—Case 11, October, 1914.

States. In all the countries in which the treatment has been used for more than a year, favorable reports have been received as to its efficacy.

It would seem likely, if the treatment was employed by many workers in countries in which leprosy prevails, further improvement might result. With the hope of stimulating and promoting further advancement in the treatment of leprosy, the International Health Commission has recently offered to compile the experiences which medical men in various parts of the world may submit.

DETAILS OF TREATMENT.

The injections are usually made at weekly intervals in ascending doses. The initial dose is one c. c., and this is increased to the point of tolerance. Much difference exists among the cases as to the amount of the mixture which the patients are able to take. In some cases a few c. c. produce marked reactions in the lesions, accompanied by fever and cardiac distress. Sometimes it is better to reduce the amount of the dose and inject at more frequent intervals. The object sought is to regulate the dose to prevent reactions of too violent a character. Quicker results also apparently are obtained when it is possible to inject the mixture into large leprous deposits, or to divide the dose by injecting it into

a number of smaller infiltrations. Attention is drawn to the fact that no strychnine was used. Many writers have regarded strychnine as an essential part of the chaulmoogra oil treatment. Saline purgatives are freely employed. Two per cent. hot sodium bicarbonate tub baths are prescribed every other day. Those who take prolonged baths regularly seem to improve more rapidly than those who do not.

RESULTS OBTAINED.

In the United States *Public Health Reports* for September 5, 1913, two cases; *ibidem*, January 2, 1914, two cases; and *ibidem*, October 16, 1914, one case, a total of five cases, were reported as apparently having been cured of leprosy and having remained cured for a period of over two years. Recent advices from Manila state that twenty-three more lepers have been discharged from the leper hospitals as cured. When I left the Philippines, in March, 1915, there were probably 200 other cases showing noticeable improvement. A statistical sum-



FIG. 6.—Case 11, February, 1915.

mary of the first series of nine cases gives the following results:

	Per cent.
Apparent cures	11.11
Apparent clinical recoveries	44.44
Showing marked improvement	33.33
Showing only slight evidence of improvement	11.11

In order to test the value of the treatment as to sex, and in the different forms of the disease, a series of forty cases were placed under treatment in April, 1914, but as it is our custom not to report results before a period of two years has elapsed, I can do no more here than state that when I last ex-

amined this series of cases, in February, 1915, many of them showed decided improvement, and the disease had been arrested in all cases, including those which we had begun to recognize as being of the rapidly progressive type. It may also be of interest to mention that the five patients, some of whom were reported cured as early as 1913, have remained well, and it has not been possible to demonstrate leprosy bacilli in the material taken from them.

CONCLUSIONS.

The present stage of the development of the treatment herein described does not warrant a claim that anything like a specific for leprosy has been found, but experience does show that chaulmoogra oil gives more consistently favorable results than any other treatment that has come to our attention, and holds out the hope that further improvement may be brought about. It produces apparent cures in some cases, causes great improvement in many others, and arrests the progress of the disease in almost every instance. The treatment is ap-



FIG. 7.—Case III, at the beginning of treatment.

parently equally efficacious in all forms of the disease; that is, the tubercular or hypertrophic, the anesthetic, and the mixed.

It is also important to remember, that there are other treatments for leprosy which may cause some improvement, and it not infrequently happens that when cases of leprosy are placed under better hygienic conditions and have hospital care, or for other reasons not understood, the disease is often arrested,

in a few instances improvement results, and apparent cures may take place without treatment.

Before further deductions are drawn, it seems well to await the results obtained by workers in

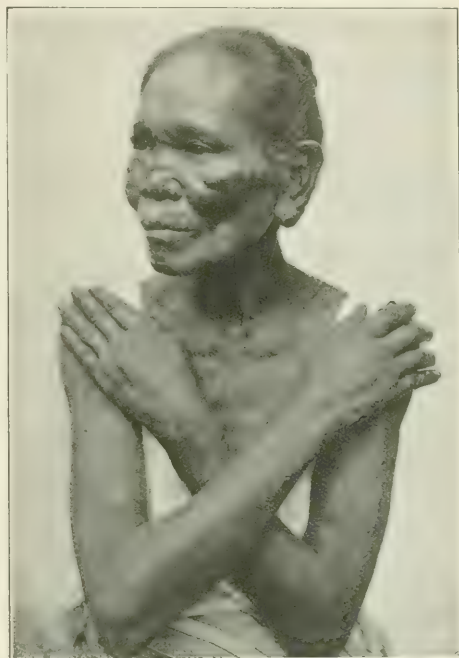


FIG. 8.—Case III, six months later.

leprosy in other parts of the world. In order to bring this about, steps are being taken by the International Health Commission to circulate details of the chaulmoogra oil treatment in all countries in which leprosy occurs, and it is hoped that the study of the records may point the way for further advancement in finding a complete cure for leprosy.

61 BROADWAY.

THE TREATMENT OF GRIPPE.

BY BEVERLEY ROBINSON, M. D.,
New York.

To any one who has taken care of many cases of grippe, anything in the way of a really efficient and harmless remedy should come as something for which to be grateful. In the following, I believe such a one is offered:

℞ *Ammonii salicylatis*, grs. iij;
Caffeine, gr. 14.

M. Fiat capsula No. 1.

M. Sig.: Two of these capsules should be taken by an adult, every two hours, for four or five doses, and then every three or four hours.

If the capsules cause slight nausea, which is rare, this may be neutralized by drinking a little imported vichy with each dose. Night and morning, a little carbolated petrolatum, 1.5 per cent., may be inserted

into the nostrils. A mouth wash and gargle of liquor alkalinus antisepticus,¹ well diluted with water, may be used with advantage, three or four times in twenty-four hours. If there are severe pains or fever, one half grain of phenacetin should be added to each capsule and the effects watched by a physician. When the capsules are taken without phenacetin, the patient does not require careful watching. He may take the capsules, which contain merely ammonium salicylate and caffeine, and attend to his daily work without interruption.

It is really remarkable the beneficial effects often produced by taking these capsules. I cannot commend their use too strongly. I am convinced that up to date they are the most useful remedy I have tried in the treatment of grippé. Hitherto, in epidemics of grippé, I have prescribed two grain quinine pills, four times in twenty-four hours, as a preventive remedy. Whenever the salicylate capsules are taken only four times in twenty-four hours during an attack, I think it advisable to prescribe two grains of quinine at each meal, as a tonic.

I have never tried the ammonium salicylate capsules as a preventive measure against attacks of grippé, but am disposed now to do so, as I believe they might be useful. Ammonium salicylate is more stimulating and less nauseating than the sodium salt. The caffeine is a good heart tonic and anti-neuralgic. All the salicylates have a pronounced antimicrobial action. This is shown most notably in the treatment of rheumatic fever.

Perhaps, in view of the latest medical opinion about the epidemic of acidosis in Massachusetts, and the possible relationship between it and influenza, the use of vichy water, or simply sodium bicarbonate added to the capsules, might prove additionally curative. In an editorial article in the *Boston Medical and Surgical Journal* for January 20, 1916, p. 101, entitled *Influenza, Pneumonia, and Acidosis*, the writer states: "The lesson of the present epidemic in Boston should be that if recurrence of similar visitations is to be prevented, there should be some method for the prompt isolation and treatment of the early cases, from which the later widespread distribution of sickness is derived."

A method of isolation in many instances, is absolutely impracticable, as frequently men and women must work, even though they are somewhat affected by grippé. Perhaps, in my treatment, I have found a real preventive of grippé. Future experience on the part of practitioners must prove or disprove it. Meanwhile, I am confident of one thing, to wit, that grippé is contagious, as measles is, even before the outbreak of manifest symptoms. The only way to ward it off, therefore, is to take the proper treatment before the disease has declared itself. Have I found such a remedy? I do not yet know. I sincerely hope I have—or at least, I trust I have given support to a combination of drugs, which have served me well, especially in the present epidemic. In one drug store in New York city, three thousand ammonium and caffeine capsules have been sold during the past few weeks (January 29, 1916), and, I believe, have been useful in most cases, when taken regularly. They have not cured magically—that I know. I also know that nothing will, so far as my

experience goes. To have at our command, however, a remedy which may lessen the number of cases of pneumonia complicating grippal attacks or following them, is a great thing. This, I am now inclined to believe, the capsules will accomplish.

Owing to the fact that "influenza pneumonia is more serious than lobar pneumonia, and various estimates place the mortality at from seventeen to fifty per cent.,"² it behooves us all to try to find the best warring drug, serum, or vaccine, to antagonize it successfully.

A FEW FINAL WORDS.

Of course, in the use of the capsules, brains must be used and the personal equation of the patient duly considered. Larger doses, continued frequently, for a longer time than I have stated, might perhaps be advantageously employed with many patients.

On the other hand, better results are often obtained by drugs in relatively small doses and not given too frequently, after the patient is well under their influence.

I find that a grippal condition will not infrequently hold a patient for two, three, or more weeks—and that such patients may notably improve during a few days and then have a relapse, which relapse is more or less serious according to different conditions, some of which are still problematical as to their effects. Therefore, it is wise not to overdo the matter of drugging in quantity, or frequency, at any one time, but allow wisely for the uncertainties and duration of the disease.

All that I wish is to point out an intelligent line of treatment of grippé at the present time and in the hope that some one of my colleagues, more fortunate than I, may discover something more efficacious; a sure preventive or a specific cure—supposing that the grippé attacks the patient before the sure preventive has been taken.

42 WEST THIRTY-SEVENTH STREET.

SO CALLED GRIPPE.*

A Bacteriological Study of Twenty Cases in the Recent Epidemic.

By J. B. RUCKER, JR., A. B., M. D.,
Philadelphia,

Director of Laboratories, Pennsylvania Department of Health.

Influenza, or *la grippe* as the French term it, is a highly infectious disease which spreads in epidemic form with great rapidity over vast areas of the earth's surface, following the routes of trade as rapidly as communication between one part and another is established. It has been known since the twelfth century, and first appeared in epidemic form in America in 1627, since which time this country has been visited by it epidemically twenty-two times. The most severe and the latest visitation occurred in the winter and spring of 1889 and 1890. It was pandemic over the whole world, originating in Central Asia and sweeping west over Europe and America and east over Russia, China, Japan, Australia, and even Africa.

Up to that time very little was known of its

¹F. T. Lusk, *Cole & McRae's Modern Medicine*, 1, 1913, pp. 47-48.
²Read before the Northern Medical Association of Philadelphia, January 28, 1916.

etiology, but then all the biologists of any note began to make researches, among whom was R. Pfeiffer, who, in 1892, discovered and described a short, thin Gram negative, nonmotile rod, three times as long as it was wide, found in the secretions from the noses and throats of those ill of the epidemic disease, and ascribed to it the role of causative agent. Other observers began to find it constantly in these cases, and one eminent scientist in our own city, who had worked on the problem all through that great epidemic, told me that in almost every case this small bacillus of Pfeiffer or influenza bacillus could be found.

Rabbits, guinea-pigs, and mice, when inoculated, failed to show the symptoms as presented in man, but died of a septicemia or intoxication. The only animal susceptible to experimental infection seems to be the monkey.

During the recent widespread epidemic of acute catarrhal disease of the upper respiratory tract and bronchi, with influenzalike pains in the head, back, and legs, accompanied by a considerable degree of prostration, attended by fever of about 103° F. for a day or two, including thousands of cases, and extending from the Atlantic seaboard to the Rocky Mountains and from the Great Lakes to the Gulf, attempts were made by many different laboratory workers in widely separated parts of the country to determine whether the bacillus of Pfeiffer stood in causal relation to this epidemic of catarrhal disease. So far, I have been unable to find that any of these workers has ascribed the cause to this organism, which was shown so positively to be a factor in the causation of the great pandemic of 1889 and 1890—not by Pfeiffer only, but by many scientific workers in this country as well as abroad.

Clinicians, who worked in and remember well that great scourge, say that the symptoms in this epidemic are not like those seen twenty-six years ago. In this epidemic, there have been few cases with intestinal symptoms; the headache is not so severe, the temperature not so high or of so many days' duration, and the degree of prostration is not nearly so great. These differences in the clinical aspects in this recent outbreak tend to show that the disease, although similar in many respects to true influenza, is not the same, and for that reason few workers if any have been able to isolate the influenza bacillus.

Mathers, of Chicago, in the *Journal A. M. A.* for January 1, 1916, gives a résumé of his findings in twenty-four cases in which he made careful bacteriological studies. In seventeen of the twenty-four cases, he found the predominating organism to be the hemolytic streptococcus. White semitranslucent colonies grew on blood agar plates, surrounded by a zone of hemolysis one to three mm. in diameter. These organisms when stained appear as small Gram positive micrococci, arranged in pairs and short chains.

Green-producing streptococci and pneumococci were found uniformly in all twenty-four cases. Four of the pneumococcus strains were studied biologically and three were found to correspond to the atypical group commonly present in the normal mouth. One exhibited all the characters of Streptococcus or Pneumococcus mucosus, and the patient

from whom it was isolated died of a complicating lobar pneumonia.

Mathers was unable to find *Bacterium influenzae* or *Micrococcus catarrhalis* in any of his cultures. He reasons that because pneumococci and green-producing streptococci are inhabitants of the normal mouth, and that hemolytic streptococci are found very rarely there, the presence of the latter in seventeen of twenty-four cases as the predominating organism, is suggestive of the fact that it is the etiologic factor in this current epidemic.

In the laboratory of the Pennsylvania Department of Health, at the suggestion of the commissioner, Dr. Samuel G. Dixon, I began, about the middle of last December, to investigate in a bacteriological way, swabbings of throats and bronchial secretions from patients with grippal symptoms as I could find suitable cases. The cases studied have numbered twenty in all to date, and only those were investigated which were of very recent onset. I regarded it as little short of useless to attempt isolations from swabbings or sputum from a patient who had been ill longer than four days. Consequently, about two weeks after the beginning of the investigation, the epidemic being even then on the wane, fresh cases became increasingly more difficult to find until now I can scarcely obtain one specimen a week.

In these twenty cases of acute catarrhal disease, so simulating la grippe that it has commonly been spoken of as such, I have found the influenza bacillus only twice, and in those only in stained smears made directly from the swabbings, but have not in a single instance, been able to isolate it. Plates of agar smeared over the surface with human blood were used as the isolating medium, but no colonies of the bacillus could ever be cajoled into growing upon them.

On the other hand, a small Gram positive biscuit shaped diplococcus was invariably found in the smears made directly from the swab on a glass slide and could be recovered with little difficulty from the colonies on blood smeared agar plates. These small diplococci grew as well on plain agar as on blood smeared agar. They appeared usually as diplococci with here and there a short chain of four elements, but never in longer chains. Sometimes these diplococci appeared to be lengthened at their rounded ends, assuming the shape of pneumococci. Occasionally they presented capsules with the Gram stain, which was the staining method invariably used.

In eight cases, Gram positive diplococci resembling type 2 of the pneumococcus were also seen in the smears made directly from the throat. Other organisms seen occasionally in the smears were the staphylococci and bacilli of the subtilis group, and in the two instances before mentioned, what appeared to be the influenza bacillus. The small Gram positive diplococci, which were found so constantly in smears and cultures, so far as I was able to observe, failed to produce any zone of hemolysis on blood agar plates.

The technic in making examinations was as follows: When the swab was obtained from an early case of grippe, a smear was made on a glass slide sterilized in a Bunsen flame, and when dried in the air was stained by Gram's method. Then the swab was rinsed well in a tube of sterile bouillon. A drop

or two of this bouillon suspension was spread over the surface of a blood smeared agar plate and the plate allowed to incubate at 37° C., for from twenty-four to forty-eight hours, depending upon the development of the colonies at the end of the shorter period of incubation.

Colonies were then fished and Gram stained, and tubes of bouillon were inoculated with each dissimilar one as shown by the Gram stain. Inulin serum-water medium was inoculated with each coccoid form found in the bouillon after twenty-four hours' incubation. One half c. c. of the bouillon culture from each dissimilar colony was injected subcutaneously into a white mouse; if this injection killed the animal, the pathogenicity was determined further by injecting one c. c. of this same culture under the skin of a rabbit, and further cultures were made from the heart's blood of the dead mouse.

The small Gram positive diplococci from three of these twenty cases coagulated inulin and those from all coagulated milk. In four cases capsules were observed around the diplococci. Typical pneumococci, forming capsules in serum medium, coagulation of inulin, and showing themselves in lancet shape, were isolated in Case v.

In two, Cases II and VII, the small diplococci caused the death of mice when 0.5 c. c. of a bouillon culture was inoculated subcutaneously; and the diplococcus was recovered from the heart's blood.

The diplococcus from Case II, when injected into a rabbit, caused great depression within twenty-four hours, manifested by ruffling of the hair and disinclination to move from the corner of the cage. Within forty-eight hours after inoculation this rabbit began to slobber at the mouth and a watery mucus exuded from the nose. The next day, his condition was unchanged, so that it was thought best to kill him and obtain a culture from his heart blood. This was done, but the culture thus obtained failed to produce the same symptoms in another rabbit.

This first rabbit on autopsy showed bronchopneumonia in the left lung. Smears made from the trachea just above its bifurcation showed these small Gram positive diplococci in pure culture. The lungs of the mouse injected with the same culture, presented the same picture.

The culture from the heart's blood of the mouse killed by the diplococcus from Case VII, when injected into a rabbit did not cause untoward effects.

Summing up the findings in these twenty cases of grippé, we have

- 8 containing pneumococcus, typical at least in morphology.
- 6 containing atypical *Pneumococcus* or *Streptococcus mucosus*.
- 20 or all containing the small Gram positive biscuit shaped diplococci.
- 2 the bacillus of Pfeiffer, in smear only.

If it were not for the fact that seventy-five per cent. of normal throats contain either typical or atypical forms of the pneumococcus, and in all or nearly all normal throats the small Gram positive diplococcus is found, we should say that this little diplococcus was the probable cause of the trouble in these twenty cases of disease of the respiratory tract, but seeing that these organisms are the normal inhabitants of the mouth, how are we to lay the

burden of the disease upon them? In this way: E. C. Rosenow in 1914, in a study of the mutations in the group of cocci under different conditions of growth, showed that a virulent pneumococcus from the throat could be changed into a hemolyzing streptococcus; a streptococcus from a rheumatic joint into a pneumococcus; *Streptococcus hemolyticus* from scarlet fever into harmless *Streptococcus viridans*; and into a pneumococcus; and all these mutations, if desired, could be reverted to their original type if grown on suitable media, or by animal inoculations, or by both.

Now, if under some unknown conditions the virulence of the ever present Gram positive diplococci become enhanced, or the resistance of the human organism becomes greatly lowered, or both, the natural combative forces of the tissues are overcome, the diplococci gain entrance to the lymph channels and blood stream, and a general bacteremia results, causing the symptom complex of the disease commonly known as grippé.

In only two of the twenty did these small Gram positive diplococci show pathogenicity in animals, and in only one case did the animal present symptoms simulating grippé as it appears in man; yet when the rabbit was perfectly well on inoculation, and within forty-eight hours began to slobber and to exhibit a thin mucous exudate escaping from the nostrils, and at autopsy the diplococcus was recovered from the heart's blood and trachea, I cannot but feel that it placed upon itself the stigma of being the etiological factor in the recent epidemic of so-called grippé. These few cases are only a small beginning and a great many more will have to be studied in order to determine if this diplococcus is really the cause. Complement fixation methods, using the diplococcus as antigen, seem to be the most promising to determine the question, inasmuch as the inoculation of laboratory animals is unsatisfactory.

2000 ARCH STREET.

COMMON ABDOMINAL CRISES.*

By MILTON R. BOOKMAN, M. D., F. A. C. S.,
New York.

Attending Surgeon, Leiden Hospital.

The object of this paper is to present a brief outline of the abdominal crises that occur most frequently, and to accentuate certain cardinal symptoms and signs with the methods of their elicitation and interpretation. In attempting this, the writer has endeavored to keep away from the almost stereotyped expressions of textbook form and to infuse a vein of personality into the topic to show how these cases construed themselves to him.

Pain as a guiding symptom is very important. Its description by the patient is variable, therefore each case must be judged separately, the physician being guided by the nervous stability or instability of the patient and not forgetting the wide range of variety in his powers of description. Pain in many instances has simmered down to a sense of discomfort after close questioning, so a safe rule to follow is not to examine a patient until every means is ex-

*Read at a meeting of the Bronx County Medical Society, December 15, 1915.

hausted to have him adequately describe the chronology and periodicity of the attack of pain, time of onset and greatest intensity, its site and radiation, and last and most important, its *character*.

Muscular rigidity is a variable expression. True rigidity is reflex and an act on the part of nature to protect an injured or diseased part from mechanical injury. It cannot be controlled by the patient, is present in the face of some hyperacute pathological condition, and once established, disappears only after the subsidence of the condition or its operative removal. Its constancy is of great diagnostic importance.

Muscular spasm, on the other hand, is a voluntary act on the part of the patient, tending toward the same end, i. e., protection from mechanical injury. This is also a variable condition, sometimes setting in at the approach of the palpating hand and disappearing when the attention of the patient is distracted; it is observed in practically all acute abdominal inflammations to a greater or less degree, and its diagnostic value has to be proportioned to the neurotic status of the individual. Rigidity and spasm may, and almost always do, coexist on opposite sides of the same abdomen, the latter overlapping and assisting the former in its protective function. Rigidity and spasm are often obscured by an excess of abdominal fat, and their seeming absence can easily lead one astray. Rigidity, therefore, is always boardlike and constant while spasm is inconstant and variable in its intensity, but may be detected by asking the patient to use the suspected group of muscles, for example, to sit up or roll over in bed; where rigidity is present, there is pain on the slightest attempt at exertion, while with spasm the pain is complained of only after the effort has been made or during the attempt.

The patient's statement as to the site of the pain and to a certain extent its radiation, is of the utmost importance and, needless to add, leading questions are undesirable. After the history has been satisfactorily obtained, the patient may then be examined. Our examination usually is begun with a close inspection, which, simple as it seems, is essential, for aside from looking for visible peristalsis, the presence or absence of abdominal flaring brings us a clue to the gravity of the condition.

In any acute inflammatory or traumatic condition within the abdomen, "abdominal breathing," so called, is invariably absent, as the motions of the diaphragm cause a displacement of the viscera, which in turn causes motion of the affected part; therefore this mode of respiration is inhibited or abolished. In conjunction with this, in severe intraperitoneal lesions there occurs a short catchy or mildly explosive expiratory effort, which is often accompanied by a more or less audible grunt very similar to that found in cases of pneumonia, although the pulmonic signs are lacking.

We have found that if the patient is asked to point out with the forefinger the site of the most intense pain, much useless prodding can be avoided and the sufferer will permit without fear a more detailed examination if this area is reserved for the final palpation. The most satisfactory method of palpation, we have found, is with the flat of one

hand on the abdomen aided by the fingers of the other superimposed on the first, which imparts all the force required even in deep manipulations; in this manner the tactile sense of the hand next to the skin is preserved to a finer degree than would be obtained if but one hand was used.

As before stated, the part indicated by the patient as being the site of the greatest pain should be examined last, therefore the rest of the abdomen may be examined for tenderness, muscular spasm or rigidity, and "masses"; the palpating hands gradually drawing closer to the affected area.

Gallstones usually occur in a woman "fair, fat, and forty" who belches gas; they are not uncommon, however, in men. The history as it is commonly obtained will be to the effect that, after a hearty meal, or during the night, the patient has been seized with a sharp pain in the epigastrium or in the right upper quadrant. This usually is attended by vomiting. This latter symptom keeps up even after the stomach is empty. The vomitus is often bile stained, and retching with an intense desire to vomit is almost pathognomonic of this condition and is most persistent. The patient may state that the pain radiates to the shoulder, but this symptom, so often met with in the textbooks, has never stood forth prominently in our experience. Jaundice is never present at the onset and only later if the calculus or calculi are lodged in the common duct. The patient is restless and is often found with the hands making pressure over the region of the pain or bending forward over the back of a chair. The pain will be described as a very severe colicky one, with occasional cessations when an intense soreness replaces the colic. Some distention may be present and abdominal breathing will be found to be inhibited or absent. The pulse is accelerated out of direct proportion to the temperature, which is rarely much above normal, and the respirations are increased with the pulse.

On examination we find the abdomen lax and yielding to the palpating hand, but over the site of the pain muscular spasm is present to a marked degree, especially if deep palpation is attempted. When the lower ribs at their flaring portions are suddenly compressed, either from side to side or from before backward, intense pain will be caused over the region where the calculus is supposed to be.

Tenderness is marked over the tip of the ninth rib when deep pressure is made with one or two fingers. If the examiner stands at the right side of the patient near her hips, and the thumb of the left hand is placed below the free border of the ribs and "rolled in" under them, some pain is caused by this manœuvre. If the hand is pushed into the loin at right angles to the skin, referred pain is often produced over the affected area. A stone impacted in the cystic duct may cause some distention of the gallbladder because of the accumulated mucus behind it and in this way may render the gallbladder more or less palpable.

In this condition if anything stands forth prominently, it is the fact that the intensity of the suffering is entirely out of proportion to the physical findings. Not all of the signs mentioned are present in a given case, but one or more of them are, and when correlated may often lead us to the correct diagnosis.

In acute cholecystitis the patient may have all the signs and symptoms of a stone, which often merge into the findings of a case of acute inflammation of the gallbladder; this is the rule rather than the exception.

The patient in this condition usually is content to rest quietly on her back and not roll about like the patient who is suffering from a simple stone. The vomiting and retching are not found to have such a prominent place in the category of symptoms as in the preceding condition, although they occur to a much more limited extent in the onset. The most prominent symptom is pain; this is continuous and not remittent and is of an inflammatory character.

When the inflammation is severe enough to involve the wall and peritoneal coat of the gallbladder, there may be and usually are adhesions to the surrounding hollow viscera and omentum, and distention and some obstipation are common associated signs. Tympanites and tenderness as a result are found in other parts of the abdomen over the distended coils; this, as a rule, rapidly disappears after enemata and allows of more detailed examination.

The physical signs are somewhat more defined than in stone and are naturally confined to the region of the gallbladder. Abdominal breathing in the upper half, above the umbilicus, is usually absent. Exquisite tenderness and rigidity are found on the right side over the upper part of the rectus muscle, at varying distances from the costal margin. A large posed liver will cause the maximum point of tenderness to be low down, as will be the case with a distant Riedel's lobe; in some cases, especially in very obese or very thin patients, the point of maximum tenderness will be much to the outer side, almost to a point near the anterior axillary line. The tenderness and rigidity in a patient with a severely inflamed gallbladder will cover quite an area and some pain will be elicited as low down as McBurney's point or low in the side and flank. A sign that we have recently described (1) may be found to be of some value in these cases; it is obtained by hooking the finger in the umbilicus and causing traction to be made downward in the direction of the pubis, which exerts traction on the round or suspensory ligament of the liver and causes a rotation of the liver bulk with resulting referred pain over the gallbladder region. This sign is present in a large proportion of cases.

In the subacute or chronic cases the gallbladder may be felt if the spasm is not so marked, but in the very acute type the rigidity is so marked as to preclude the possibility of feeling any definite mass. The temperature usually rises to about 101° or 103° F., and the pulse is raised in proportion.

Perforation of a gastric or duodenal ulcer is a condition that formerly was looked upon as a rarity, but now is known to be fairly common; it is a dramatic occurrence that takes place at unexpected moments, usually without warning.

The history, as obtained just after the perforation, as a rule runs like this:

The patient states that he felt perfectly well, when after a hearty meal he suddenly experienced a sharp stabbing pain in the epigastrium, severe enough to double him up. He wants to lie down and is content to remain so quietly with his knees drawn up. With

the onset of the pain, shock to a greater or less degree is noted, and sensations of faintness are complained of. The patient is found with a rapid thready pulse, shallow breathing, and cold clammy perspiration, and soon thereafter he vomits. There is no cramplike character to this pain, but it is of a constant unremitting, boring character.

The seat of the pain in these early stages is over the region of the epigastrium or a little to the right of it, and gradually extends downward along the right paracolic gutter to the region of McBurney's point, which the patient often states is the site of its maximum intensity. The reason for this is plain; when the ulcer perforates there is a sudden spurt of hyperacid gastric juice into the peritoneal cavity, and this jet of fluid continuing with each movement of the diaphragm, causes a violent peritoneal reaction, a chemical peritonitis in other words, so a pool of this highly acid fluid collects which fills the right suprarenal pouch (Morrison's pouch) and overflows into the flank. This so called gutter is the space between the right abdominal wall and the ascending colon with its mesocolon, which causes the fluid to collect in a second pool in the right flank in the region of the appendix; so that when the physician first sees the case the maximum point of tenderness is usually in the region of McBurney's point, the most recently invaded peritoneal surface.

On seeing the patient in the very early stages, that is to say in the first hour or two, we are impressed with the gravity of his condition. The evidences of shock are all present—cold clammy skin, pulse small and running, and the temperature possibly subnormal; some mild cyanosis may be present. As time goes on, the symptoms of this intense shock abate to a considerable extent, and the condition becomes one of a localized peritoneal inflammation of severe grade. The temperature at this later stage is about 101° or 102° F., the pulse around 110 to 140, and respiration rate increased in proportion.

This condition is a progressive one in the majority of cases, unless operated upon, terminating in a localized or subphrenic abscess or a diffuse peritonitis, but there is a certain percentage of cases where the perforation is small, in which a tab of adjacent omentum seals over the perforation and thus limits the process, the so called subacute type, which may end in recovery without further intervention. Of course in the early stages, when the family physician first sees the case, there are no known means to differentiate this latter type of case from the more severe and progressive cases, and all cases of this description should be regarded as operative unless in the course of some hours the critical symptoms abate.

The diagnosis of acute appendicitis, in this enlightened age, as a rule has no terrors for any of us, but we know of no one who can, in even a fair percentage of cases, foretell accurately the pathological outcome. By this statement we do not mean to imply that all cases are, or eventually will become operative, but we simply wish to state emphatically that no case is so mild that it cannot bear further and most careful watching.

The sequence of events in an average case is as follows: With or without any prodromal signs, the patient is seized with a series of cramps in the epi-

gastrium, attended or closely followed by vomiting of a moderate degree. Nausea as a distinct entity is not so common. These cramps gradually become worse and shift their position downward to the right iliac fossa. In a moderately severe attack the patient seeks his bed and is content to lie on his back quietly, perhaps with his knees drawn up. The vomiting at this stage continues until the stomach is empty or until the ingestion of food or medicine. The pain continues, but the cramplike character has worn off to be replaced by a continuous soreness with a cramp now and then. About this time the doctor is usually called.

We are speaking of an average acute case. The patient is found lying quietly on his back with a temperature about 100° or 101° F., and a pulse from ninety to 120. At any stage of this condition the rate of the pulse and not the temperature constitutes one of the most important guides to the severity of the lesion.

On inspection there is noted an absence or diminution of abdominal breathing, which is especially marked in the lower abdomen. In a thin person the abdominal wall is flat or slightly scaphoid; later some distention is present. On palpation over the left side of the abdomen, we often find tenderness and some spasm at varying levels above Poupart's ligament, which is due to the fact that there may be free serous fluid, Nature's great protective agent, in the pelvis, or the tip of the appendix may be pointing in this direction. The left upper quadrant is singularly free from tenderness and spasm. In cases in which there is an incomplete descent of the cecum, the really acute pain may begin high up on the right side, so much so, that occasionally the presence of some gallbladder affection must be taken into serious consideration. As the examiner approaches the region of McBurney's point, the palpating hand no longer is allowed to sink gradually into the abdominal wall, and a more distinct sense of spasm and beginning rigidity is noted. Over the exact site of the appendix, or the region denoted by the patient as being the seat of his greatest pain, distinct evidences of spasm and beginning rigidity are noted. This may be accentuated if the patient is asked to attempt to raise the right limb with the leg extended, which manœuvre causes the body of the psoas muscle to become more prominent, and, as the appendix in most instances lies over this, the organ is brought nearer the anterior abdominal wall and the examining hand. Care must be exercised, otherwise we may rupture a distended and gangrenous appendix.

A few important points may well be mentioned. First is the statement of a patient under observation for the first or second twenty-four hours, that pain has quite suddenly disappeared, but the physical signs have not; this simply means that the appendix, that up to this time has been under considerable tension and caused severe pain, has had the tension released, and the most common way in which this occurs is by rupture. Another important point to be kept in mind is when the patient complains of pain in the loin or back in describing his symptoms; in these cases the appendix may be retrocecal or paracecal, and the signs obtained upon palpating the anterior abdominal wall are rather slight. Upon

their persistence the resulting operation may reveal an abscess due to a ruptured retrocecal appendix to the chagrin of all those concerned. Very often the patient does not complain of these leading symptoms, yet the condition just mentioned may be found. As a result of this experience the writer never examines a case of suspected appendicitis without slipping one hand under the loin and examining the front of the abdomen in this region with the other, and since he has used this little manœuvre the number of surprises due to a retrocecal appendix have been fewer in number.

Angulation or torsion of the vascular pedicle of the kidney (Dietl's crisis) is a fairly common cause of abdominal pain. Here the patient is either a very stout or a very thin woman of enteroptotic habitus, who will state perhaps that after a twist or strain she experienced a sudden stabbing pain in the loin high up under the ribs (usually on the right side) or deep in the epigastrium, ushered in by nausea and vomiting, especially the former, which persists long after the stomach is empty. With this condition the patient is content to remain quietly in bed, but is inclined to be restless and to roll about.

The pain is described as of a continuous, sore, lancing character, without remissions, and when asked to point out the exact site of the trouble the patient will sweep the hand around from the back to the epigastrium. Some slight shock may be present in the early stages, but soon passes off. There may be, and usually is some frequency of urination; the urine as a rule is negative, but at times may contain blood in small quantities. Our experience has shown no definite changes in the amount of urine voided. After a time the patient will state that the pain goes "through and through," meaning from the epigastrium to the back. On examination, the patient will be found groaning and lying prone with the hand grasping the affected side; abdominal breathing is interfered with to a considerable extent. The rest of the abdomen is found negative, with the exception of the affected side high up under the ribs, where there is exquisite tenderness with marked spasm and some rigidity. This spasm and rigidity extend well out into the side and around to the costovertebral angle. Occasionally in a very thin patient a mass tender to the touch may be felt in front or in the loin just above the level of the umbilicus. The mass, if any is felt, is larger than a normal kidney would feel, as the torsion of the pedicle causes considerable congestion and swelling of the kidney itself and of the perirenal tissues. A hot bath may relieve some of the spasm, render a mass more palpable, and allow of a better examination. Here also the compression of the bony thorax causes pain, but the differential points between the twist of a kidney pedicle and an inflamed gallbladder are that, in the case of the kidney, the tenderness and muscular resistance are more diffuse than in a gallbladder, and in many instances there is a distinct and appreciable interval below the ribs where there is very little or no tenderness in the kidney condition, while with an inflamed gallbladder the edge of the liver is usually sensitive. The pulse is rapid and out of proportion to the temperature, which is rarely high; this disproportion continues unless the kidney and resultant

hydroncrophrosis become infected through the blood stream.

Renal or ureteral calculus is a condition which often simulates an abdominal crisis very closely. A patient with this condition will state that he was in perfect health when he was suddenly seized with a sharp, stabbing pain in the loin or back. The pain is intense, agonizing; and unremitting and, as a rule, stationary, for the calculus moves slowly and the patient is hardly cognizant of the fact of the slight change of position. Often as not when the patient is first seen, he is doubled up, yelling, even rolling on the floor and knocking the furniture about. Vomiting is frequent as an initial symptom, especially if the attack comes on shortly after a meal. Afterward it occurs as a rule only on the ingestion of food or medicine. Nausea is uncommon. Macroscopic blood in the urine is present only if the stone is irregular in contour, but in almost all cases blood is found in the specimen if the urine is centrifugated and examined under a microscope. Frequent and slightly painful urination is common. In a case of this nature, if the patient can be kept quiet long enough to answer questions, he will state, if not led up to it, that the pain radiates down the ureter to the genitals. In the male, contraction of the masseter muscle with retraction of the testis is fairly common.

Physical examination is unsatisfactory, as the patient cannot or will not remain quiet long enough to permit a thorough one to be made. When asked to point out the site of his pain, he will sweep the hand over a large radius from the last rib in the back to the mid line in front, from the ensiform cartilage to the pubis. On palpation the actual tenderness is limited to a smaller area, but the muscular spasm is brought into play by the patient over a wider area than in any other condition. For with the slightest motion of the hand that may cause disturbance of the position of the calculus, the abdominal, back, and loin muscles are brought into play to protect the part and resist the examiner. A sign of great help in some cases is Murphy's hammer percussion, elicited by placing the left hand flat against the lower ribs and striking it with the clenched fist; if a calculus is present in the kidney or pelvis, the patient will react sharply with a cry of pain. In some cases in the male, where the calculus has already passed into the ureter, if the fingers are put into the rectum high up above the prostate and hooked so as to cause traction on the affected ureter, referred pain will be caused in the region where the calculus is lodged; in the female similar pain may be caused when the fingers are hooked into the anterior fornix of the vagina or if the cervix is pushed to the opposite side.

The temperature in this most painful condition is rarely elevated, but the pulse rate is always more rapid than normal. A very hot bath will make the patient much more comfortable and at the same time enable the examiner to make a more thorough search for the actual points of tenderness. Another important observation is that the agonizing pains may suddenly cease and an intense soreness supervene for a time as long as the patient remains quiet, but on an attempt at exertion the terrible ordeal is precipitated again. This is explained by the fact

that the calculus has come to rest and been made to move again by some muscular effort on the part of the patient. In milder cases the pain is less severe, but then such cases do not assume the aspects of an abdominal crisis with which our paper deals.

Another type of crisis that occurs only too frequently in general practice is that in which the patient is a party to the attempt to conceal or pervert the history. We refer to the type of *pelvic inflammations* that occur after attempts to bring about an abortion, although these same pelvic infections can and do occur without illegal interference.

The history usually runs after this fashion: The patient may state that she was overtime, and leave out the very important fact that anything had been done. The first thing of any importance that is obtained from the history is that she began to suffer from pains in the lower part of the abdomen, and to vomit. The pains became more severe and extended to a higher level, so that she was not able to stand upright and had to go to bed. The pains are described as cramplike with intense soreness in the intervals. The vomiting as a symptom does not stand out very prominently, as the pelvic peritoneum is tolerant to irritation. The temperature is found to be elevated to about 102° or 104° F., and the pulse will be found to be rising. She may have had some more or less distinct chills. Frequent and painful urination may be complained of. On examination, the patient is found with the knees drawn up and content to remain quietly in bed on her back. The face is flushed—the old fashioned ovarian reflex—and has an anxious expression that is hard to describe. Abdominal breathing may be inhibited or absent entirely. Palpation of the upper part of the abdomen reveals tenderness, which increases as the hand approaches the symphysis. Distinct muscular spasm and rigidity are marked in a crescentic area over both Poupert's ligaments and over the pubis; in the median line the muscular resistance may extend up as far as the umbilicus. Vaginal examination reveals, first, a sensation of local rise of temperature, and no matter how gently this procedure is conducted, it is always attended with a considerable amount of pain. The uterus is fixed, and on attempting to tilt the cervix the pain is increased; examination of the fornices causes more pain than has yet been produced, and a bimanual is well nigh impossible on account of the extreme pain. At a later stage, when the condition has reached more of a subacute type, the fornices are filled with definite masses and the uterus is imbedded in inflammatory tissue, the feel of which has been likened to that of a pelvis that has been filled with plaster of Paris.

In the foregoing remarks no mention has been made of even the most simple laboratory tests, x ray, instruments of precision, or anything that is not at hand when the doctor is called for the first time. This omission is in line with the original intention of writing a paper dealing with the abdominal crises commonly met with in general practice, and rendering their recognition easier with the simple means at every one's command.

REFERENCE

- C. M. R. BOOKMAN: *Medical Record*, July 24, 1915.
473 EAST 141ST STREET.

WITH THE AMERICAN RED CROSS IN VIENNA.

By P. A. SMITHE, M. D.,
Enid, Okla.

The American Red Cross Unit K, assigned to service in Vienna, arrived in that city in the middle of October, 1914. It was under the directorship of Dr. Cary A. Snoddy, of Knoxville, Tenn., the assistant surgeons being Dr. Fred G. Benton, of New



FIG. 1.—Imperial and Royal Reserve Hospital No. 8, Vienna. Conducted by American Red Cross.

York, and Dr. Walcott Denison, of St. Louis. Dr. P. A. Smithe, of Enid, Oklahoma, joined the unit January 1, 1915; Dr. Russel A. Jewett, of Cleveland, was transferred from the Red Cross service in Budapest to Vienna, joining the unit in March, and later replacing Doctor Benton, who returned in June, and Dr. Walpole Brewer, of Atlanta, Ga., who replaced Doctor Smithe on his return to the United States, August 1st. With the unit were thirteen graduate nurses under Miss Lyda M. Anderson, of Chicago, who by their patient and persevering attention to the details of their work, deserve no small share of the credit for the success of the mission. They were Misses Elizabeth Dooley, Cynthia Richardson, Margaret J. Leonard, Anna Sutter, Mar-

the Austrian Red Cross that the Americans should be assigned to the reserve hospital service, the unit opened its building for patients, under the official name of the Imperial and Royal Reserve Hospital No. 8, situated in the twelfth district (Meidling). The building was a four story school building, almost new, modern in every particular, and admirably adapted for use as a military hospital. It was of concrete construction, possessed modern plumbing, and was heated by steam. Lighting and ventilation were very good, and the building possessed the further advantage of a roomy court in the rear, utilized during pleasant weather as an exercising ground for convalescent cases and for out of door treatment of tuberculous, infected, and septic cases.

The building was divided into two almost equal parts, the one originally occupied by the Americans having been used as the girls' side of the building. The equipment was extended about February 1st, so that the entire building was used as a hospital, thus making the total bed capacity about 360. Physicians' and nurses' sleeping quarters were provided in the building, and furnished by the Austrian Red Cross, who likewise furnished the hospital furniture, beds, bedding, linen, etc., equipped the operating and dressing rooms, and furnished the kitchen, and pro-



FIG. 3.—Bath tubs in receiving room.



FIG. 2.—Hospital building from rear, showing disinfecting barrack.

garet L. Bodkin, Ella K. Hoff, Lula B. Martin, Ella Weyman, and Bertha Butterfield, all of Cincinnati; Mary E. Minshall, of Fort Thomas, Ky.; Anna Domershausen, of Terre Haute, Ind.; and Genevieve Dyer, of Chicago.

Early in November, after it had been decided by

vided servants and food for the entire unit. The hospital was under the nominal control of a hospital commandant, or *Regimentsarzt*, Dr. A. Wurmfeld, with the rank of captain, as all military hospitals in Austria are integral parts of the Austrian military organization. He courteously left professional affairs and the matter of organization to the director of the unit, and occupied himself chiefly with matters relating to the military department, thus taking off the shoulders of the Americans a huge burden of military detail work. Further to assist in the administrative work, three other Austrian officers were assigned to service at the hospital, and were freely at the service of the Americans at all times. The most cordial relations invariably prevailed between the military officers and the Americans, who will long remember their courteous and friendly treatment in Vienna.

The class rooms of the building were equipped as wards accommodating ten to twelve patients each. One particularly large and well lighted room on the second floor was used as an operating room, and furnished with a complete equipment, including a bone

engine. Sterilizers were situated in a small room adjoining. On the same floor was the radiographic room, with an excellent apparatus manufactured in Vienna. A large room forming the right L of the building, which had been a gymnasium, was used as



FIG. 4.—Bosnian patients. K. u K. Reserve Hospital No. 8.

a receiving ward, and in an adjoining room a battery of bath tubs was installed, where each patient, often covered with dirt and vermin from the trenches, received a full bath before going to the dressing rooms. Warned by the sad experience of the Serbian units, who had to contend with extremely poor buildings and equipment, and who lost two of their surgeons from typhus, a thorough disinfectant treatment directed against lice was used, and proved effective. On only one occasion did lice gain access to the wards, and in that case prompt measures checked the spread. We depended chiefly on a solution of mercury bichloride in hot vinegar. Hair and beard were closely clipped on admission, which facilitated the *Entlausung*. The uniforms and personal possessions were immediately taken to a disinfecting plant situated in the court outside the building proper, and disinfected by steam. After the bath and antiseptic treatment, the patients went to the dressing room, received appropriate treatment for their wounds, and a history was taken in German by the military department. A complete history and physical examination was later made by one of the American staff.

The wounded usually arrived in transports of twenty to fifty men, the slightly wounded on foot, the more severely wounded in motor ambulances. I do not think any member of the European Red Cross will ever forget the peculiar tired shuffle of a transport of exhausted wounded soldiers. As a rule, the last dressing had been applied one or two days previously, but occasionally the numbers of wounded men who had to be handled by transport trains was so great that the dressings had been badly neglected; we received one transport largely of men with infected compound fractures from bullet wounds which had not been dressed in about five days, and these were in very bad condition. The wounds, as a rule, had been received one to two weeks previous to admission, and thus had passed through dressing stations not far back of the line, and one or more field hospitals in addition. As a rule, they seemed to have received good attention, but considering the losses among the medical staff with the Austrian

army during the first six months of the war, I am inclined to believe the army at times was short of medical men.

Among the wounded, injuries inflicted by the steel jacketed bullet predominated, and wounds of the extremities, over body wounds. Wounds from shrapnel were next in frequency, and wounds from fragments of shell, less common still. We had only one or two cases of bayonet wound. If the steel jacketed bullet passed only through soft parts, it did surprisingly little damage. Those where a bullet at mid range (500 to 700 metres) struck the shaft of a bone squarely, resulted in very severe comminuted fractures. In many of these cases the entire diameter of the limb at the level of the injury would be shown by the radiogram to contain irregular fragments of the steel jacket of the bullet, as though the bullet had been filled with explosives. We had only one case, however, where we suspected that the wound had been caused by a bullet of this type, which is sometimes used for range finding. The most severe grades of comminution are found in bullet injuries of this type, the whole shaft of the bone at



FIG. 5.—Bullet wound of forearm.

the level of the injury often being reduced to a mass of fragments one or two cm. or less in length, and these are often driven into the surrounding muscles in every direction. Conservatism was the keynote of our treatment of these cases, immobilization by

moulded plaster or flexible wire splints, sometimes with pulley extension and suspension, removal of all loose fragments easily accessible, and daily dressing. Usually, six weeks later, when the discharge had greatly diminished or ceased, and the granulating area was much narrowed, the patient would be anesthetized, and such of the fragments of bone and bullet as had not yet been discharged through the wound, usually together with some fragments which had become necrotic, would be removed. Healing after this procedure would usually be prompt and nonunion was not often met with, nor was the use of Lane plates or bone grafts usually necessary. We found that by waiting for this period we sacrificed less bone than when the clean-up was immediate; moreover, if the fracture was relieved of all loose fragments at the time of admission or soon after, the operation had to be repeated. The infection in these cases was usually of a mild type, only a few cases showing any tendency to general sepsis; this was possibly due to the general use of iodine as a

if easily accessible, or if they caused pain; otherwise they were left alone. A good many cases of hernia and chronic appendicitis were operated in, and a good many plastic operations to repair defects from loss of tissue were performed. Alternate hot and



FIG. 7.—Large wound of ext. poster. surface of arm, rupture upper and lower third.



FIG. 6.—Perforated wound of knee joint dividing patellar tendon.

first aid dressing on the field, a procedure which we found very general.

Such bullet wounds of the lung as we received recovered uniformly. Usually the sufferers gave a history of bloody expectoration of from one to two weeks' duration after the injury, accompanied with a few days of high temperature. Bullet wounds of the knee joint were among the most serious, although in these cases infection did not always occur.

Frozen feet were frequent. If the tissues became gangrenous, it was our practice to wait for a well formed line of demarcation, gradually separating the tissues at this point with gauze packing daily, and finally to amputate through this point, cutting off the bones so deep that the ends would be well beneath the granulating surface; we found that cases treated in this manner were less apt to have infection spread to the tendon sheaths than if we amputated above the line of demarcation. By this method, also, the patient usually saved enough of his foot to walk on. Bullets were localized by the x ray, and removed

cold applications, or immersion alternately in hot and cold water, followed by massage, was used for adhesions about joints, especially in the hand, and these measures proved very effective.

We found that a majority of patients suffered from defects of the teeth, and that pyorrhea was very prevalent. This condition, together with exposure and improper diet at the front, was responsible for a great deal of the digestive troubles, which usually cleared up under proper attention to the mouth and a rational diet. Typhoid occurred occasionally but was never epidemic in Vienna; the same was true of typhus and Asiatic cholera. We had but two cases of the latter and no typhus whatever.

We had but one case of tetanus, from a bullet wound of the hand, developing twelve days after the injury. This recovered under serum hypodermically, after a period of convulsions lasting about ten days. An injection of magnesium sulphate was



FIG. 8.—Infected compound fracture of femur, shot from the pathians. Probably explosive bullet. Shaft of femur badly shattered. Doing well; normal temperature. Had been about seven days without renewal in tight starch dressing like a plaster cast.

given at the beginning of symptoms, but not repeated.

Real rheumatic manifestations were not common, although practically all patients just from the front

suffered from exhaustion pains in the muscles for two weeks or more after admission.

We used a good deal of stock antistreptococcus serum in practically all cases in which the infection showed a tendency to become generalized, and as a rule it seemed to give good results. We had but



FIG. 9. Fracture of femur from bullet wound, showing fragments of metal throughout diameter of limb. Due, possibly, to a range finding explosive bullet.

one case of general sepsis, which was caused by a wound through the middle of the humerus from a steel jacketed bullet. This patient was infected on admission, a mixed streptococcus type, suffered a metastasis to the knee and later to other parts of the body, but lived six months, further metastases and exhaustion finally resulting fatally.

We used autogenous vaccines in several cases, but on the whole the results were disappointing. This work, as well as routine bacteriological work in general, was ably attended to for us by Doctor Becker at the seropathological institute. We depended largely on bacteriological examination of blood cultures for the diagnosis of typhoid, and on bacteriological examination of the stools for cholera. Practically every soldier with diarrhea recently from the front received a careful bacteriological examination of the stool.

The patients treated in the American hospital were all Austrian soldiers from eastern and southern fronts, but many races and languages were represented, Germans, Hungarians, Bohemians, Poles, Tyrolese, who spoke Italian, others who used Slavish dialects, Croatians, and Roumanians, hence many interpreters were necessary. We were fortunate in securing the services of Fräulein A. Vilma Jurenka,

who volunteered for the work and spent at it many forenoons weekly. This gifted young woman, who is a native of Bohemia, is a teacher of pianoforte, has lived for some years in England, and speaks practically all the languages of our patients fluently.

The Austrian Red Cross, in spite of the fact that they were deluged with work, omitted no detail which could add to the comfort of the Americans, and delegated Frau Lecher, wife of Professor Lecher of the University of Vienna, and Frau Ina von Schneller, as hostesses in the hospital. To these worthy women, who attended with painstaking care to the housekeeping and the servants, are due the thanks and appreciation of the American staff for their comfort while at the hospital.

The unit was also fortunate in having the services of two American women, both wives of American army officers who were in Austria as military observers, Mrs. Ford and Mrs. McIntyre, who have since returned to the United States. These estimable ladies volunteered for work in the hospital and were of great assistance to us, as was also Mrs. Snoddy, wife of the director of the unit.

The second division of the hospital to be equipped used Austrian nurses almost entirely and was for-



FIG. 10. Typical result of mid-range bone trauma with steel-jacketed bullet. Union, reaction upper and middle thirds.

fortunate in obtaining the services of Fräulein Antoinette Grobl as surgical nurse. This lady received her training at the Philadelphia General Hospital and was engaged in professional nursing in Philadelphia until the summer of 1914. Returning to her home just before the war to visit her parents,

she volunteered for military nursing and took excellent care of her department in the American hospital, her American training proving very valuable to the staff.

Too much cannot be said in praise of the American nurses, who gave their best efforts to make the work of the unit a success. Their work for the Austrian soldiers was such as to win them the respect and admiration of every patient who came under their care, and the Austrian military officials often expressed their appreciation of the work done by them. Miss Ella K. Hoff, of Cincinnati, acquired tuberculosis in an active form while engaged at the hospital. When offered her transportation home and discharge, she said she preferred to stay

hesions, and, last but not least, routine care and an aseptic conscience in the dressing rooms, where most of the military surgery is done. I would add, also, the including of a good dentist with each unit.

Military surgery in its every day aspects does not call into constant play the complex problems of operative surgery such as are seen in the larger surgical clinics in civil practice, but it does make large demands for patient attention to little things, and for hard conscientious work, and the success of the unit was largely due to the insistence on these principles by the director, Doctor Snoddy, a man whose capacity for management, diplomacy, and taking pains in all things, was practically limitless.

It is a matter of regret to me that as yet the tabulated records of the institution are not available, the unit not having yet returned to the States, but I think at least eighty or ninety per cent. of our patients were ultimately able to take up all or a part of their military duties, and our total mortality out of many hundreds of patients handled, was but three, and two of these cases were due to internal diseases of chronic nature acquired before admission to the army.

All the Americans who were on duty in Vienna will, I am sure, always remember many features of their work with pleasure, particularly the gratitude of their patients, which they showed in countless ways; also the hospitality and kindness of all Austrians whom we met, or who were associated with us, and we shall always remember with admiration the spirit of the wonderful old city, bright and cheerful as always under the stress of war and military conditions.

122½ NORTH INDEPENDENCE STREET.

THE DIAGNOSIS OF BRAIN TUMOR.

Some of the Difficulties,

By H. CLIMENKO, M. D.,
New York,

Attending Neurologist, Central and Neurological Hospitals; Adjunct
Attending Neurologist, Montefiore Home and Hospital; Chief,
Neurological Clinic, Outpatient Department, Mt. Sinai Hospital.

(From the Neurological Division of the Mt. Sinai Hospital.)

Perhaps in no other field of medicine may the diagnosis at once be as easy and as difficult as it is in brain tumors. The reason is evident. The brain is an organ of very delicate texture, and with the exception of two small areas every part of it has its more or less recognizable function. In normal conditions, it practically fills the cranial cavity, and any additional volume is bound to exert pressure on the structure and affect its functions, eventually giving rise to the classical symptoms of brain tumor. These are familiarly known as general and local symptoms.

I will not dwell upon these symptoms, familiar to us all and to be found in almost any textbook. It is my object to point out some of the difficulties experienced in a series of cases treated in the neurological service of Mt. Sinai Hospital. In relating these cases, I have left out details irrelevant to the subject under consideration.

CASE I. A. G., aged fifty-eight years; chief complaint, fainting spells. At twenty-five years of age he noticed a small, soft mass, about as large as a marble, in the hypo-

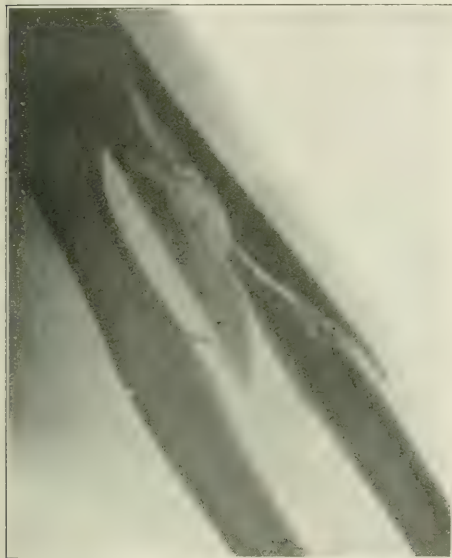


FIG. 11.—X fracture produced by steel jacketed bullet.

at work until the expiration of her term. After her return to her home, last June, her strength failed and she fell a victim to the disease.

On the occasion of the European units being recalled, October 1st of the present year, those in Austria and Germany received an offer from the German government to go to Russia to care for the German prisoners, which they accepted, and practically all of the Vienna unit is now in Russia working in that capacity.

I would sum up the most valuable points gained in our experience as follows: As in other practice, the systematic history and examination of all patients, including those with apparently trivial injuries, thorough routine sanitary precautions against epidemic diseases, conservatism in compound comminuted fractures from bullet wounds, the thorough use of iodine as a first aid application, conservatism in freezing injuries of the extremities and the avoidance of flap amputations for the same when possible, persevering hydrotherapy and massage for ad-

gastric area; this gradually grew, without symptoms, until, after thirty-three years, it was as large as a football and very soft. There was psychic trauma one year ago when his son was drowned. The present illness began five months ago when he had an epileptic form of convulsion and frothed at the mouth; this was preceded by dizziness and a sense of distress in the epigastrium. He remained unconscious for ten minutes; felt as though passing into a pleasant sleep, becoming gradually unaware of his surroundings. Since the first attack, four similar but shorter ones had occurred, all during the day. He was easily resuscitated by dashing cold water on his face. In none of the attacks had he injured himself in falling. Directly after the attacks he was fully conscious and knew what had happened. He complained of headache in the last few days. In the interval between attacks he felt perfectly well. He attributed them to the difficulties of his work and denied that exciting domestic conditions were responsible. On physical examination the head and scalp were negative; the pupils were equal, regular, reacting to light and accommodation; very slight lateral nystagmus in external position; fundi of eyes normal. No palsies. There was moderate pyorrhea alveolaria. The pharyngeal reflexes were present. The lungs were negative, except for numerous subcrepitant rales at both bases posteriorly, at the end of inspiration. In the abdominal wall there was a large, soft, pendulous mass, shaped like a football, occupying almost the whole of the hypogastrium and extending above the level of the umbilicus; higher on the right side; extending laterally for about fifteen cm. on either side of the umbilicus. There were several distended veins over the lower portion of the mass. Lateral pressure caused dimpling of skin. No impulse on coughing. Probably a lipoma. There was good motor power in the extremities. The reflexes were all elicited. Blood pressure: Systolic, 140; diastolic, 90. Wassermann was negative. In December, 1914, the seizures were diagnosed as those of mild epilepsy, or due to chronic nephritis. In January, 1915, lumbar puncture was done; there was obtained clear fluid under greatly increased pressure; two cells to the c. mm. About twenty c. c. of fluid was removed, which was followed by severe headache lasting several hours. The headache persisted until his discharge from the hospital. During his stay at the hospital there were no convulsions, though the time for one was due; possibly the relief from the pressure by the lumbar puncture aborted the attack. The blood pressure fluctuated between 125 and 150 mm.; at low point the headaches were most severe. He was discharged with the diagnosis of epilepsy; organic basis not positively ascertained. Diffuse glioma, or tuberosclerosis was suggested because of the associated abdominal fibrolipoma.

A week later, he was readmitted to the hospital suffering from increased headache and vomiting. He yawned frequently, appeared drowsy, and his intelligence seemed diminished. In walking there was a tendency to fall to the left, with dragging of the left foot and laxness of the left hand. There was a questionable left facial, no Babinski, no changes in general reflexes; no astereognosis; the hearing was slightly diminished; no perception of smell on right side and only slight on left, tongue at times deviated to the left, but there was no deviation of palate. The sense of taste was entirely lost on the right side and impaired on the left. Slight weakness of grip of left hand, but no difference in gross power of the two sides. No adiadochokinesis. No descensus or ataxia of left arm; there was slight tremor, however. There was definite increase in tone of left lower extremity, amounting almost to a spastic condition; descensus elicited. The right lower extremity was lax. Bilateral choked discs, greater on the right than the left. He refused medicines and food because the taste was bitter. All these symptoms appeared within twenty-two days. Diagnosis of brain tumor on the right side was made. Five days later, the patient showed left lower facial paresis; no spasticity; left knee jerk greater than right; no abdominal reflexes; optic neuritis more marked on right than left.

On this date, January 26th, this patient was operated upon. A right sided subtemporal decompression was done. This exposed a partly necrotic mass in the cortex of the brain, not attached to the dura. Two drops of pus escaped from its interior. The

mass was not encapsulated and was removed from the white matter to which it was attached. It was the size of a walnut and quite soft. The patient died a few hours after the operation. A partial autopsy was done, which showed that the above mentioned mass was a glioma.

CASE II. Mr. Aus, man, aged sixty years, whose chief complaint was failing vision and headache. His father died of tumor of the chest wall. Denied venereal infection and was temperate in habits. He had what was diagnosed as diabetes for seven years, during which time he had lost considerable weight. Lately felt moderately weak. Two and a half years ago, failing sight began with slight frontal headache and dizziness. The vertigo increased so that two weeks ago he was forced to give up work; he had difficulty in getting home, a distance of eight blocks, bumping into about ten people on the way. One week ago, while reading, he saw many colored objects before his eyes and the headache became more severe. These hallucinations recurred. The vision was hazy and its acuity had decreased in the last week. The headaches had become more severe and generalized and the vertigo had increased, a day previous to his entrance becoming intense enough to cause him to fall. No change in gait, no tendency to fall on either side, and objects did not rotate about him in any particular direction. During the last week vomiting, not projectile, had recurred several times daily with increase in headache. When the headache became throbbing in character, loud, vibrating noises were heard. No change in smell or taste; no impairment of muscular power. No sensory symptoms, other than the optic and auditory, with the exception of burning of the forehead during the headaches. Synopsis: Glycosuria for seven years, failing vision, hallucinations of sight, headache, vertigo, ringing in ears.

Physical examination showed no cerebellar tilt of head, abnormalities, or favoring of either side in gait, and no tendency to fall in either direction. No Romberg or ataxia. No bony tenderness of skull. Pupils reacted to light and accommodation. Wernicke's reaction to light. Both halves of each retina sensitive to beams of light, causing contraction of pupil at right lower portion of iris. There was a blood streak which appeared like a new bloodvessel. Conjunctivae moderately congested; more marked in left eye. No nystagmus. Weakness of both external recti; left homonymous hemianopsia present. Bilateral choked disc, apparently of equal extent. Veins markedly distended. Jaw jerks present. Heart slow in rate. Pulse, visible pulsation. Abdominal reflexes diminished on left side throughout. Cremasters present and active on both sides. Extremities: No diminution of muscular power on either side; no atrophy. Descensus of left arm more rapid than of right; no ataxia; no astereognosis; no fault in localization of pain or pressure. Patient overpointed with right hand in trying to find the left; did not overpoint with left hand in trying to find the right. There was slight hypotonia of left lower extremity and the descensus of left was more rapid than of right. No fault of localization of touch of either lower extremity. Knee jerk diminished, but elicited and equal on both sides. Achilles jerk present and equal. Blood pressure: Systolic 160, diastolic 60. Lumbar puncture; initial pressure 330 mm., five c. c., yellow fluid removed. The urine, while he was in the hospital, was negative. Wassermann negative. X ray was negative.

Exploratory craniotomy over the right occipital region, showed no increase of tension. The brain was really falling away. No tumor was found.

CASE III. A. P., a woman, aged forty-two years. She was admitted to the hospital in June and discharged in July, 1915. Diagnosis: Tumor of right pontocerebellar angle. She had typhoid at fifteen years. Four years ago vertigo and facial paresthesia appeared. For three years she had had headache; for two years there had been weakness of the extremities, dragging of right foot, falling to left, mumbling speech, difficulty in swallowing, and impairment of vision. For six months there had been tinnitus in the left ear, drawing pain of left face, and numbness of right face.

Physical examination showed monotonous speech, weakness of the lower two branches of the left face, hypalgesia of right face, and dermatographia of left; head held in fixed

position. Bilateral ptosis; slight weakness of both external recti; rotary nystagmus in all directions; hippus; irregular pupils; bilateral corneal anesthesia; choked discs; slight deviation of tongue to left with fibrillary tremors; pharyngeal anesthesia; diminished abdominal reflexes; bilateral intention tremor, right more than left; exaggerated tendon reflexes in the right upper and lower extremities; right adiadochokinesis, slight on left; weakness of right upper and lower extremities; right knee jerk greater than left; unsteady gait and station; advanced nerve deafness on right side, but smell and taste intact. Slight flattening of right temporal and masseter muscles. Lumbar puncture: Initial pressure 260 mm., final pressure 160 mm., two c. c. clear fluid withdrawn. Caloric test: Left ear; nystagmus to right in forty seconds; dizziness and falling to left. Right ear; no nystagmus; no dizziness or falling within three minutes. Pointing test showed spontaneous outward deviation on right side. X ray report showed the sella turcica of normal size, but the haziness of the clinoid processes indicated a marked degree of bone absorption; though an examination of the accessory sinuses was made, the report showed no other abnormality.

At operation, early in July, a glioma was found, originating deep in the substance of the cerebellum and grown outward toward the cerebellar pontile angle. It was not well excapsulated and only a portion of it was removed. The patient was discharged, improved.

CASE IV. P. K., woman, aged twenty years, married two years, no children, one miscarriage. Admitted to the hospital in August and operated on during that month. For four years she had right sided frontal headache, which, eight months ago, became severe and continuous, night and day. During these eight months the headache had been accompanied by pain in the right side of the face, dizziness, tinnitus in both ears, dimness of vision of both eyes, yawning, hiccoughing, vomiting three or four times a day, with relief for one to three days, occasionally projectile without relation to meals; difficulty in walking, staggering to the left; slight general weakness; weakness of right facial and of left leg. Physical examination showed very positive symptoms; absent pharyngeal reflexes; slight dullness of right apex of lungs with occasional rales; the pupils equal and regular, reacting sluggishly. There was post-neuritic optic atrophy in both eyes, nystagmus in the right; insufficiency of right internal rectus and central scotomata in both eyes; taste unimpaired; sense of smell on the right impaired. The right and left upper abdominal reflexes were absent, the right lower absent, and the left lower present. Anesthesia of lower two thirds of right side of face. Transillumination showed a very slight shadow over left antrum. There was hypertrophy of the right middle turbinate, atrophy of right lower. There was a small amount of clear mucus on the edge of the middle turbinate on the left side and mucopurulent secretion in the middle meatus. Puncture and irrigation of the left antrum were negative. There was slight Romberg; the gait was cautious; she walked on a wide base with a tendency to fall to the left. No cerebellar tilt of the head. Reflexes of extremities were present. Wassermann and cerebrospinal fluid were negative. Caloric test: Left ear, irrigating with cold water, nystagmus to the right in twenty-five seconds; falling reaction normal, hypointing to the left. Right ear, irrigating with cold water for five minutes; no nystagmus, no hypointing, no falling reaction. X ray report: The sella turcica was absent, the clinoid processes having almost entirely disappeared. The coronal suture was gaping and the bones of the skull were fragile and showed a large number of areas of bone absorption. In the left frontal bone about three quarters of an inch from the midline about one and one half inch above the supraorbital ridge, the bone was eroded so as to appear like two small perforations. The right frontal sinus was absent; the left was very small and in that portion of the bone which goes to form the floor of the orbit was a transverse, nearly circular perforation about three eighths of an inch in diameter. These Röntgen findings were very suggestive of intracranial pressure. The patient died and, though the pathological report has not been completed, it was fully established that no tumor was present in the brain.

A. G., as we see, showed for a long time only

one symptom of intracranial pressure—convulsions. These were not severe, and from the hospital history it would not have demanded even an enthusiast to have given the case an exclusively Freudian aspect. I well remember that I had some difficulty in persuading the patient to enter the hospital, so light were his symptoms. Here, after weeks of careful observation, after being examined by men most competent in their different specialties, the patient was dismissed with uncertainty of diagnosis, but was, however, referred to the outdoor department for observation. Only a few weeks later, all the other symptoms of organic disease appeared with unusual suddenness.

I take this opportunity to sound a warning; if convulsions begin first at or after middle age, the diagnosis of epilepsy should not be made. Every such case which I had the opportunity to observe carefully, sooner or later revealed its organic origin.

As a contrast to this case, P. K. came to the hospital with all the general symptoms of increased intracranial pressure. Syphilis and nephritis were clinically excluded, and yet the post mortem examination showed definitely the absence of tumor, in spite of the fact that we were forced to operate owing to a rapid increase in severity of the symptoms. The headaches were so intense that the patient threatened suicide if she was not relieved.

CASE V. Mr. R., in my service at the Central and Neurological Hospital, was a man aged forty-five years, who came to us with a history of headache, vomiting, and right sided paroxysmal convulsions. Syphilis, nephritis, and alcoholism were excluded. He showed double choked discs, more marked on the right; double Babinski and all the other spastic phenomena, more marked on the right side and only slightly expressed on the left. While at the hospital, a few weeks later, a series of Jacksonian seizures developed which could not be controlled by medication. It was deemed advisable to decompress, at the same time exploring the sensory motor area on the left side. Not only was no tumor found, but the surgeon, Dr. H. Neurohoff, reported that there was a distinct diminution in brain volume and pressure at that point, and that the condition was rather one of softening. Thus we see that, though the patient had the classical symptoms of new growth at that point, fully justifying operative interference, yet no tumor was found at the site of operation.

In the case of Mr. Aus, we see that the diagnosis is clear, the location definite; yet the patient shows symptoms of some seven years' duration and no one suspected the existence of brain tumor until the case was finally seen by a neurologist. The patient came to operation; no tumor was found, no evidence of increased intracranial pressure was manifested when the skull was opened. In spite of that, he improved after the operation to such an extent that all the symptoms, except the hemianopsia and glycosuria disappeared.

On the other hand, the case of A. P. shows that by judicious and careful study we are able to diagnose the tumor, localize it, remove it, and render the patient's condition comfortable indefinitely. For A. P. is today practically a well woman. It is therefore evident that the diagnosis of brain tumor should be made with the utmost care. Any symptom may be utilized for or against a given diagnosis. It is the clinical developments of the case and the proper interpretation of the symptoms that are of greatest importance. Often a symptom

may be considered as a functional one, as was the case with A. G. and other patients; particularly in a patient whose case was reported by Dr. S. P. Goodhart and myself under the letter L; here the convulsions were for a long time regarded as hysterical in nature, but eventually showed themselves to be due to a frontal lobe tumor, while in A. G., above described, the seizures were regarded as due to epilepsy. I remember clearly that while in the case of A. G. the convulsions were practically the only symptoms, one of the gentlemen on the neurological service confirmed the diagnosis of brain tumor. The convulsive element alone left one in extreme doubt; then, however, the eye of the experienced observer associated a tumor of the abdominal walls with the occasional presence of glioma of the brain. The anomaly of the one suggested the other. Dr. B. Sachs reported a similar observation in a case of general gliosis.

In conclusion, I should like to say that many problems in the diagnosis of brain tumors are yet to be solved. Many conditions may simulate neoplasm of the brain and the differentiation is at times extremely difficult. It is therefore urgent that every case of suspected brain tumor be carefully observed and reported, for I believe it is the clinical and not the experimental study that adds to our knowledge of diagnosis in these cases. The diagnostic value of a given symptom and its relation to others varies in almost every case. The symptom which guides us in one case may be valueless in another. I shall not now discuss the relative value of individual symptoms. It is only by years of careful and painstaking study that one becomes able to accept what is valuable and reject what is not important for the diagnosis.

Today we do not look upon patients with brain tumor as doomed. The marvelous advance in surgery, the results of the work of such brain surgeons as Horsley, Cushing, Elsberg, Krause, etc., show that some of these cases can be cured and most of them can be relieved of distressing symptoms, such as headaches, blindness, etc. Only those can be entirely relieved in whom the localization is correctly made and where the tumor is in an accessible area of the brain. The nature of the neoplasm must be taken into consideration in the prognosis of the case. From a limited observation, I should like to add that I believe brain surgery should be done only by brain surgeons.

To Dr. B. Sachs, Dr. I. Abrahamson, and Dr. I. Strauss, I wish to express my gratitude, not only for privileges, but for profitable instruction.

252 EAST BROADWAY.

Aviation Sickness.—Doctor Ferry, in *Presse médicale* for January 6, 1916, states that from sixty personal observations collected after ascents in various types of machines he has made the following deductions: Quickening of the pulse depends upon variations in altitude, but also upon the subjective sensations experienced by the aviator; the constant hypotension observed may explain in some degree vertigo and faintness during flight; whence the need of making gentle ascents and descents to avoid cardiovascular strain.

TREMOR TRACINGS.

A Note on the Diagnostic Significance of Tremors,

BY HANSELL CRENSHAW, M. D.,

Atlanta, Ga.,

Neurologist, Grady Hospital.

For the first time, so far as he knows, the writer has succeeded in recording both coarse and fine tremors. The apparatus used was an ordinary sphygmograph. But instead of buckling the pneumatic cuff around the wrist, the cuff was merely well inflated and the patient made to rest the trembling hand upon the cuff. Records were then taken, just as in recording pulse excursions. While this method served fairly well, the writer found that by having the patient lightly hold a glass of water on the pneumatic bag, the lateral as well as perpendicular oscillations were registered and both more sharply.



FIG. 1.—Tracing from a normal hand.

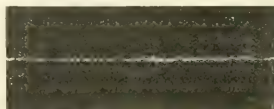


FIG. 2.—Fine tremor of hypertenoidism.

When the oscillations of a tremor are not more frequent than four to six a second, the tremor is said to be coarse—particularly if the excursions of the oscillating part are more than one eighth inch in scope. Oscillations of greater amplitude than three fourth inch do not constitute tremor, but are athetoid or other gross motor disturbances. When the vibrations of a tremor are more frequent than eight or ten a second, the tremor is called fine.

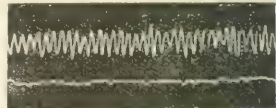


FIG. 3.—Coarse tremor of paralysis agitans. (Copied tracing from affected limb.)

Tremors are also classified, irrespective of their frequency or amplitude, into, 1, intention tremors and, 2, nonintention tremors. The so called intention tremor is the type brought on or greatly intensified by manipulatory efforts. Thus if a patient

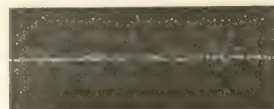


FIG. 4.—Early tremor in normal persons who do not use delicacy.

troubled by this sort of tremor attempts to pass a glass of water to his lips, he shakes it more and more violently as he brings it toward his mouth. If the condition is well marked, he will spill some of the water before the glass reaches his lips. Likewise, such a patient, in attempting to pick up a small object, will manifest an intention tremor in the effort. The handwriting also may show this tremor

It may be remarked here that the term intention tremor is objectionable. Equally unsatisfactory is a term preferred by some writers, namely, voluntary tremor. Such tremors are of course neither intentional nor voluntary. Nor does the unexecuted intention to perform a voluntary act bring on tremor. *Effort tremor* is a term suggested by the present writer as being more descriptive and appropriate. Nonintention, or better, passive tremors, are either not affected by muscular effort or are temporarily stopped by it.

In order to understand the cause of tremors, it may be well to recall the fact that muscles in health are held in tone by mild impulses delivered into them along the motor nerves at the rate of about twelve a second. No perceptible tremor results (Fig. 1); but if these normal impulses become abnormal because exaggerated in force, for example, then a fine tremor results; or if they become diminished, coarse tremor may ensue, because every second impulse is lost and the alternate ones affect the muscle more noticeably. A condition of muscular imbalance, as when fatigue from lifting exhausts the flexors of the arms without tiring the extensors, may, in the writer's opinion, cause tremor.

Consider now what may operate to alter the normal tone impulses to the voluntary muscles.

1. Irritation of the motor areas of the cortex may arise from toxic agencies, from mechanical irritation (as pressure of tumors), or from emotional irritation. 2. Inhibition of a motor area may decrease the tone impulses to muscles, so as to bring about that skipping of impulses responsible for certain coarse tremors. Muscular fatigue, with its generation of toxic products chemical in nature, may act thus. Doubtless certain other toxins do also. Moreover, degenerative changes such as are due to senility and to posthemiplegic conditions may destroy some of the tone impulses and produce tremor.

According to mediate cause, then, tremors may be divided into three groups as follows:

1. Toxic tremors—including those due to tobacco, alcohol, alkaloids, metals, hyperthyroidism, and probably those due to exhaustion (Fig. 2). 2. Organic tremors, embracing tremor due to tumors, brain lesions, general paresis, multiple sclerosis, posthemiplegic conditions, and senility. 3. Functional tremors, including tremor due to fear, hysteria, neurasthenia, and probably that due to paralysis agitans (Fig. 3).

Now, as to the diagnostic significance of tremors, we may say, 1, that, with the exception of the tremor of Parkinson's disease, coarse tremors indicate organic disease; 2, that fine tremors indicate toxic or functional conditions; and, 3, that effort tremors suggest central organic lesion. All tremors are of central origin; and practically all disappear during sleep.

The disease which gives us the most typical effort tremor is multiple sclerosis. This tremor is perhaps next most constant in brain tumors.

Tremors affecting the face or tongue are most characteristic of alcohol and general paresis. Tremors of the head are oftenest found in senility, while trembling of the legs generally results from fear or fatigue.

All tremors are increased by strong emotion, but passive tremors are either not affected at all or are actually decreased by specific voluntary muscular effort.

The disease of which the coarse passive tremor is most characteristic is paralysis agitans. The oscillations in this tremor are from four to eight a minute; are unaffected by voluntary muscular action, and cease during sleep. The character of the tremor is well described by the name "pill rolling" tremor. This tremor may be momentarily stopped by an act of the will—a unique characteristic. Moreover, this tremor is usually first noted in the fingers of one hand, later spreading up the arm and often affecting the head, and occasionally the other side of the body as well.

The coarse tremor of posthemiplegic origin is similar to the tremor of paralysis agitans, and always unilateral in distribution; but it is not passive, and is intensified by effort.

In concluding this brief survey of one class of rhythmic disturbances of the motor system, let us remember that the tremor of hysteria may simulate any of the other tremors and may prove a snare for the unwary observer.

603 CANDLER BUILDING.

FRACTURE OF THE SKULL.

The Value of Lumbar Puncture,

By FREDERICK R. BARNES, M. D.,

Philadelphia,

Surgical Intern, German Hospital;

AND MORRIS A. SLOCUM, M. D.,

Philadelphia,

Surgical Intern, German Hospital.

In presenting a series of fractures of the skull, we desire to show the value in their treatment of withdrawal of spinal fluid by lumbar puncture. The success attending this simple procedure is well known. Moreover, it is far from our intention, in reporting such a small number of cases, to set forth a new form of treatment of skull fractures. We feel, however, that it may be of some interest to show the marked decrease in the mortality record in our fractured skull cases since we began the routine practice of lumbar puncture in all cases admitted to the German Hospital. We are indebted to Dr. John B. Deaver for allowing us to report these cases from his service, and for his suggestions and aid in preparing this paper.

Since January 1, 1910, twenty-seven cases of fracture of the skull have been admitted to the hospital. This number comprises fractures of both the vault and the base. The majority of cases come under the latter heading, however, there being but four fractures of the vault. Of the remaining twenty-three cases, sixteen were diagnosed as basal fractures by the x ray and seven were clinically of the same diagnosis, although no x ray pictures were taken for various reasons. From 1910 to 1913, a period of three years, lumbar puncture was not done in any cases and all but one case ended fatally, a significant fact as will be seen later. During the next three years, the majority of cases were tapped

Year.	Recovery.	Death.	Mortality, per cent.	Trephined.	Spinal puncture.	Hexamethylenamine.	X ray.	Base.	Vault.	Base and vault.	Remarks.
1910.....	1	2	66	1	0	0	0	2	1	0	Case trephined; recovery
1911.....	0	2	100	0	0	0	0	..	..	..	1 died from pneumonia
1912.....	0	3	100	0	0	0	0	..	..	..
1913.....	3	2	40	1	3	3	5	3	2	..	1 fatal, pneumonia, case trephined; recovery
1914.....	0	4	40	0	6	0	8	7	1	0	
1915.....	4	0	0	1	3	3	4	2	..	2	Case trephined; recovery

and a much larger percentage of cases terminated favorably.

It is now a routine measure in the German Hospital to do spinal puncture in every case of skull fracture, immediately after admission. The head is x rayed as soon as possible, but we do not wait for this confirmation of our clinical diagnosis before tapping. The usual technic is to withdraw about ten c. c. of spinal fluid in a sterile tube and then inject a sterile solution of hexamethylenamine, amounting to sixty grains (four grams). The spinal fluid is then sent to the laboratory for bacteriological examination and culture. In only one of our cases a growth developed. This occurred on the eighteenth day after the fracture, which was basal, and the growth showed the presence of Gram negative extracellular diplococci. This case ended fatally. A daily spinal tap and the introduction of hexamethylenamine is done until the patient appears to be out of danger. Little skill and work are required in this procedure, and the results have been so gratifying that we feel that more radical surgery offers our patients no greater chance for recovery than our present method of treatment.

A word regarding the use of hexamethylenamine. Little credit should be given this drug in treating skull fractures. Although we use it in every case, we are inclined to believe that the cases that terminated in recovery, did so because they were tapped and not because of the use of this drug.

The table briefly summarizes the treatment and results of the twenty-seven cases reported.

As regards the advisability of trephining, unless a strong indication presents itself, such as rupture of the middle meningeal artery or a depressed fracture, it is our belief that patients will get well if let alone. To trephine in an obscure case of skull fracture brings in an element of danger, not present in the simple procedure of daily lumbar puncture. It is true that our three cases in which trephining was done, ended in recovery, but these patients presented an urgent indication, namely, ruptured meningeal artery, depressed fracture, and signs of a focal epilepsy. A too hasty decompression is a mistake in the average case.

The following conclusions seem to be tenable:

1. Lumbar puncture should be done in every case of severe head injury, both for diagnosis and treatment. One tap does not suffice; daily puncture until recovery is best.

2. Trephining should be reserved until the last. Definite indications only should warrant opening the skull.

3. Patients often get well if let alone. Too much surgical interference is a mistake.

4. The intraspinal injection of hexamethylenamine is harmless, but is of little value in our opinion.

GIRARD AND CORINTHIAN AVENUES.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVI.—How do you treat the constipation of sedentary men? (Closed.)

CLXVII.—How do you treat rickets? (Answers due not later than February 15th.)

CLXVIII.—How do you treat cyclic vomiting of infants? (Answers due not later than March 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXV was awarded to Dr. Louis Weiss, of Newark, N. J., whose article appeared on page 266.

PRIZE QUESTION CLXV.

THE TREATMENT OF OPHTHALMIA NEONATORUM.

(Continued from page 268.)

Dr. C. C. Hightower, of Hattiesburg, Miss., believes that:

Special emphasis should be placed upon prophylaxis in outlining the management of this disease. Every general practitioner and obstetrician should call in an ophthalmologist at the very first indication that the disease is going to be of the purulent variety. A prospective mother suspected of having gonorrhea, should be examined, and treated if the disease is present. During the last few weeks of confinement, have her take, twice a day, a douche of an alkaline antiseptic, or a one to 5,000 mercury bichloride solution. During labor, use a one per cent. lysol solution as an antiseptic lubricant.

As soon as the baby is born, sponge off its head and eyelids with a one to 10,000 mercury bichloride solution, and place in each eye a drop of a one or two per cent. solution of silver nitrate. Every case of this extremely infectious disease should be isolated, if practical, and all articles becoming contaminated should be disinfected.

Begin active treatment as soon as the disease is suspected. Make a microscopic examination for the gonococcus. If in doubt, treat as if gonorrheal

until sure. Have the room well ventilated. Employ a good day and night nurse. See that digestion is good, that the baby is well nourished, that its bowels are kept open, and that its general condition is as good as alternatives, tonics, and careful nursing can make it. If, fortunately, only one eye is involved, protect the other by means of a watch glass and adhesive strips, leaving a small aperture for air at the lower outer angle.

During the first stages of the disease apply cold compresses every few minutes, day and night, the compresses being made of pieces of gauze two inches square in several layers, and made cold by placing on a block of ice kept close by. A compress is destroyed after being used once. In the height of the swelling, or during the purulent stage, when it seems that the corneal nourishment is being cut off, hot applications may be substituted for the cold, in the hope that the circulation will be improved and ulceration of the cornea prevented.

The lids are prevented from sticking together by the application of boric acid ointment to the edges. The baby's hands are prevented from rubbing the eyes.

Irrigations with warm five per cent. boric acid solution from an ear syringe, the eye being held to one side over a basin, are used four or five times a day in the beginning, and are followed each time by dropping into each eye a twenty-five per cent. solution of argyrol.

During the stage of purulent discharge, cleanliness is the watchword. The irrigations are increased in frequency, being used every half hour if necessary. Small pieces of cotton soaked in boric acid solution are used to brush away gently the mucopus which the irrigations fail to remove. Disturb the baby as little as possible. It may become necessary to allow the discharge to accumulate for a time in order that a weakly, nervous baby may get a much needed rest. If the argyrol does not seem to be getting results, a two per cent. silver nitrate solution may be painted on the everted lids and neutralized with salt solution.

If the swelling of the lids becomes so great as to prevent sufficient drainage and cleanliness, cut the outer canthus down to the bone. If the swelling in the conjunctiva on the ball becomes so great as to impair the nutrition of the cornea, make radial incisions through the conjunctiva.

When there seems to be a tendency toward ulceration of the cornea, this complication is prevented by the measures outlined above, and by dropping into the eye a solution of atropine ($\frac{1}{2}$ grain to one ounce), three times a day. If an ulcer develops, touch it once or twice a day with a one to 2,000 formaldehyde solution. If perforation seems inevitable, stop the atropine and use eserine (one fortieth of one per cent.) to prevent prolapse of the iris.

After the discharge has ceased the irrigations are left off, but the argyrol is continued for some time although in weaker strength, especially if there is a tendency toward chronic inflammation. For such a chronic condition, 0.5 per cent. solution of zinc sulphate may also be used, or the lids may be painted with a silver nitrate solution (one grain to the ounce).

Dr. Jesse W. Downey, Jr., of Baltimore, remarks:

Primarily, ophthalmia neonatorum is a preventable disease, therefore, the physician who neglects to instill a few drops of Credé's solution (two per cent. nitrate of silver) into the eyes of all infants at birth, whether there is any suspicion of gonorrhea or not, should be held directly responsible for the infection. This statement is not put too strongly; Credé's solution is harmless, it will certainly prevent infection, it takes but a moment to use, and, therefore, the physician can give no credible excuse for failing to carry out this simple preventive measure.

When infection has taken place, then the chief treatment is *absolute cleanliness*. The eyes must be kept free of pus, which is more important than medication. It is best accomplished by flushing the eyes with a saturated solution of boric acid as often and as frequently as pus forms. The little rubber syringe, known as an ear and ulcer syringe, is the best for the purpose. Whoever is to give the treatment must be taught that no force is to be used, either in opening the eyelids or in the irrigation, and that the sole effect desired is the washing out of all discharge. The baby should be held by one person with its head in the lap of another who is giving the treatment. All pus should be gently washed off the outside of the lids. Then the eye may be opened by placing the fingers over the supraorbital ridge and on the cheek beneath the eye; and by gentle traction the lids may be opened sufficiently wide to allow the boric solution to trickle in between. Do not stick the point of the syringe between the lids. Everything can be accomplished by irrigation. Use plenty of the solution and get out all of the pus. Impress upon the nurse that this is the important point and that it makes no difference how much of the boric acid solution is used. When the eye is free of pus, drop in two or three drops of a fifteen per cent. solution of argyrol. Carry out this treatment night and day as frequently as there is an accumulation of pus. The infection will show marked improvement within twenty-four hours in the great majority of cases.

If one eye alone is affected, which is rare, do not bandage the good eye. Protect it carefully with a wad of cotton while irrigating the infected eye. Watch it closely and institute treatment immediately, if infection occurs.

Avoid unnecessary manipulation of the eyes. Do not force open the eyelids or use pressure on the globe. Even the physician should avoid the use of the lid retractor, if possible. If the lids are opened in the way described and held for a few moments, the baby will, in most instances, roll its eye into such a position as to allow a view of the cornea. Trauma predisposes to corneal ulceration, and corneal ulceration almost always leads to impairment of vision.

When the acute stage is over and there is no further discharge, the thickened conjunctiva may be brushed lightly with silver nitrate solution (ten grains to the ounce). The writer does not believe in the use of silver nitrate until this stage is reached.

Corneal complications receive no other treatment than that described—other than extra effort to get the infection under control.

To summarize: *Absolute cleanliness* obtained by frequent and gentle irrigation with boric acid—ar-

gyrol, fifteen per cent., and avoidance of trauma from unnecessary manipulation are the chief points in the treatment. The one who is to have charge of the treatments must be deeply impressed with the importance of freeing the eye of discharge as soon as it forms, and that it must be done gently and with care. All persons coming in contact with the baby should be warned of the seriousness of the affection and the necessity of burning all cotton used in the treatments, the sterilization of towels, etc., and the proper cleansing of their own hands after each treatment.

Dr. W. M. Gardner, of Brooklyn, New York, advises:

Prophylaxis. The first thing to observe in the treatment of ophthalmia neonatorum is to instill a two per cent. solution of silver nitrate into each eye of the newborn babe to prevent it. We take exception to dropping the solution upon the cornea, according to Crêde's own directions. No one can prevent the solution coming in contact with the cornea, but it is better to instill it into the conjunctival sac, and allow it to spread by contact with the lids.

Instead of silver nitrate we may use one of the albuminate solutions of silver. There is little difference in effect between several of these, and they are not so irritating. The eyes are inspected daily for a few days to be positive that infection is not present. Infection may occur after as well as during birth. Instruction should be given concerning the bath. The water used for the bath should not be used to bathe the eyes. Neither should the same basin be used as is used in bathing the mother. Her lochial discharges may adhere to the sides of the basin. Infection has occurred in this way.

Treatment. A culture is taken to ascertain if the purulent ophthalmia is due to the gonococcus or some other germ.

A mild case may be treated at the home. If, however, the case is serious and there is reason to believe that the home care is not going to be what is desired, it is sent to the hospital and a special nurse assigned. The attendants should use care to prevent contamination. A gown is worn to protect the clothing. Rubber gloves are cumbersome. Goggles or large lens glasses should be worn. This is important, for, during the struggles of the child, pus is liable to be spurted into the eyes of the attendants, as has occurred with serious result.

Rarely only one eye of the child is affected. If so, the child is kept on the affected side as much as possible and the unaffected eye is covered with a shield which is removed at times to ventilate and bathe the eye. The child's hands are restrained sufficiently to prevent its reaching the eyes.

Everything should be in readiness before subjecting the child to treatment, so that it will not have to be held longer, nor the eye handled more times than is really necessary. The solutions, cotton pledgets, swabs, and so forth should be prepared and within easy reach of the physician. A good waste receptacle (which may be only a paper sac in a jar) should be accessible so that bits of contaminated waste will not be thrown about.

The actual treatment of a case resolves itself into three parts: 1. Preventing excessive inflammation and multiplication of organisms. 2. Cleansing

3. Promoting the reaction of inflammation. These three follow pretty closely the three stages of the disease.

During the onset cold applications may do good by helping to keep down swelling and inhibiting the growth of organisms. The applications are most conveniently made by using pledgets of cotton dipped in ice water and laid gently upon the lids. These are changed before they become warm. This means constant attention. While using cold, the cornea must be watched and any hint of cloudiness is an indication to discontinue cold and even, perhaps, to use hot applications. Likewise the condition of the lids must be watched. Too long an application of cold will seriously interfere with their nutrition.

The discharge from the eyes is to be washed out, especially during the second or purulent stage, and must be done rigorously.

Washing. The washing should be done as often as is necessary to prevent an accumulation of pus beneath the lids. An added precaution is to anoint the edges of the lids with sterile petrolatum after bathing.

The physician should see the cornea at each visit and note its condition. Thorough cleansing should be done by the physician once a day and oftener if necessary. The duty of the nurse, aside from applying the compresses, is to clear the palpebral fissure of pus as often as it accumulates to an appreciable amount by holding the lids apart as best she can and allowing the solution to run through the fissure. This may mean every half hour or every fifteen minutes during the height of the disease.

Instillations. After the nurse has washed the eye she instills some form of silver solution, preferably an albuminate. Four or five drops may be instilled each hour during the active part of the disease. Considerable reaction follows and the pain is moderately severe for the moment, but later a bluish pellicle forms, which sloughs off and the eye looks better. When this slough occurs the shreds should be washed out as they act as foreign bodies and cause discomfort.

Gonococci may be found in the secretions after the eye appears to be well. A local immunity has been established, and since it is a question whether general immunity can be attained against this organism, it seems futile to use vaccines in the treatment of ophthalmia neonatorum. They may, however, prevent joint complications. On the other hand, Roemer thinks it more rational to create a passive immunity with a specific serum which he uses in the form of a powder dusted into the conjunctival sac after washing.

Complications. Certain complications are to be met at times, such as ulceration of the cornea. This is usually preceded by cloudiness. This is an indication for atropine, and if cloudiness occurs during the period in which cold applications are being used, they are stopped at once and, if necessary, hot applications used instead to increase the nutrition of the cornea. The silver is continued. In case of perforation with incarceration of the iris, leave it until the disease subsides. Excessive bulbar ecchymosis may call for nicking of the conjunctiva to relieve the tension. Excessive swelling of the lids is to be met by canthotomy to relieve the pressure of the lids on the cornea. Nose, throat, and stomach are to be

watched, as infection sometimes reaches them by way of the nasal duct.

Dr. William L. Rhodes, of Kansas City, Kansas, states that:

Ophthalmia neonatorum is an acute purulent conjunctivitis occurring in the newborn, caused by the child's eyes coming in contact with the vaginal secretions of the mother during parturition. The symptoms, complications, and course are identical with, and require the same treatment and precautions as the gonorrheal ophthalmia of adults.

The first thing to do upon seeing the patient for the first time is to take some of the secretions for diagnostic purposes; then thoroughly wash out all remaining secretions with a warmed boric acid solution. Having done this, examine the eyes carefully to learn the extent of the infection.

Instill one or two drops of a one per cent. solution of atropine sulphate into each eye, whether the cornea is infected or not. After a lapse of several minutes, instill several drops of a twenty-five per cent. solution of argyrol, or a ten per cent. protargol solution. It is advisable to use the one per cent. atropine sulphate solution twice daily, and the argyrol or protargol solution every four hours, combined with hourly lavage with a warm saturated boric acid solution until the condition has been arrested. There is, of course, danger of an argyrosis, but that is better than a lost eye.

After pus has begun to form, make a daily application to the retrolarsal and palpebral conjunctiva, of a two per cent. silver nitrate solution followed at once by thorough lavage with a warm saturated boric acid solution. Iced pads should be used intermittently from the start, until the redness and swelling begin to diminish, then make the intervals between applications longer and the duration of the applications shorter.

In the adult we gauge the duration of the time the iced pads should remain on the eyes by the manner in which the ice is borne by the patient, but in the ophthalmia of infancy we are liable to leave the ice on too long, thus endangering the cornea through excessive cooling. If the cornea is involved, it is better to use hot compresses than iced pads.

The internal treatment should consist of keeping the bowels free by the use of castor oil or cascara or any mild laxative suitable to the case.

Give one grain of hexamethylenamine every four hours, for the reason that, according to recent experiments, the reaction has been demonstrated in the aqueous humor a few hours after ingestion.

I consider this of sufficient importance to warrant the use of hexamethylenamine in ophthalmia neonatorum for the protection it may afford the entire cornea, but more especially Descemet's membrane and the uveal tract through its antiseptic properties.

It is my custom not to bandage the eyes, as is the prevailing method, but to leave them entirely free from bandages of any kind, keeping the patient in a well lighted, well ventilated room where the direct sunlight may come in contact with the closed eyes from time to time.

Vaccine therapy has its place as an adjunct, in the treatment of these cases, and should by no means be overlooked.

The child should receive the constant attention of

a nurse for the first forty-eight hours, as this is the most critical period in the treatment of this disease.

Absolute cleanliness of the hands of the attendant, of all clothing, medicine droppers, and medicines is necessary, and in fact everything coming in even the remotest contact with the patient should be as sterile and clean as it is possible to make it.

Dr. A. B. Pemsler, of New York, advises:

The treatment must be divided into prophylactic and curative. The prophylactic treatment is very important, because if carried out properly, it will act as an absolute preventive. This treatment consists of the use of an antiseptic vaginal douche if the mother shows a purulent discharge, and the instillation of two or three drops of a two per cent. silver nitrate solution in each eye immediately after birth.

The curative treatment consists of the frequent removal of pus by washing with a saturated solution of boric acid every two hours. Compresses cooled by being kept on a cake of ice should be applied every few minutes. Care must be taken that this treatment is not kept up too long, as the cornea may be injured by the excessive chilling. As soon as the redness and swelling subside, the cold should be discontinued. Careful and constant nursing both night and day is necessary.

A two per cent. silver nitrate, a five per cent. protargol, or a ten per cent. argyrol solution should be instilled every two or three hours, depending on the severity of the case. I prefer the protargol, as it does not stain like argyrol and is not as painful as the silver nitrate.

If the infection is present in only one eye, the other should be protected by a shield and by the instillation of one of the silver salts, two or three times a day. If the cornea is involved, the pupil should be kept dilated with a weak solution of atropine sulphate.

The prognosis in the severe forms must always be guarded. Early and proper treatment usually results in a cure, but unless care is taken blindness is apt to occur.

[Lack of space prevents the publication of interesting essays from Dr. H. S. Bulkley, of Little Falls, N. Y.; Dr. C. C. Henin, of Springfield, Mass.; Dr. Henry G. Wincor, of New York; Dr. McW. B. E. Sutton, of Brooklyn, New York; and Dr. Charles S. James, of Omaha, Neb.—Eds.]

Deafness in Military Practice.—André Castex, in *Bulletin de l'Académie de Médecine* for November 16, 1915, states that deafness may be produced, not only from the explosion of a shell in proximity to the sufferer, but also from the din of battle, which may alone suffice completely to deafen him. Tympanic rupture occurs especially when a rifle or shrapnel bullet strikes the temporal or mastoid region or when a relatively mild shell explosion induces slight commotion. Concussion of the labyrinths occurs when explosion of a large calibre shell disrupts a trench and projects the men into the air. It is often accompanied by brain concussion, and the prognosis as regards subsequent deafness is bad, the loss of hearing tending to grow worse as constriction of the cells of the internal ear by cicatricial tissue progresses. In tympanic rupture the prognosis is less grave.

Abstracts and Reviews.

INVESTIGATIVE AND SCIENTIFIC PHASES OF THE DIABETIC QUESTION.*

*With Their Probable Relations to Practical
Problems of Clinical Medicine,*

By F. M. ALLEN, M. D.,

Rockefeller Institute for Medical Research.

Among therapeutic problems the treatment of diabetes has presented great difficulty, and has been characterized for many years by the constantly changing state in which successive steps in the study of the disease have left it. Essential to a complete solution of the problem is an ability to answer the question, What is diabetes? From the start, a distinction must be made between diabetes as a disease and glycosuria as a symptom, if a clear study of the subject is to be conducted. Clinically, we may occasionally meet with a renal glycosuria to which the term diabetes is not applicable; but, as a rule, glycosuria clinically witnessed implies the presence of diabetes. Such glycosuria may be mild at first, but later may become severe and be the manifest indication of a diseased state.

The treatment of diabetes is now characterized by a definite aim which the physician sets before himself, viz., that every diabetic should be kept free of sugar. In casting about for knowledge of the correct procedure to accomplish this, the therapist was led tentatively to adopt certain hypotheses concerning the etiology of the disease, and among these the most widely heralded was that of diabetes as a condition due to deficiency of the internal secretion of the pancreas. It became definitely known that diabetes is not due to impairment of the external pancreatic secretion—that discharged into the intestine. The question of deficient internal secretory activity as the cause has been studied through numerous series of experiments in dogs. For a period, interest in the pancreas in this connection died down for the reasons, among others, that pancreatic organotherapy in diabetes proved a failure and that distinct differences were noted between the effects of human pancreatic disease and those of complete pancreatectomy in dogs. Later, more accurate methods of experimental study were devised, only certain portions of the pancreatic tissue, for example, being removed, and care being taken not to interrupt the communication of the remaining portions with the intestinal canal. It was found that if a sufficient amount of pancreatic tissue were removed, without, however, crippling the functions of the gland entirely, a gradual diabetes could be produced which presented many points of analogy with the human affection. Such a diabetes may also be produced by feeding an excess of carbohydrates. Under these conditions specific histological changes in the islets of Langerhans may be observed.

In applying the results of the experiments in dogs to the study of human diabetes, careful examination into the points of similarity and difference between the conditions arising in these two ways is necessary. The chief points of similarity between human and

artificial canine diabetes are as follows: 1. The manner of onset is the same in the dog and in man; when seven eighths of the pancreas is removed in the dog, a diabetes not of sudden but of gradual onset is produced. 2. Sugar ingestion alone is sometimes capable of producing diabetes where other carbohydrates are not. 3. Individual idiosyncrasies are observed in both instances. 4. Renal impermeability to sugar may result from the presence of an excess of sugar in the blood. 5. A "nervous" type of glycosuria can be brought on in small dogs and in larger dogs of nervous nature. 6. Traumatic diabetes occasionally arises in predisposed animals—especially as a result of anesthesia, even for a brief period only. The observation of a severe, delayed traumatic diabetes in a cat which had been subjected to a violent scare by a dog has been reported. 7. There may occur in the dog, as well as in man, a deceptive type of diabetes, the so called "diabetes decipiens," in which glycosuria supervenes in the absence of polyuria. This may be due either to combination of the disease with organic kidney impairment or to the presence of a mild degree of diabetes alone. 8. In the diabetes caused in dogs by partial pancreatic removal there is not such a tendency to disturbing complications as in the completely depancreatized animal. At a late stage in the former, manifestations suggestive of human diabetic gangrene are witnessed. On the whole, diabetes may be defined, in this connection, as a specific disorder of nutrition which causes a diminution in the resisting powers of the body to outside influences. The diabetic dog shows a tendency to complications which correspond to those occurring in man.

The differences between human diabetes and the condition arising through pancreatectomy in the dog include the following: 1. A discrepancy exists in the dextrose and nitrogen ratio met with in the two conditions. 2. A great increase in protein metabolism takes place in the totally pancreatectomized dog. As shown by Geyelin, however, some human cases likewise exhibit this peculiarity. 3. Changes in the pancreas due to diabetes are observed in the dog. The cells of the islets of Langerhans early show vacuolization, and later pycnotic changes in the nuclei. These manifestations are due only to diabetes; they may be produced by administration of an excess of sugar. Investigators have not become convinced of the occurrence of these changes in human diabetes, although they have been observed in lower animals other than the dog, including the monkey. Of the alpha and beta types of cell into which the parenchymatous elements of the islets of Langerhans have been divided, Homans showed that only the (more numerous) beta cells underwent the specific diabetic changes in dogs, at least at first. In cats, on the other hand, the changes occurring in all the cells are practically simultaneous. The term "hydropic degeneration" has been applied to these cellular changes taking place in diabetes. It is important to note that the difference between the lower animals and man in this connection—in particular, the absence of hydropic generation in the pancreas of human diabetes—may be accounted for by differences in the functioning of other organs. Abnormal renal function, indeed, is the rule in human diabetes. The resulting salt retention may possess a bearing on the problem in point. 4. A difference is manifest

*Presented at the First Annual Meeting of the American Association of Endocrinologists, held at the Rockefeller Institute for Medical Research, New York, N. Y., 1926.

in the ketonuria or acidosis of the later stages of the disease. The diabetic animal dies in a state of cachexia instead of in coma. Apparently, no reduction in the alkalinity of the blood takes place in the diabetic dog. No experimental evidence concerning this is as yet available. It is known, however, that dogs are less subject to ketonuria than the human subject. They are, furthermore, not tolerant to fat in the same degree as is man.

In the light of the hitherto prevalent views of diabetic acidosis, neutralization of the latter through the introduction of an alkali has been considered a very important therapeutic measure. Prolonged fasting in these cases, moreover, has been deemed inadvisable. In a series of experiments the author observed the effects of fasting in dogs. Similar studies were then conducted in man. A striking result was obtained, in that rapid cessation of pre-existing acidosis took place. As a result of the fasting treatment, ketonuria was observed to fall, and the oxygen and carbon dioxide interchanges showed a distinct tendency to return to normal. A salient feature of these studies was that, whereas in normal persons fasting produces acidosis, in the presence of diabetes it does not. Former theories are thus completely reversed, and no objection attends fasting in the treatment of diabetes on the ground that acidosis will thereby be favored. Furthermore, vigorous exercise during the period of fasting is beneficial in these cases. The glycosuria ceases and the acidosis drops as a result of it. As illustration of the effect of the treatment may be cited the case of a diabetic child to whom carbohydrates were given in an attempt to ward off coma; symptoms of a heavy degree of acidosis thereupon suddenly developed, but upon institution of the fasting treatment the condition soon cleared up. As a matter of fact, children in an advanced diabetic condition clear up without difficulty on fasting. Fat individuals form no exception to the rule as regards the efficacy of fasting. An apparent exception has been reported by Geyelin in the case of an emaciated man who resisted the treatment. Upon adding fat to this patient's diet the preexisting ketonuria was observed to cease.

How correctly is the term, acidosis, applicable in diabetes, and what is the significance of the condition? Sometimes there is an actual acidity. But it is of the greatest importance to note that turning the urine alkaline fails to yield benefit in these cases. In cases such as would ordinarily receive sodium bicarbonate to combat coma, mere abstinence from food will clear up the symptoms in twenty-four hours. The use of alkalis in diabetes is on the wane. Joslin has discontinued sodium bicarbonate altogether, and administers sodium chloride and water only. Significant is the fact that a normal subject after exercise exhibits a more pronounced acidosis than a patient in diabetic coma. Injections of acids into dogs have shown the comparative innocuousness of an excess of these substances in the system. The toxicity of the acetone bodies is relatively slight. A suddenly appearing ketonuria of high degree has been considered especially dangerous; and yet in marked diabetes induced by phloridzin in man, symptoms of this sort are absent.

The so called diabetic coma is, as a matter of fact, not always diabetic, and may, indeed, not even be a coma, being merely the end stage of the disease con-

dition. Occasionally patients die, not in a true coma, but in a diabetic variety of collapse or heart failure.

Of interest is the observation that, whereas a patient with poor resistance becomes free of acidosis under fasting, one with strong resistance may not. In rare cases ketonuria develops on fasting, that is, acidosis appears. Raising the alkalinity of the blood to normal fails to save these patients. Fundamentally, no one knows anything about the acidosis of diabetes. It may eventually turn out to be a true acidosis, or an intoxication by acetone bodies, or both. Probably diabetic patients do not show typical coma in the absence of acidosis, yet they may die without having passed into a condition of intoxication. No information is as yet at hand concerning the distribution and amount of the sugar in the tissues in diabetes. This increases the difficulty of an accurate study of the whole question. Clinical experience has shown, however, that in the diabetic patient, once intense acidosis has supervened, a peculiar power develops of burning up acids in the body. This applies, perhaps, to the acetone bodies. It may be that diminished permeability of the kidneys is produced in these cases. At any rate, the treatment by fasting will throw new light on various aspects of the problem.

Returning to the question, What is diabetes? we may conclude that if the cause of the disease is pancreatic, it is manifested in diminished power on the part of the organism to utilize glucose. But diabetes is probably a broader condition than this. The diabetic organism does not assimilate normally. To account for this we are driven back, owing to the lack of chemical evidence, to hypotheses such as that accumulation of reserves decreases tolerance, while deficient supply increases it, or that ingestion of any food decreases the assimilatory power for other foods, so that after a sufficient period of excessive carbohydrate intake, ketonuria appears more readily.

The history of the treatment of diabetes comprises, in the first place, a period during which restriction of sugar was considered the chief desideratum. A second therapeutic object is that of diminishing the total caloric intake. The latter treatment is in reality the older of the two, but at first gave poor results, owing to incorrect application. Administration of a nontoxic diet was the aim, but the institution of such a diet was found to lead to poor nutrition. The spell cast by diets embodying such materials as oatmeal, etc., has been broken. They have no special virtue and prove a failure in genuinely severe cases. Observations on sixty cases at the Rockefeller Institute, on the other hand, showed that all these patients could be kept free of glycosuria indefinitely if the principles of the fasting method were applied. No complications were observed in the aftertreatment. Progressive improvement took place in all cases. So far the longest period of observation of a single patient thus treated has been twenty-one months. To be especially borne in mind is the fact that vigorous exercise is looked upon with favor in the application of the method. Many of the patients under treatment earn their living. The keynote of treatment in diabetes is, *rest of a weakened function*. As yet no method of actually strengthening this function has been discovered.

Contemporary Notes.

Coming Recognition of Prophylaxis.—Whatever you may wish about it, the physicians in a generation or two are going to be devoting their time more to preventive measures than to diagnosing and treating diseases. The people are learning that it is better to stay well than to get sick and employ physicians to cure them. Physicians will be in demand just as much as now, thinks the January *Texas Medical Journal*, but they will in most cases begin their diagnosis and treatment before their patients get down with disease.

The Introduction of the Dry Law.—A common interest among the four States¹ represented by this journal, remarks *Northwest Medicine* for December, 1915, will be found in the fact that, beginning with the new year, each of them will start the experiment of prohibition of the alcoholic traffic. While the details of the prohibition laws vary in each of them, the object to be obtained is the same, the suppression of the abuse of alcohol and relief from the appalling results which have followed it for so long a period. While there is an honest difference of opinion as to the practicability of eliminating the consumption of alcohol, there is no question that a great reduction can be brought about, even under an ineffective enforcement of a prohibitive law. No portion of the community comes in such close contact with the physical ills and depraving results of the use of alcohol as do the physicians and none have more reason to desire its elimination. The effective enforcement of the laws in these four States can be materially advanced by the cooperation of the medical profession, and as a body the physicians should desire to aid in determining whether or not the drink evil can be successfully combated. It will in no sense be a credit to the profession of these States, if at some future time it be stated that the law in a given State proved ineffective, aided by the connivance of certain doctors. On the other hand, the knowledge that the medical profession as a body proposes effectively to aid in its honest enforcement will do much to prove that beneficial results may thus be obtained.

Incomes of Southern Medical Men.—The incomes of physicians, says the *Charlotte Medical Journal* for December, 1915, have always, and doubtless will continue to be the subject of much speculation and friendly exaggeration by the friends of the doctor whose income from his professional work is under discussion without anything very definite becoming known. Of all men of the community, it is perhaps safe to say, for the appearance of prosperity he is expected to, and does usually assume, the doctor of medicine has the smallest actual income and comes nearer paying full price for all his purchases than possibly any other individual in the community.

Of interest in this line is the list of Richmond, Va., incomes for the past year, taxed as per a recent publication from the office of the State auditor of Virginia. In this State there is an exemption of incomes not in excess of \$2,000.

Richmond, Va., had during the year under consideration slightly in excess of four hundred physicians; a few reside without the city and pay taxes in the county; of the number in the city proper, thirty-three pay taxes on gross incomes of \$4,000 or over, including the exemption of the first \$2,000.

Of the practitioners with gross incomes of \$4,000, eight are medical men and two are surgeons. Those running over \$5,000 include four medical men and three surgeons. Of \$6,000 incomes, four are physicians. Of \$7,000 incomes, the three taxed are physicians. Of \$8,000 incomes, one only is listed; a specialist in eye, ear, and throat. Of \$9,000 incomes there are listed two, one an internist, the other a surgeon. Of \$10,000 incomes only two are listed; one a surgeon, one an eye, ear, nose, and throat specialist. One surgeon is listed in excess of an \$11,000 income; an amount only exceeded by two, one a very well known surgeon taxed on an income in excess of \$23,000, and the other, one of the South's most famous surgeons, listed at excess of \$42,000 gross income.

An Important Judgment.—A few weeks ago, according to the *Canada Lancet* for December, 1915, Mr. Justice Clute gave a judgment in the case of an action brought against a practitioner, which is of the utmost importance. The case was a unique one, especially in one particular. The plaintiff was a woman on each of whose breasts an operation was performed. The lady consulted a doctor about a lump in one of her breasts. The doctor said he also detected a lump in the other breast, and secured the patient's consent for the removal of both lumps. This doctor referred the case to a surgeon of experience, who removed the lump in one of the breasts. While the patient was under the anesthetic, the doctor who had been first consulted said that there was a lump in the other breast, and that the surgeon doing the operation should remove it also, as the patient had given her consent. The breast was prepared and the operation was performed. Some time after the operation trouble arose in the arm of the second side operated on. An action was brought against the surgeon who performed the operation, alleging assault, on the ground of doing an operation on a part of the body where consent had not been given. In this respect the plaintiff was in conflict with the doctor first consulted. After hearing a considerable amount of evidence on this branch of the case, Mr. Justice Clute held that a surgeon is justified in performing a second operation under circumstances where the case demands that more be done than was at first detected or revealed. It was held that a surgeon might even be open to blame if he did not perform such further operation, if it could be shown that such was necessary for the cure of the patient.

This is an exceedingly important judgment, and is destined to prove of much value. We feel confident that no surgeon will abuse the privilege accorded by such a judgment. It will always be recognized as the proper procedure to secure in advance the patient's consent to all that may have to be done; but in unforeseen contingencies this judgment may furnish much needed protection.

¹ Chicago, Wisconsin, Oregon, and Texas.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.
CLAUDE L. WHEELER, A.B., M.D.Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.Subscription Price:
Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 12, 1916.

THE PRESENT STATUS OF THE NON-
OPERATIVE TREATMENT OF MALIG-
NANT TUMORS.

Much interest of late has been aroused in the nonoperative treatment of malignant disease, but therapeutics with metallic salts and their solutions, vaccines, and serums, in cancer has not proved sufficiently efficacious to be considered curative, although some isolated results appear to have been favorable. The application of these therapeutic measures should, consequently, be reserved for inoperable cases and for postoperative treatment, as has recently been pointed out in the Report of the Heidelberg Cancer Institute. The same applies to treatment with radium and mesothorium.

This treatment, according to the report of the London Radium Institute, gives an apparent cure in two per cent. of the cases of malignant tumors, with the exception of cancer of the skin, in which the chances of cure are much greater. Radium treatment should be reserved, therefore, with the exception of skin cancer, to cases where an operation is unjustifiable, in which circumstance it can be of unquestioned value by bringing about an amelioration in about fifty per cent. of the cases, according to results obtained in London.

However, it is to be pointed out that certain gynecological clinics have recorded a number of appar-

ent cures of uterine cancer, to such an extent that the question of radium treatment, without surgical interference, has been discussed. It is proper to remark, however, that these results are as yet of too short duration to allow us to come to a conclusion as to their real value, and that the accessory lesions produced by the treatment itself are of a serious nature.

The same may be said of the x rays, which so far have procured positive results in skin cancer only, and although they are more penetrating than the radium rays, the opinion of those most experienced in their use is that surgical operation is to be preferred. The treatment by x rays, combined or not with radium or other therapeutic measures, should be reserved for inoperable cases and postoperative treatment, and here both the x ray and radium are of undoubted value.

As to the supposed increase of malignant disease, there is an apparent increase in a number of countries and in Switzerland up to the year 1906. In examining this problem more closely, we find that this apparent increase is the result of more perfect medical diagnosis and the progressive increase in the mean duration of life at the present time. The latter has amounted since 1876 to eight years and nine months, on account of reduced infant mortality and deaths from infectious diseases, so that for the usual age of cancer, that is to say from the fortieth to the seventieth year of age, the mean number of the living has increased from twenty-two to forty per cent. The number of subjects attaining the cancerous age being thus notably augmented, mortality from malignant disease must of necessity follow, although the effective morbidity remains the same. For some writers the morbidity of cancer, in spite of the above mentioned factors, has slightly increased, this being due to some factor as yet unknown, this factor being all the harder to discover because the increase of malignant disease does not involve the same categories of cancer in all countries.

Among the causes invoked to explain the increase of malignant disease of certain viscera, it is not, perhaps, superfluous to mention the theories of Doctor Shaw, of London. After having divided in a rather arbitrary way "accessible cancers and others" this writer endeavors to demonstrate that the increase in the former class is due to previous surgical removals of nonmalignant growths in organs in which cancer develops later. Now, by examining on the basis of recent statistical and clinical data, each of the categories of "accessible" cancers enumerated by Doctor Shaw, we easily perceive that this theory is not justified by any one of these categories, and that isolated facts that may be invoked in its favor are counterbalanced by the

more numerous instances pointing in a contrary direction.

As to the hopes that Doctor Shaw bases on the nonoperative treatment of cancer, they are clearly contradicted by the recorded experiences of recent years and by the writings of Doctor Shaw himself. No matter how great may be the insufficiency of surgical treatment, particularly in advanced cases, operation remains the only real means of cure in the majority of forms of malignant disease.

THE SIGNIFICANCE OF CEPHALIC STIGMATA OF DEGENERATION.

Whatever is the real significance of the great majority of the so called stigmata of degeneration in respect to the evolution of the human race, or in respect to the role they play in mental defect or disorder, or in moral delinquency, it is obvious that many stigmata, especially in the head, are purely mechanical effects of some comparatively trivial maldevelopment or of the lack of osseous tissue necessary to the support or development of the rest of the bony structures. This applies particularly to the part played by the teeth and their development in the physical, physiognomic, as well as utilitarian functions of the cranium and face. The bony cavity of the nose, of the postnasal pharynx, of the palatal arches, and of the jaws are all affected in their shape and functions by the development and the growth of the teeth. The extraction of a permanent tooth, or the malposition or the extrusion from the line of even one of them will of itself cause an appreciable diminution in the size of the dental and palatal arches. There will be impaired ability to masticate, with digestive disturbances arising therefrom; besides, there is a diminution of the room needed for the tongue and impairment of the power of vocalization, with the direct embarrassment that goes with it as well as the indirect effect on mental development and clear thinking. The change in physiognomy is characteristic and is not infrequently associated with mental or moral deficiency.

Moreover, there is a commensurate narrowing or twisting of the face, falling of the nose, and, therefore, an abnormal approximation of the chin and nose. The prognathous upper jaw, facial asymmetry from underdevelopment of one side of the face, and nasal and septal deflections are also common results of dental abnormality. The narrowing of the pharynx or the presence of nasal and septal deflections, causes obstruction to the respiratory passages and characteristic mouth breathing, with diminished dignity and comeliness of facial expression.

Many criminal facial types result from like anomalies. Perhaps the criminality is the expression merely of a general inferiority caused by these impairments. Indeed, it is now a common experience to find many of the so called criminal or feeble-minded cured by treatment which tends to remove or repair these defects. Yet in dealing with these stigmata of the head and face, the result of mechanical bony changes, the treatment is of long duration, somewhat costly, and requires the assistance of experienced orthodontists. Since Fau-chard, the father of modern dentistry, began his work in 1728, there has been a steady evolution toward study of the teeth from the standpoint of their effect on the development of the bones of the head and face. Great progress has been made recently in the corrective science of orthodontia, not merely from the cosmetic or even purely dental standpoint, but especially from the broader standpoint of the general development of the head and face and the general welfare of the organism. Not only are the displaced teeth set in order and the palatal and dental arches widened, but, if the child is taken in hand early enough, the heretofore intractable nasal obstructions are remedied. In marked bony obstruction of the nose with great backwardness of the child, rapid widening of the upper jaw can be effected by orthodontia. The malformed, undeveloped face can be remodelled and made beautiful.

A careful examination of children for evidences of faulty bony development would result in early detection and easily applied treatment and would obviate many of the stigmata—possibly to the advantage of many of the mentally, morally, and physically defective.

HOSPITAL STANDARDS.

Questions arise constantly as to the propriety of certain developments in hospital work and administration and as to the advisability of the retention of certain forms and usages inherited from the past. Opinions differ, as there is no recognized body of standards which can be referred to for advice or guidance. This lack of standards, among other things, is responsible for the opposition on the part of certain medical schools to the fifth hospital year. They fear that the required hospital experience, when obtained in certain institutions, would be of little benefit to students and that it might even tend to depreciate in a young man's mind the value of scientific precision which had been impressed upon him while in college. Likewise, the training of nurses would be greatly improved if standards were devised to define accurately the relation of the train-

ing school to the hospital and the mutual obligations of these institutions.

The desirability of an authoritative study of this whole problem was pointed out some time ago by the Public Health Committee of the New York Academy of Medicine. It is gratifying to learn that the useful suggestion was not disregarded, and that the American College of Surgeons, with the financial assistance of the Carnegie Foundation, has undertaken a systematic study of hospitals in their manifold relations. The status of the two bodies insures a careful analysis of the situation, which will, no doubt, result in a series of constructive suggestions and well thought out standards.

COLD IN THERAPEUTICS.

From the indiscriminate use which is being made of cold air in the treatment of disease, we might suppose it could have no injurious effects and that it was a cure all for affections of the respiratory tract. It has become a therapeutic fad to hustle all sufferers from respiratory affections into the open, regardless of their age, of the nature of the disease, or of the temperature to which they are exposed. We are glad to note that recently some of our foremost clinicians have raised a warning voice against this mistaken use of cold.

While cold is a stimulant, heightening, in all those who are vigorous, all activities of the body, it is a local as well as a general irritant, and its effect in some conditions of the sensitive respiratory organs may be deleterious. Doctor Morse and Doctor Holt have pointed out that in acute nasopharyngitis and in bronchitis the breathing of cold air is harmful. It is especially dangerous in the very young and the very old. In pneumonia it has not been proved that cold air has reduced the mortality. Even in tuberculosis, in which it can seldom be said to be other than helpful, we must not forget that it does not by any means always cure the patient, and that there is much else to be done.

Cool, dry, pure, moving air is always of advantage to the sick and well, and so much has been said of late on this subject, that we should imagine that the sick room, especially in hospitals, would be kept comfortable for the patient. We were the more astonished, therefore, on entering a private room in one of our institutions which prides itself on its up-to-dateness, to find the air of the large and easily ventilated apartment at a temperature of 80° F. The patient, moderately sick in bed with an intestinal disease, was suffering from a severe headache. The heat itself seemed quite sufficient to account for this symptom, which at least was aggravated by it.

Nurses and head nurses are not as yet adequately

impressed with the importance of the aerial envelope of the average patient, but are more concerned with his cotton and woolen coverings, with the taking of temperature—often influenced by the temperature of the room—and the giving of medicine.

Extremes of heat and cold may be dangerous to the body both in health and disease. They should be handled with the caution which their possible harmfulness indicates. We need a more sensible use of each.

THE PREPARATION OF CATGUT.

J. D. Speid Sinclair, resident medical officer, Bellingbroke Hospital, communicates to the *Lancet* for January 22, 1916, his opinion that the method of preparing catgut suggested by Roeder is simple and inexpensive. The raw gut is placed in a saturated solution of picric acid in oil of cloves for one week, rinsed thoroughly for about ten seconds in sterile water or a one to 5,000 bichloride solution to remove the oil globules clinging to the surface, and then stored in ninety-five per cent. alcohol. In four days it is ready for use. Before placing the gut in the saturated solution of picric acid and oil of cloves Mr. Sinclair prefers to formalize it in a five per cent. solution for twenty-four hours; this modification gives the gut additional strength and keeps it from swelling. The acid and the oil being soluble in alcohol are extracted to a considerable extent from the catgut, rendering the suture unirritating.

The advantages alleged for the method are these: The gut is rendered absolutely sterile throughout, as the picric acid and oil of cloves have marked penetrating powers. The oil of cloves, beside being a powerful germicide, renders the gut pliable, very strong, and less quickly absorbed, and, further, the gut does not deteriorate with storage. Mr. Sinclair has used the slightly modified Roeder method of preparation with gratifying results, and recommends it with confidence as one of the best for the preparation and sterilization of catgut.

AN EXPLOSION CAUSES STRANGE WOUNDS.

Dr. J. Lewis Thomas, of Newport, Mont., writes in the *British Medical Journal* for January 15th, of the curious results of an explosion. It appears that some twenty years ago, three men were sitting by the fireside in a small cabin, smoking. One was also busy trying to readjust the composition of some dynamite which he had been tempering on the hob in an old salmon tin. Becoming heated too much, the nitroglycerin separated from the earthy matter and formed a jellylike lining on the inside of the tin, and this the man was endeavoring to scrape off with his pocket knife. A terrible explosion occurred, and two of the men presented extraordinary wounds, especially on the thighs, but in only one wound (a chest one) was any trace of metal found. In the thighs and trunk the chief feature was a

small external wound leading into a large cavity churned up and softened. One man had both eyes quite burst up, as if a rough attempt had been made to gouge them out. The oldest man, who, it seems, was furthest away and thus less injured, was mentally upset, and not able, when he recovered consciousness, to give particulars of the accident. His mind was such a blank that it was thought that he was malingering, in order, being a foreman, to escape responsibility.

At the time Doctor Thomas came to the conclusion that the strange wounds were caused by the escape of internal body pressure into the vacuum produced by the explosion, the particular situation being determined by certain spots in the integument being accidentally punctured and a funnel shaped cavity produced. There was little damage to clothing and practically no burning.

MONSONIA OVATA IN DYSENTERY.

R. A. J. Asbury writes to the *Lancet* for December 11, 1915, recommending for dysentery among the troops, *Monsonia ovata*, which has been used successfully in South Africa by John Maberly and the writer, who says that it must be used fearlessly and will produce results in three days where bismuth and ipecacuanha have failed. Martindale and Westcott's *Extra Pharmacopœia* says of the drug that it is a Cape geranium closely related to the U. S. geranium, and has been used as a native remedy for dysentery, also for hemorrhage in typhoid fever. There is a tincture, one part in eight of ninety per cent. alcohol, the dose of which is one to four drams every four hours.

News Items.

Surgical Research at Columbia University.—An anonymous gift of \$10,000 for surgical research at Columbia University has been announced by the board of trustees.

The Mütter Lecture.—The postponed Mütter lecture of 1915 will be delivered in Thomson Hall, Philadelphia, Friday evening, February 18th, by Dr. Rudolph Matas, professor of surgery, Tulane University, New Orleans. His subject will be the Principles Governing the Surgical Treatment of Peripheral Aneurysms, and will be illustrated with lantern slides.

Changes in the Medical Faculty of Columbia University.—Dr. Gorham Bacon has tendered his resignation as professor of otology, to take effect at the close of the present academic year. Professor Raymond Dodge, of Wesleyan University, has been appointed nonresident lecturer in psychology for the academic year. Dr. Alexander T. Martin has been appointed lecturer in pharmacology. Dr. Archibald M. Strong, lecturer in clinical medicine, and Dr. E. Van Kleck, instructor in physiology.

Symposium on Joint Diseases.—At a stated meeting of the Philadelphia Clinical Association, held Monday evening, February 7th, the following papers on joint diseases were read: The Diagnosis and Treatment of Acute Articular Rheumatism, by Dr. William Egbert Robinson; The Diagnosis and Treatment of Arthritis Deformans and Still's Disease, by Dr. Alfred Stengel; The Diagnosis and Treatment of Gout, by Dr. Ralph Pemberton; The Diagnosis and Treatment of Joint Affections of Nervous Origin, by Dr. E. H. Goodman. The discussion was opened by Dr. Francis J. Dever.

Massachusetts Association of Boards of Health.—At the annual meeting of this organization, held in Boston on Thursday, January 27th, Dr. Frank A. Woods, of Holyoke, was elected president, and other officers were elected as follows: Dr. Francis X. Mahoney, of Boston, first vice-president; Dr. W. W. Wolcott, of Natick, second vice-president; Dr. F. G. Curtis, of Newton, treasurer.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, February 15th, West Branch, County Medical Society; Wednesday, February 16th, Section in Otology and Laryngology, College of Physicians; Thursday, February 17th, Northeast and Southeast Branches of the County Medical Society, Section in Ophthalmology, College of Physicians; Friday, February 18th, Jefferson Hospital Clinical Society.

Medical Reserve Corps Association.—The Colorado State Division of the Association of the Medical Reserve Corps of the United States Army has been organized in Denver, with the following officers: President, Dr. Charles A. Powers; vice-president, Dr. T. E. Carmody; secretary, Dr. C. K. Berlin; treasurer, Dr. Cuthbert Powell. The association meets monthly for the discussion of topics pertaining to the work of the corps and for the instruction of its members in military matters.

The New York Geriatric Society.—The next meeting of this society will be held on Wednesday evening, February 16th, in the Sherman Square Hotel, New York. The subject for discussion will be Chronic Constipation in the Aged. Many of the most prominent abdominal surgeons and gastroenterologists in the city will take part in the discussion. The medical profession is invited. Dr. Robert Abrahams is president of the society, Dr. Edward P. Swift, vice-president, and Dr. I. L. Nascher, secretary.

The Brooklyn Medical Association.—At the annual meeting of this association held on Wednesday evening, January 12th, the following officers were elected: President, Dr. J. Sturdivant Read; vice-president, Dr. William H. Steers; recording secretary, Dr. George J. Doyle; corresponding secretary, Dr. Adolph Wieher; and treasurer, Dr. Gordon Gibson. At a meeting held on Wednesday evening, February 9th, the paper of the evening, A Review of Anesthesia in Obstetrics, was read by Dr. Harvey B. Matthews.

Industrial Hygiene in Pennsylvania.—The Division of Industrial Hygiene and Engineering of the Pennsylvania Department of Labor and Industry is planning a series of conferences for the promotion of industrial hygiene in the industries of Pennsylvania. The first conference, which will be devoted to a discussion of lead poisoning, will be held at the State Capitol on Thursday, February 17th. Detailed information regarding these conferences may be obtained from Dr. Francis D. Patterson, chief of the division of hygiene, Department of Labor and Industry, Harrisburg, Pa.

A Memorial to Doctor Trudeau.—Plans are being made for raising \$500,000 to endow a Trudeau Memorial Foundation, to perpetuate the name and fame of Dr. Edward Livingston Trudeau, whose life was devoted to the fight against tuberculosis. The main object of the foundation is to conduct research work to determine the causes of tuberculosis and to develop methods of treatment, and the work of the foundation will be conducted through three institutions, the Trudeau School of Tuberculosis, the Saranac Laboratory for the Study of Tuberculosis, and the Society for the Control of Tuberculosis. The details of the plan for raising the endowment will be announced shortly. It is hoped that an income of at least \$25,000 will be provided for research work.

The Bay Ridge Medical Society.—The first meeting of this newly organized society was held on Tuesday evening, February 1st. The paper of the evening was read by Dr. A. H. Nansen on Blood Pressure. Those who took part in the discussion which followed were Dr. R. E. Coughlin, Dr. C. M. Fisher, Dr. C. W. Berry, Dr. Earl Mayne, and Dr. E. D. Ferris. The society has for its object the sociability of its members, study, and general welfare. The district embraces the territory from the Narrows to Thirty-ninth Street and Gravesend Avenue. The officers elected were: Dr. John P. McQuillin, president; Dr. Robert E. Coughlin, vice-president; Dr. Frank E. Stoney, secretary; and Dr. Roderick Byington, treasurer. The society has forty-two charter members.

The Philadelphia Genitourinary Society of the American Urological Association elected the following officers, at the annual meeting held recently in Philadelphia: President, Dr. H. R. Loux; vice-president, Dr. Thomas R. Nielson; secretary-treasurer, Dr. B. A. Thomas; librarian, Dr. William H. Mackinney; executive committee, Dr. Alexander A. Uhle, chairman, Dr. W. H. Kinney, Dr. Alexander Randall, and Dr. C. S. Hirsch.

Hartford, Conn., Medical Society.—At the annual meeting of this society, held Monday evening, January 3d, Dr. Joseph E. Root was elected president and other officers were elected as follows: Vice-president, Dr. Charles C. Beach; secretary, Dr. Amos T. Harrington; assistant secretary, Dr. Howard W. Brayton; treasurer, Dr. Philip D. Bunce; librarian, Dr. Walter R. Steiner; board of trustees, Dr. Edward K. Root, for three years; executive committee, Dr. Charles W. Page, for three years; board of censors, Dr. Gideon C. Segur, for three years.

Deaths from Railway and Street Car Accidents in the United States.—According to a summary of statistics for the registration area of the United States for the year 1914, issued recently by the United States Census Bureau, deaths due to railway accidents and injuries totalled 7,062, corresponding to a rate of 10.7 in 100,000 population, which is the lowest on record and shows a marked decline compared with the rates for 1913 and 1912. The deaths from street car accidents and injuries numbered 1,673, or 2.5 in 100,000 population. This rate is also the lowest on record.

National Association for the Study and Prevention of Tuberculosis.—The next annual meeting of this association will be held in Washington, D. C., May 11th and 12th, under the presidency of Dr. Theodore B. Sachs, of Chicago. The meeting will follow immediately after the triennial conference of the Congress of Physicians and Surgeons of North America. The following chairmen of sections have been appointed: Advisory Council, Dr. Livingston Farrand, of Boulder, Colo.; clinical section, Dr. Thomas McCrae, of Philadelphia; pathological section, Dr. Gerald B. Webb, of Colorado Springs, Colo.; sociological section, Dr. Seymour H. Stone, of Boston. Dr. Henry B. Jacobs, of Baltimore, is secretary of the association.

Changes in the Sanitary Code of New York.—Numerous changes and additions have been made in the sanitary code of the city of New York by the board of health. Among them are the following: Exposed water tanks must be covered with a tightly fitting cover, and where used for drinking water must be thoroughly cleansed at least once a year; the use of constituents injurious to health is forbidden in hair dyes and cosmetics; the requirement of a permit to retail milk is abolished; the sale of horse flesh for food purposes, heretofore interdicted, will be permitted hereafter under certain restrictions; all horsehoes establishments will be required to obtain a permit from the board of health and to comply with certain regulations, as these establishments constitute an important factor in the spread of glanders; a definite bacteriological standard of clean, fresh water will be required in all bathing establishments.

New Children's Clinic Record Card.—One of the most promising developments of the tuberculosis clinic service throughout the city has been the establishment of special children's classes. These classes are designed to care for, not only the children patients of the clinics, but also the children of the clinics' adult patients—those who are known to have been exposed to infection. In these classes, which are held on Saturday morning, every effort is made to carry out preventive measures and to secure for all the children proper disposition either in preventoriums, sanatoriums, or open air school rooms.

An important feature of the children's clinic work has been the courses in physical exercise inaugurated at the Chelsea Clinic by the Society for Prevention and Relief of Tuberculosis, and subsequently introduced into other clinics through the cooperation of the Department of Education. The classes have been so well attended and have been so beneficial in improving or maintaining the good health of the children and holding their interest in the clinic, that it is hoped it may be possible to extend these classes to other clinics.

During the coming year, it is proposed to carry on simultaneously with these classes, a control class for the purpose of comparison. It is confidently expected that not only will great benefit accrue to the children, but that interesting statistical data will presently be available.

Allegheny, Pa., County Medical Society.—Dr. William W. Jones, of Pittsburgh, was elected president of this society, at the annual meeting held in Pittsburgh on January 11th. Other officers were elected as follows: Vice-president, Dr. E. S. Montgomery; secretary, Dr. C. J. Vaux; assistant secretary, Dr. J. H. Collins; treasurer, Dr. W. C. Bryant; directors, Dr. J. I. Johnston, Dr. I. H. Alexander, Dr. John A. Hawkins, Dr. John W. Boyce, Dr. K. I. Sanes, Dr. W. C. Wible, Dr. T. G. Simonton, Dr. George Johnston, Dr. E. B. Heckel; Dr. C. A. Stillwagon, Dr. W. T. Burleigh, and Dr. W. H. Mercur were elected censors, with Dr. George W. McNeil, district censor. Dr. John D. Milligan was elected chairman of the relief committee, and Dr. I. L. Ohlman was elected auditor of the society's weekly bulletin. Dr. E. B. Haworth is the society's retiring president.

A Lowered City Death Rate.—Figures given out by the Department of Health of the City of New York show that the death rate of the city for the past week was 2.41 lower than the rate for the previous week. The decrease in the number of deaths from influenza, bronchitis, and pneumonia was responsible for this lowering. During the week there were 1,547 deaths, compared with 1,812 deaths during the week ending January 29th, the respective rates being 14.5 and 16.46; 46 deaths were reported from influenza, compared with 81 during the week before; 292 deaths were reported as due to pneumonia, while 339 were reported as due to this cause during the previous week; 340 deaths were reported as due to heart disease against 424 during the week ending January 29th. During the first six weeks of 1916, the rate has been 16.07 per 1,000 of population; during the corresponding period of 1915, the rate was 14.48. This increase of nearly three points has been due entirely to the epidemic of influenza, now happily almost extinct.

Personal.—Dr. William Seaman Bainbridge, of New York, delivered an address on Some Effects of the War, before the Eastern Medical Society of the City of New York, Friday evening, February 11th. The address was illustrated with lantern slides, and discussed by Major Louis Livingston Seaman, president of the British War Relief Committee, and Dr. Foster Kennedy.

Dr. Juan Santos Fernandez, of Havana, Cuba, president of the Cuban Academy of Sciences, was the guest of honor at a meeting of the Wills Eye Hospital Ophthalmic Society, held February 4th.

Dr. Frank H. Edsall, superintendent of the Bureau of Health in Jersey City, N. J., has been elected president of the New Jersey State Health Officers' Association.

Dr. Frank E. McAvoy, of Providence, R. I., has been awarded a fellowship at the Mayo Clinic, Rochester, Minn. The term of service is three years.

Dr. Stanley C. Cox, of Holyoke, Mass., has been appointed associate medical examiner in the third Hampden district.

Fur in Relation to Anthrax.—The Department of Health of the City of New York has issued a statement regarding the alarming report issued by Dr. Graham Rogers, of the State Labor Department, concerning the spread of anthrax infection through the wearing of cheap furs. It is the opinion of the department that there is absolutely no cause for alarm. The cheaper furs, in particular, are submitted to a dressing and dyeing process which cleanses and disinfects them. The department insists that before Doctor Rogers' reports as to the infectiousness of cat fur can be accepted, unimpeachable scientific testimony based on the bacteriological examination of these furs must be furnished, and such testimony has not been forthcoming. Furthermore, if cat fur is a dangerous source of anthrax infection, those employed in the preparation of the fur should show a high mortality from anthrax, while, as a matter of fact, no cases of the disease have occurred among persons closely associated with cats and cat fur. According to statistics of the Division of Industrial Hygiene of the department nine cases of anthrax were reported last year, and the occupations of the victims were as follows: Lawyer (male), seventy-one years of age; candy-maker (female), seventeen years of age; medical student (male), twenty-five years of age; government weigher (Custom House), thirty-four years of age; laborers (two cases), aged fifty-two and forty-five years respectively; shoemaker, fifty years of age; no occupation (two cases), twenty years and six years of age.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

GRIPPE IN CHILDREN.*

By EDWIN E. GRAHAM, M. D.,

Professor of Diseases of Children, Jefferson Medical College.
Philadelphia.

In the etiology of influenza there are usually associated with the bacillus of Pfeiffer other organisms, such as the pneumococcus, streptococcus, and staphylococcus. The influenza organism is better recovered from the deeper air passages, the ear, empyema cavities, and the products of meningeal inflammation than from the upper air passages. In the influenza of infants and children pathological changes take place both in the upper and not infrequently in the lower respiratory tract. Involvement of the gastrointestinal tract occurs with particular frequency. In the young child or infant bronchopneumonia is a common complication.

The symptoms of influenza in children are very irregular. Some cases are mild, the disease lasting only from two to five or seven days. In these the onset is almost always sudden. A general soreness develops and the child "fusses" whenever handled. The early symptoms often include vomiting, and the temperature rises to 101°, 102°, or 103° F., even in mild cases. There is considerable prostration. Convalescence is slow, even from mild attacks. Coryza, pharyngitis, and bronchitis almost always accompany these cases. In the severe group of cases the temperature rises to 102°, 104°, or even 106° F. Prostration is more marked than in the preceding group of cases. There is almost invariably a sudden onset, the patient, e. g., being able to go to school in the morning, yet becoming decidedly sick before bedtime, with vomiting and headache as manifest symptoms. In these severe cases the clinical appearance in the first twelve hours is much like that of pneumonia. The temperature is extremely irregular, and nervous symptoms are prominent. The child is often found lying in a drowsy stupor and appears very ill. Convulsions are rare, though there may be muscular twitchings and some degree of delirium.

On the whole, the symptoms and physical signs in influenza cases are not as severe as we should ordinarily expect with the temperature. The latter shows a tendency to fluctuate daily. Thus, in one recent case, that of a young boy, a daily chill was observed; the temperature rose to 104° F. every day, yet every day touched normal. This patient lost his appetite and was drowsy, but as regards the respiratory tract suffered only from bronchitis.

The moderately severe attacks of influenza last from six to eight or ten days. Pneumonia may develop as a complication. Follicular tonsillitis is the rule rather than the exception. Vomiting and diarrhea are frequent accompaniments. Relapses are extremely common; in forty-eight hours after re-

cession of the temperature to normal, it rises again and the symptoms return without apparent cause. The bacillus of influenza has been recovered from patients weeks and weeks after the onset of the disease; on the other hand, it may disappear quickly. In the worst cases it can be recovered from the blood. These cases are most likely to have meningeal complications and arthritis.

In the respiratory type of influenza, pharyngitis, tonsillitis, laryngitis, bronchitis, and not uncommonly bronchopneumonia are the chief pathological conditions to be noted. If a latent tuberculous process exists, it is likely to be lit up by the acute disease. In the gastrointestinal type, such symptoms as nausea, vomiting, and diarrhea are outstanding features. There exists, on the other hand, a nervous type, characterized by irritability, restlessness, headache, twitchings, stupor, and often a very high fever, without, however, actually dangerous symptoms.

Pneumonia is the commonest condition secondary to influenza, and is especially dreaded. Secondary otitis is also recognized as a distinct complication. Adenitis is common. Eruptions similar to those of measles and scarlet fever are at times met with and may lead to confusion of the condition with these diseases. In the differential diagnosis of such cases, we fall back on the history; the existence of other cases, especially in the same household, is of diagnostic help. The child is often the last member of the family to acquire the disease. Nephritis is not a very common complication of influenza. Anemia, however, is distinctly common, and predisposes to tuberculosis.

The prognosis of influenza in the young is good if there are no complications. If pneumonia develops, it is more grave, especially if the patient is already in a weakened condition. The younger the patient, the greater the danger, not only owing to the high mortality from secondary pneumonia but because of the likelihood of digestive disturbances, the effects of which are especially severe in infants. The common symptoms of influenza are those of a general infection. If a special local infection develops anywhere, the prognosis is rendered so much the graver.

In treating influenza, the first measure to be enforced should be isolation, especially isolation of the young child from other children. The patient should be kept during his illness in one or two rooms, which should later be subjected to fumigation. Every child should be put to bed, and a laxative should be given at the outset. High initial temperature may be controlled with a tepid bath (98° F.), after which the patient should be rubbed well. An icebag may be placed on the chest and moved round from time to time. For nervousness and headache, two and a half grains of acetophenetidin may be given, morning and night, in the

first forty-eight hours, four powders only being prescribed. If the pulse becomes weak, the agents used should be whiskey, strychnine, strophanthus, and digitalis. Cough is often relieved by small doses of heroine or codeine; these should be ordered for use if the patient is kept awake by the cough. The cough of convalescence, on the other hand, should be treated with codliver oil and small doses of creosote. Pneumonia, if it develops, should be treated with the measures customarily employed in this disease. It is important, in the infant, to watch the feeding, especially if there is a family history of tuberculosis. If the illness is protracted, the child should be taken to the country or seashore as soon as possible. In winter, a journey to some warmer point, e. g., to Old Point Comfort or Browns Mills, is likely to prove beneficial.

The diagnosis of influenza is necessarily clinical, bacteriological diagnosis being at present too difficult. Epidemic or family cases, or the existence of a special type of the disease, are therefore of great help. Influenzal meningitis may be witnessed during an epidemic or occur sporadically. It is characterized pathologically by a cloudy cerebrospinal fluid and an increase in the contained polymorphonuclear cells. The influenza organism is both intracellular and extracellular in situation. Martha Wolstein has recently recommended for these cases a serum made from virulent grippé organisms. This serum bears the same relation to, and is of the same significance in influenzal meningitis as is Flexner's serum in cerebrospinal meningitis. The bacteria can always be found in the blood in the worst cases, those which show a high mortality. The serum referred to, which is already on the market, is therefore to be remembered as a valuable aid in treatment. In the diagnosis we should bear in mind that where, in the presence of meningeal symptoms, no meningococci or pneumococci can be found in the cerebrospinal fluid though the latter is cloudy, the presence of the influenza organism is to be strongly suspected.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,
Department of Biology, Olivet College.
Sixth Communication.

THE BROMIDES.

When may a bromide be rationally administered? This may seem an idle question to those who, with imperturbable sangfroid, daily prescribe bromide mixtures for sleeplessness, hysteria, neurasthenia, chorea and epilepsy. But is the use of bromides in such cases exactly rational? Is not the principal result aimed at in such treatment the early palliation of acute symptoms? Is the ultimate welfare of the patient duly considered?

The physician's responsibility involves as complete eradication as possible of the causative factors of debility and disease. This process of eradication should be conducted expeditiously, and with as little incidental disturbance of the general system as circumstances permit. If the nature of the affliction is occult, then great care indeed must be exercised that

temporary measures prove not secondarily detrimental.

The most pronounced effect of the bromides is on the cortex and the gray matter of the cord. There is produced a depression of the higher intellectual and motor areas of the cerebrum, a marked interference with the mnemonic faculties, and an inhibition of the spinal reflexes on both the motor and sensory sides.

After a therapeutic dose of a bromide there ensues a mental dullness, confusion of thought, and a difficulty in framing ideas, which results in hesitancy in speaking. This is followed by lassitude, physical and mental apathy, drowsiness, and shallow unrefreshing sleep—or, rather, a condition of marked hebétude. From this lethargy the patient slowly rouses, after several hours, feeling stupid and tired, and unfit for exertion; and this depression of the mental faculties rarely passes off before several hours more. What may be the pathophysics involved herein is not known. One writer holds that the bromides produce "a degeneration of the cortical cells, beginning at the peripheral neurones," but the evidence thus far produced may be considered inadequate. It does appear, however, that there is an effect produced profoundly toxic rather than therapeutic.

In sleeplessness the soporific effect of the bromide does not result in that quality of sleep essential to rest, while the aftereffect frequently adds to the depressive anxiety that primarily caused the insomnia. Or, if the sleeplessness is due to pain, the bromides usually fail entirely.

Neurasthenia may be alleviated temporarily by the bromides through cortical inhibition, but the subsequent depression of all the faculties makes the second stage of the patient much worse than the first. The underlying trouble has not been removed, yet the incidental manifestations have been aggravated. This same conclusion is equally true concerning administration of the bromides for that peculiar symptom complex known as hysteria.

Chorea minor may usually be cured with Fowler's solution, if hygienic measures are also adopted. Huntington's chorea is made rapidly worse by the large doses of the bromides required to control the twitchings; no curative or adequately compensatory results are obtainable.

The great field in which the bromides have been employed is epilepsy. In this distressing ailment frequency of attack may be lessened considerably, provided that the bromide is administered continually. But continued dosing with bromine brings on an inevitable mental, moral, and physical deterioration of the patient, with only occasional amelioration of the acute symptoms. Many alleged cases of epilepsy have been reported as cured under the bromide treatment, but the logic of pharmacology sharply challenges the accuracy of the diagnosis. Epileptoid convulsions may be produced by many conditions not truly epileptic, there being in such cases a relative inhibition of cerebrocerebellar co-ordination, all of which may readily be remedied by removal of the causative factors, or by the increased stability accompanying normal growth; in such cases the coincidental administration of a bromide might readily lead to undeserved merit being ascribed to

the drug. A just recognition of these facts has led to a marked diminution in the use of bromides in many of the larger retreats for epileptics, more reliance now being placed on plain, easily digested food, simple occupations, fresh air, and the removal of all discoverable irritants.

Justifiable indications for the use of the bromides may be found in exacerbations of acute manias and acute irritations of the spinal cord, even though in the former depressive insanity may be induced ultimately—a condition less dangerous and no more hopeless.

Sodium bromide is less irritating than the potassium salt, hence is the preferable preparation. Bromides should not be given to mentally normal children.

Gastric Hyperacidity.—As the result of a careful analysis of gastric hyperacidity, with or without ulcer, Willard J. Stone (*Journal A. M. A.*, January 29, 1916) came to the conclusion that the hyperacidity was directly associated with carbohydrate excess and acid decomposition of the carbohydrate molecule in the stomach. On the basis of this causation of hyperacidity and ulcer, the following satisfactory plan of treatment was worked out: The diet should be limited at first to foods which contain less than ten per cent. of carbohydrates and which yield, for the most part, from three to five per cent. only. Such foods are fresh juice and pulp of such fruits as grape fruit, oranges, peaches, and watermelon, without sugar; broths, eggs, fish, chicken, broiled or baked meats, bacon, and milk; tea, butter, and cream; asparagus, spinach, cauliflower, watercress, endive, squash, turnips, carrots, lettuce, fruit, and lettuce salad with olive oil dressing and a small amount of lemon juice; brazil nuts, pecans, or hazel nuts. Candy and all sugary foods; condiments; fruits with more than ten per cent. of carbohydrate, such as apples, pears, plums, bananas, cherries, and currants; peas, parsnips, baked beans, potatoes, corn, cereals, rice, macaroni, bread and crackers, cocoa, chocolate, and coffee should be prohibited. If, when the diet has been properly restricted, the symptoms do not promptly subside, the patient may take a glass of milk between meals and follow each feeding with a powder of the following composition:

R Magnesii oxidi, . . . }
Sodii bicarbonatis, . . . }ãã gr. xx.
M. et fac tales chartulas.

When diarrhea is present the powder may also be made to contain bismuth subcarbonate. If the organic acids still persist in forming, an attempt may be made to rid the stomach of destructive organisms by a daily lavage with a litre of a one to 1,000 solution of salicylic acid. Where active ulcer is present, initial treatment should demand rest in bed with rectal alimentation for a few days, or until vomiting ceases. Albumin water with fruit juices, but no sugar, milk, and broths may then be begun, two to three ounces every two hours. The powder mentioned before and including bismuth constitutes the medicinal treatment. After a week to ten days, tolerance to food will usually have been so increased by this treatment that soft articles from the per-

mitted foods may be gradually introduced and the patient brought up to a more adequate diet. In patients suffering from starvation or serious malnutrition, continuous enteroclysis with a solution of an ounce each of dextrose and sodium bicarbonate to the quart of plain tap water should be ordered.

Management of Patients with Chronic Renal Disease.—Theodore C. Janeway, in the *American Journal of the Medical Sciences* for February, says that for the most part treatment in the past was purely schematic, based on a conventional diagnosis, and usually involved violent interference with the habits of a lifetime. To tell every patient with albuminuria or hypertension to stop eating red meat, or worse to go on a milk diet, is evidence of colossal ignorance, or of inexcusable mental laziness. He divides the cases into five types. The first is one in which albumin and casts in the urine are the only evidence of disease. If the treatment of acute nephritis results in a steady subsidence of albuminuria, it should be persisted in, just as though the patient had a known acute nephritis, but if a week in bed on a milk diet has no appreciable effect on the albumin and casts, the bed and milk diet are an unwarrantable hardship. In children the question of a postural albuminuria should be cleared up without delay. The effect of exercise and cold baths should be studied carefully, as these may cause an albuminuria. Severe physical strain, exposure to cold and wet, and excesses, not only in tobacco and alcohol, but in other things as well, are to be avoided. Soups and spices may wisely be excluded from the diet. Gourmands should have their excessive appetites restrained, obese patients should be moderately reduced, but if the phthalein test is normal he sees no reason for a restriction of protein, either qualitative or quantitative, below a moderate normal intake. Patients who use much salt should reduce it.

The second type is one in which the patients have hypertension with or without a trace of albumin and with slight if any subjective symptoms. The worst advice for a man of important affairs is to give up business completely, but change of occupation may be imperative for the manual laborer. It is of great importance to secure adequate normal sleep. A short rest in the middle of the day is of great benefit. Tobacco in excess is a poison. While excessive athletics may be dangerous, exercise is beneficial, and when this cannot be allowed for any reason, massage is helpful. Diet should follow about the same lines as in the first class, and the use of salt should be moderate. The abuse of fluid is dangerous and a winter vacation in a warm climate is sometimes desirable.

The third type has hypertension and outspoken myocardial insufficiency. The heart must be safeguarded by rest in bed or in a chair. Those with auricular fibrillation need digitalis, those without should also receive the drug, but some of them do not respond as well. Toxic effects must be watched for, as some patients with regular rhythm are made worse by digitalis. Then one of the caffeine diuretics should be tried, theocin, about twelve grains a day, or diuretin, about forty grains in divided doses, not oftener than every other day. The fluid

intake and the urine output must be measured accurately. Diuresis from digitalis should not be expected within forty-eight hours, but that from the caffeine group may be observed on the day of administration and the next doses should be given when the diuresis ceases. The symptoms that demand treatment are dyspnea, edema, and the whole picture of cardiac failure with passive congestion of the viscera; vasodilators are indicated. He speaks highly of fresh nitroglycerin tablets dissolved on the tongue and not swallowed. Theobromine may be valuable in some cases. Regulation of the diet is essential, while the intake of fluid, salt, and nitrogen must be reduced.

The fourth type is one of general edema without notable myocardial insufficiency. These patients excrete small quantities of salt, so treatment should always begin with a period of very low salt and water intake to promote rapid absorption of the dropsy. Bed is desirable until normal function is restored, and if the dropsy disappears the further treatment is that of convalescence from acute nephritis. Obstinate edema requires other dehydrating measures, sweat baths, hot packs, perhaps purging.

The fifth type is that of advanced renal insufficiency. Treatment is purely symptomatic. Paroxysms of dyspnea and of Cheyne-Stokes breathing demand special relief. Morphine is effective in many cases, but may induce anuria with coma. Chloral hydrate in five or ten grain doses, alone or with bromides, sometimes is effective. The patients should be encouraged to sleep in a chair instead of insisting that they go to bed. Diet is reduced to a minimum by the patient himself. Bleeding has its greatest value in sudden convulsions, when the removal of 500 or 600 c. c. of blood is indicated. Sweating occasionally is of benefit.

Emetine in Hemoptysis in Chest Wounds.—

J. Dupont and J. Troisier, in *Bulletin et mémoires de la Société médicale des hôpitaux de Paris*, November 27, 1914, report three cases of penetrating rifle bullet wounds of the thorax with hemoptysis, in which emetine was used with results apparently as satisfactory as those already reported by several observers of the hemoptysis of pulmonary tuberculosis. In the first case, with a wound at the base of the left lung, arterial blood was being abundantly expectorated upon admission, and the man was dyspneic and oppressed, and presented signs of a slight hemothorax. The condition persisting throughout the night in spite of the dressing applied, a subcutaneous injection of two thirds of a grain (0.04 gram) of emetine hydrochloride was given. In the afternoon the bloody expectoration showed marked reduction, and in the succeeding night ceased almost completely. A week later, the patient was discharged in excellent condition. In a second similar case, a single injection of emetine was also followed in a few hours by cessation of bloody expectoration. In the third case, that of a man wounded a week before, bloody expectoration had been continuous, and auscultation revealed a tendency to consolidation of the lower portions of the lungs, with crepitant rales. After an initial injection the bloody sputa were reduced from fifty a

day to ten, and after the second, entirely disappeared.

The authors would not hesitate, in severe cases, to administer initial doses of one and a quarter or even one and a half grain (0.08 or 0.1 gram). That the benefit afforded by the drug is permanent was shown in that, after the period of improvement following injections, a return of hemorrhage through secondary vasodilatation did not occur in any instance.

Treatment of Weeping Erythematous Eczema of the Face.—In the *Medical Fortnightly* for July 25, 1914, reference is made to the fact that where this condition involves the face, there is usually pronounced edema of the loose tissue in the infraorbital region, so that erysipelas may be suspected. Under these circumstances greasy applications should be avoided, and wet dressings soaked in normal saline solution used. The following lotion is effectual in relieving the irritation and smarting:

R Zinci oxidi, 5i (4 grams);
Lapidis calaminaris, 5ii (8 grams);
Glycerini, 5ss (2 c. c.);
Liquoris calcis, q. s. ad, 5vi (180 c. c.).

M. et ft. lotio.

When the exudation has ceased a powder such as the following may be used:

R Zinci oleostearatis (N. F.), 5i (30 grams);
Amyli pulveris, 5ii (60 grams).

M. et ft. pulvis.

Or the following cream:

R Zinci oxidi, 5i (4 grams);
Adipis lanæ, 5iii (8 grams);
Olei olivæ, 5ss
Liquoris calcis, } 5i (120 c. c.).

M. et ft. cremor.

A Mouth Wash in Grippe.—Dr. Beverley Robinson, in an original communication on the Treatment of Grippe in this issue of the *JOURNAL*, page 293, recommends as a mouth wash and gargle the well known liquor antisepticus alkalinus. Doctor Robinson informs us that even more efficacious is a mixture devised by his friend, Dr. Augustus Wadsworth, and published in a communication, Mouth Disinfection in the Prophylaxis and Treatment of Pneumonia, in the *Journal of Infectious Diseases* for October, 1906, page 774. The formula is as follows:

R Sodium chloride (C. P.), 5ss;
Sodium bicarbonate (C. P.), gr. x;
Water (dist.), 5i;
Glycerin, 5j;
Alcohol, 5v;
Thymol, . . . } 5ā gr. j;
Menthol, . . . }
Oil of wintergreen, gtt. iij;
Oil of cinnamon, gtt. ij;
Oil of eucalyptus, gtt. v;
Tinct. cudbear, 5jss;
Tinct. rhatany, 5ss

M. Sig.: Dilute with an equal volume of water.

In preparing this solution, remarks Doctor Wadsworth, the salts should be dissolved in the water before adding alcohol. Even when carefully made up, a cloudiness or precipitate may appear in the solution, on account of the presence of rhatany. By adding two or three of the flavoring oils a less pronounced taste is obtained than when only one is used.

The Mould Infections of the Lung.—Charles P. Emerson, in the *Indianapolis Medical Journal* for January 15th, urges the administration of potassium iodide in large doses in these cases, as it is the one drug that has proved of value in all infections due to plant parasites. The differentiation from pulmonary tuberculosis must be made stringently, for this drug is contraindicated in the latter disease.

Treatment of Rhachitic Disease of the Muscles.—Erwin Baumann recommends in the *Correspondenz-Blatt für Schweizer Aerzte* for December 11, 1915, a daily dose of from one to two teaspoonfuls of an emulsion of phosphorus, 0.01 phosphorus to roo of emulsion, in divided doses at each meal, for children in the first six or seven months of life.

Strontium Salicylate.—There being no satisfactory foundation for the therapeutic reputation enjoyed by this salicylate, M. A. Blankenhorn (*Journal A. M. A.*, January 29, 1916) undertook a clinical study of this drug in comparison with other commonly used salicylates. He found that the average minor toxic dose was the same as for sodium salicylate; that it produced the same gastric and other toxic symptoms as other salicylates; and that it was no more effectual in the relief of pain than the other salicylates. In addition, its physical properties rendered it less convenient to handle.

The Relation of Prognostic Factors to Treatment in Diabetes mellitus.—Nellis B. Foster, in the *American Journal of the Medical Sciences* for February, says that every case of diabetes demands careful study, not only of the diabetic state, but also of all conditions which may influence the future health of the patient. Infections must be kept in mind as a constant danger. Early cases must be kept free of glycosuria in order to raise resistance and to avoid the development of acidosis. This can be done even in the face of acidosis by restricted low diets. With advanced cases glycosuria must be controlled in order to restore normal weight and vigor. When there is grave acidosis, this also in many cases may be successfully abolished. The chief difficulty in treating diabetics is the necessity of constant vigilance extending over years.

Radical Treatment of Rheumatoid Arthritis.—The condition is believed by M. J. Rowlands (*Lancet*, January 15, 1916) to be secondary to some chronic focus of infection and to be toxic in nature. If taken early, before there has been too serious damage to the tissues, treatment will yield satisfactory results. The first essential is the thorough searching out and removal of all foci of chronic infection and the preparation of an autogenous vaccine from organisms isolated from such foci or from the urine if foci cannot be definitely located. The vaccines should be given in ascending doses, every week or ten days, adjusting the dose so as to secure a slight arthritic reaction. After improvement has advanced, the intervals between doses may be lengthened. The treatment should be continued for a year or more. In addition to these direct measures, all of the general ones in common use should be employed, including change of scene, attention to the general health, massage, baths, tonics, removal of sources of worry, etc.

Spontaneous Pneumothorax.—According to Louis Hamman, in the *American Journal of the Medical Sciences* for February, the treatment of spontaneous pneumothorax is to do nothing. The pulmonary collapse closes the pleural opening, the air in the pleural cavity is absorbed gradually, and as the lung begins to expand the pleural rupture is tightly healed. When the pneumothorax recurs after the lung has completely expanded, the healing of the pleural wound has no doubt been incomplete.

Nitrous Oxide in Obstetrics.—In a letter to the *Indianapolis Medical Journal* for January, Arthur E. Guedel says: "I have written to some twenty men all over the country who have been using this anesthetic method and have received reports of over 1,000 cases of its application. In none is there a serious unfavorable result, the mother and baby always doing extremely well. The only unfavorable reports received are those in which the mother apparently had little benefit from the gas, and these number less than two per cent. of the total."

Treatment of Cirroid Aneurysm with Boiling Water.—John A. Wyeth, in the *Medical Record* for January 15, 1916, describes this method which he introduced in 1902. Boiling water is injected subcutaneously into the aneurysmal mass with a steel syringe, to the barrel of which a lighted candle is held to cause generation of steam. As in the case described (cirroid aneurysm of right temporal and parietal region), several sittings may be required with intervals of two days. The mass becomes solid and pulsation ceases.

Intravenous Use of Sensitized Vaccines in Typhoid.—Fritz Meyer (*Berliner klin. Woch.* August 16, 1915) gave doses ranging from 200 to 1,000 million killed sensitized typhoid organisms intravenously, at intervals of three days, to a series of patients with typhoid fever and secured favorable results. His main object, however, was to study the possible ill effects of this form of specific treatment. Aside from a slight local reaction at the site of the injection and a slight, temporary elevation of the temperature with some increase in headache, the injections produced no ill effects. Following each injection there was a decided reduction in the number of leucocytes, which was greatest after the first dose. In all cases the subjective improvement of the patients was very marked. Meyer regards the early therapeutic administration of small ascending intravenous doses of sensitized typhoid bacilli as a safe and valuable therapeutic procedure.

Quinine in Conjunctivitis.—As the result of extensive experience, begun before the days of diphtheria antitoxin, John Tweedy (*Brit. Med. Jour.*, Jan. 1, 1916) recommends the local application of solutions of quinine in cases of infected and sloughing corneal ulcers and in many cases of infected conjunctivitis.

Erratum. In a paragraph on the treatment of gripe in our issue for January 29th, page 230, the amount of acetyl-salicylic acid in a prescription is given as sixty cgm. As the parenthesis shows, this should be six grams.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

August 9, 1915.

New Studies on the Pancreas, by Max Einhorn.—Methods are described whereby one can determine clinically the amounts of rennin, amylpsin, steapsin, and trypsin present in the duodenal fluid in man with the aid of the duodenal tube. The normal total amounts of ferments in this fluid in the fasting state are on the average six mm. for amylpsin, 3.5 for steapsin, and nearly three for trypsin, as measured by the height of digestion in capillary tubes of solid materials. From a study of a large series of patients several classes of functional disturbances of the pancreas can be differentiated: 1. Hyperpancreatism, an increased activity with all ferments present and trypsin in abnormal abundance. 2. Hypopancreatism, reduced activity with all ferments present, but the amount of trypsin less than normal. 3. Dyspancreatism, disturbed activity with one or two ferments absent. 4. Heteropancreatism, variable function without constancy in the presence and amounts of the several ferments on repeated examinations. In gastric ulcer slightly less than half of the patients showed normal pancreatic function, ten per cent. showed hyperpancreatism, nine per cent. dyspancreatism, and thirty-six per cent. hypopancreatism. In duodenal ulcer thirty-seven per cent. had normal function and hypofunction, respectively, while eight per cent. had hyperpancreatism and seventeen per cent. dyspancreatism. Only six cases of diabetes were studied, but of these two thirds showed normal pancreatic function and no case hypopancreatism. The method should also prove of material help in the scientific adjustment of suitable diets in doubtful cases, as well as being an aid to diagnosis in digestive disorders.

MEDIZINISCHE KLINIK.

November 28, 1915.

Effectiveness of Typhoid and Cholera Immunization, by A. von Wassermann and P. Sommerfeld.—As infection in these two diseases always occurs through the gastrointestinal tract, the effectiveness of prophylactic immunization was called into question. Statistical studies from considerable series of human inoculations are not conclusive evidence of the prophylactic efficiency of the method, in the opinion of the authors. Animal experiments, therefore, were undertaken to determine the status of such immunization, and it was found that there was a direct relation existing between the content of the blood in bactericidal substances and the resistance of the intestine to invasion by typhoid or cholera organisms. Prophylactic inoculation, therefore, not only furnishes defensive weapons against the organisms of cholera and typhoid after they enter the circulation, but also exerts a direct influence in reducing the possibilities of invasion. Such protection, however, is only relative and in the face of marked exposure may be overcome. General hygienic measures should not be relaxed even when the population has been prophylactically immunized.

Animal Charcoal in the Isolation of Typhoid Bacilli, by Philaethes Kuhn.—The adsorbent powers of animal charcoal for typhoid bacilli are specially marked and are much greater than for other organisms inhabiting the intestinal tract, including colon bacilli. This specific property can be made use of in facilitating the isolation of typhoid bacilli from the stools or urine by adsorbing them with small amounts of charcoal and plating out the sediment containing this agent after proper centrifugating. By this means the organisms may not only be isolated more readily, but isolated from a much larger proportion of otherwise doubtful cases than is the case with the ordinary procedures.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

November 16, 1915.

Toxic Properties of Prostatic Extract and Their Relation to the Benefit Following Prostatectomy, by Paul Thaon.—In a previous research the author's attention was drawn to the extreme toxicity of prostatic extracts, a maceration of 0.2 to 0.25 gram of bull's prostate, for example, causing death in a 2.5 kgm. rabbit in three or four seconds upon intravenous injection. Distinct and separate toxic and blood pressure raising effects were found to take place, the latter effect sometimes being absent in spite of the presence of a severe toxic action. Heating the prostatic extract prevented the pressure raising action without reducing the toxic action. These observations are compared with the recent statements of Bazy, to the effect that although drainage of the bladder in a case of prostatic hypertrophy with retention of urine results in considerable improvement in the patient's condition, certain toxic symptoms nevertheless persist which disappear only after prostatectomy has been performed. While hard to define, the resulting benefit may be said to consist essentially in a restoration of the patient's appearance to that of good health, seemingly not enjoyed by him until the actual performance of the surgical procedure. From histological studies Thaon attributes the prostatic toxicity to labile fats or lipoids sometimes seen in the periphery of the organ to be passing into the emergent vessels in the form of small fatty globules, as though a true internal secretion.

Visual Disturbances in Gunshot Injuries of the Brain, by Pierre Marie and C. Chatelin.—In a series of 300 cases of skull injury, over thirty presented lesions of the central optic pathways or the visual cortical centres. Cortical blindness, followed after weeks or months by a return of distinct vision, but with extreme contraction of the fields, was a common condition. Inferior hemianopsia, rare in civil practice, was met with in several soldiers. Other disorders observed were lateral homonymous hemianopsia, hemachromatopsia, quadrant hemianopsia, and, in twelve cases, hemianopsic scotomata. The fact was ascertained that these hemianopsic deficiencies are always the result of permanent destruction of a specific part of the cortex or subjacent white matter; the blind areas do not subsequently vary in size. Where a change in the visual field was found, an x ray examination was regularly made, and in over half the cases the presence of an unsuspected foreign body in the cortex was thus detected.

Surgical intervention is contraindicated in most cases, unless a hemianopsic scotoma is observed to be rapidly enlarging, in which event a brain abscess should be thought of.

PRESSE MÉDICALE.

November 22, 1916.

Refractometry of the Cerebrospinal Fluid in the Diagnosis of Acute Meningitis, by A. Babès and A. A. Babès.—Although in many instances the clinical picture is sufficient for the diagnosis of acute meningitis, examination of the cerebrospinal fluid is always a useful and sometimes an indispensable procedure. The various specific changes in this fluid hitherto examined for, except the finding of special bacteria, are of less significance than the estimation of the refractive index of the fluid by means of the Zeiss refractometer. The authors examined 220 specimens of cerebrospinal fluid from this standpoint, including fifty from cases of local surgical disturbance, thirty from cases of infectious disease, thirty from chronic cardiac or renal cases, fifteen from epileptics, thirty from chronic nervous cases, twenty from cases of mental disease, twenty from cases of disorder other than acute meningitis in children below six years of age, and twenty from cases of acute meningitis in adults or children. Five drops of cerebrospinal fluid were found to yield as precise results as larger amounts. The refractive index in the adult in all conditions other than acute meningitis ranged between 1.33482 and 1.33517; in acute meningitis, between 1.33528 and 1.33705. In children, the corresponding figures were 1.33478, 1.33501, 1.33513, and 1.33555. A rise of the index of refraction up to or above 1.33528 in adults and 1.33513 in children is to be considered a pathognomonic and constant sign of acute tuberculous or cerebrospinal meningitis. The technic is easy and requires no special knowledge.

PARIS MÉDICAL.

October 23, 1915.

Effects of Explosive Convulsive Concomitance on the Nervous System, by P. Sollier and M. Chartier.—The clinical nervous effects of the detonation of explosives present no special, exclusive feature, and occur under other conditions. Some appear to be due to distinctly organic changes, others to dynamic nervous disorder. The former seem to be due chiefly to shock and sudden decompression, the latter to vibration. The complete series of transitional forms between the organic and functional disorders indicates that all are due to like disturbances of the central nervous system which vary, however, in intensity. The functional manifestations generally present the earmarks of hysteria, which in these cases occurs in its most spontaneous, elementary form, completely free of the psychological complex ordinarily associated with it. These cases show that hysteria may be of purely physical origin; the psychological theories of hysteria do not account for all cases.

BRITISH MEDICAL JOURNAL.

January 8, 1916.

Researches on Phagocytosis, by H. J. Hamburger.—As the result of many years' work with living leucocytes suspended in serum or saline solution, it was found possible to test accurately the

phagocytic powers of these cells toward carbon or starch grains and to use such observations in the study of the actions of various drugs. The addition of very small amounts of calcium caused marked increase in the phagocytic power of the leucocytes in serum or in normal saline solution. Calcium was also found to exert the same influence when administered systemically to animals, the phagocytosis being tested by means of capillary tubes inserted beneath the skin. Such an action of calcium probably explains the clinical observations that the drug is beneficial in pneumonia and certain other infections. Iodoform, in small quantities, also increased phagocytosis, while larger amounts reduced this function of the leucocytes to below normal. This action was determined to be due probably to the solvent powers existing between the drug and the lipid cell wall, and was found to extend to a large series of lipid soluble agents such as chloroform, alcohol, camphor, benzene, etc. It was postulated that the increase in phagocytosis was due to an increase in the plasticity of the cell membrane and probably an increase, therefore, in the activity of the cell. From this and other recorded observations it seemed possible that the same explanation might be extended to the mechanism whereby certain narcotics, such as ether and chloroform, produce an initial stimulation. The behavior of the living leucocyte might thus be taken as an indication of the behavior of other living cells under the same influences. The leucocytes were also found to respond to alterations in oxygen and carbon dioxide concentrations in a manner exactly analogous to that observed for the respiratory centre, thus serving to confirm the validity of the previous hypothesis.

Observations on Castellani's "Tetravaccine" and "Pentavaccine", by G. A. Lurie.—As the result of extensive series of inoculations with the tetravaccine, consisting of typhoid+paratyphoid A +paratyphoid B+cholera, or with the pentavaccine, containing the organisms of Malta fever in addition, the conclusions are reached that both complex vaccines are harmless; that they produce effective amounts of the several specific immune bodies; and that they should be used as a routine practice in regions where the several diseases are likely to be present or to become epidemic.

LANCET.

January 15, 1916.

Factors Responsible for Gaseous Gangrene, by Kenneth Taylor.—From an extensive experimental study the author comes to the following conclusions: The bacillus probably does not contain an endotoxin of appreciable activity. There is an exotoxin which is of importance in the production of gangrene, but which is not of a very high degree of toxicity. The tissue toxin, produced by the growth of the organisms in the wound, is probably largely responsible for the extreme intoxication, and is probably a complex mixture of the autolytic products of protein digestion. The gas formed by the growth of the bacilli in the tissues is of little or no toxic importance, but it contributes largely to the production of the gangrene through destructive pressure on the tissues in which it is confined, reducing their blood supply and mechanically spreading the infection.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

January 22, 1916.

The Diazo and Urochromogen Reactions in Pulmonary Tuberculosis, by A. N. Sinclair.—As the result of an investigation in 146 cases of pulmonary tuberculosis, the author concludes that the appearance of a negative diazo with a positive urochromogen reaction constitutes the only favorable change from the normal absence of both reactions. The following changes are of the gravest portent: 1. A change from negative diazo, with or without positive urochromogen, to positive diazo with or without urochromogen. 2. The appearance of both reactions. 3. A change from positive diazo and negative urochromogen to positive for both or to normal. 4. Disappearance of diazo with failure of the urochromogen to take its place. If the diazo disappears and is replaced by the urochromogen reaction, the prognosis is favorable, and the disappearance of the diazo alone when both tests have been positive is not unfavorable. But little value can be attached to the urochromogen reaction alone as a contraindication to the use of tuberculin, and the same is true of the diazo. On the other hand, the presence of the urochromogen reaction may prove a valuable indication for the continuance of tuberculin treatment when other indications point to the need for its discontinuance.

Anaphylactic Food Reactions in Dermatology, by Albert Strickler and Joseph M. Goldberg.—Methods of preparing protein extracts from a wide variety of foods are described, together with the nitrogen content of the resulting extracts. These extracts were used for intracutaneous injection to determine the presence or absence of anaphylaxis toward food proteins in cases of skin diseases. A reaction to be positive must remain for forty-eight hours, and careful interpretation of the reactions is needed in order to avoid being misled by pseudoreactions. Normal persons do not give positive reactions to these injections, and it is believed that their use will give valuable information regarding the relationship between certain skin diseases and specific food products. The reactions seem to be specific when they do occur.

MEDICAL RECORD.

January 22, 1916.

Dangers of Hasty Diagnosis in Pulmonary Tuberculosis, by Maurice Fishberg.—Premature diagnosis may do harm by discouraging the patient or excluding him from a chance to earn his living, and a business man's affairs may be ruined in this way. Fishberg's method is to place the patient under supervision after informing him that there is a possibility or danger of the disease, and if there is no fever, tachycardia, emaciation, or debility, he is allowed to continue at his vocation. Public sanatoriums will not fulfill their purpose until they decide to admit none but really active cases of tuberculosis with fever, night sweats, emaciation, anorexia, etc. So called incipient cases are usually spontaneously curable. Cases of merely suspected beginning phthisis should be spared the stigma of tuberculosis until a definite diagnosis of active disease is made.

Peptic Ulcer from the Point of View of Medical Selection, by Henry Wireman Cook.—From extensive investigation and research, Cook decides that cases of gastric ulcer which have been free from symptoms after medical treatment, or without special treatment for more than two years, may be accepted as insurance risks with a rating of from 175 to 250 per cent. From the fifth to the tenth year after active symptoms, they may be rated at about 150 per cent., and after ten years may be accepted as standard.

January 21, 1916.

An Enzyme Theory of Cancer Etiology, by Leverett Dale Bristol.—From an exhaustive study of the literature and experiments on white rats, Bristol concludes that the enzyme theory is the most acceptable one, that cancer is the result of localized hyperoxidation of epithelial cells, which in turn is brought about by the action of intracellular oxidizing enzymes. According to this theory the difference between cancer cells and normal cells is essentially a difference in speeds of their biochemical reactions.

Syphilitic Roseola Limited to the Soles, by Douglass W. Montgomery.—This eruption, when seen on the soles of the feet, is characteristic of syphilis, but its localization there, as in the case reported, is unusual.

Pericystitis Complicating Acute Appendicitis, by Eugene H. Eising.—Two cases observed by Eising bring to mind the condition of pericystitis, which is not always considered as a possibility in acute appendicitis, and which may be overlooked with serious consequences.

AMERICAN JOURNAL OF ORTHOPEDIC SURGERY

January, 1916.

Treatment of Tuberculous Arthritis, by John Joseph Nutt.—The author believes that the most important part in the treatment of tuberculous joints in children is the attention paid to the general condition. He permits the local treatment to interfere as little as possible with the normal activity of the body. He uses a brace for fixation in preference to a cast.

Operation for Relapsed Club Foot, by Ansel G. Cook.—The writer describes his technic in tarsectomy for relapsed club foot. If necessary, he divides the fascia and tendo Achillis and then, through an incision on the outer surface of the foot in front of the malleolus, he excises a large wedge of bone, the apex extending to the opposite side. Then the foot is corrected, paying particular attention to the elevation of the outer border. He has performed this operation in thirty cases. Three of these required secondary operations. All resulted in cures.

Tendon Fixation in Infantile Paralysis, by W. E. Gallie.—In all but ten of these cases the results of the fixation operation have been satisfactory. The results were particularly satisfactory in cases of varus, equinovarus, valgus, calcaneus, and moderate calcaneus valgus. Fixation of half tendons in cases of partial paralysis was tried and proved successful. No operations were performed until two years had elapsed since the attack of poliomyelitis. In this operation the tendon is exposed, drawn taut

enough to correct the deformity, and then buried in the bone.

The Fate of Bone Grafts, by George W. Hawley.—The author performed operations upon paralytic deformities of the feet in which he endeavored to fix the ankle joint by means of a bone transplant, and in five of his six cases recurrence developed. X ray examinations showed that the transplant at either end (that is, the part inlaid in bone) was strong and healthy, but the bridging section was atrophied and disintegrated.

Congenital Deformities of the Vertebrae and Ribs, by Fred G. Hodgson.—This interesting paper, presenting four cases of congenital deformities of the spine and ribs occurring in children and showing variations in morphology, number, and differentiation, suggests the possibility of mild congenital anomalies causing some of the painful deformed back conditions.

Proceedings of Societies.

AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY.

Sixth Annual Meeting, Held at Philadelphia, November 10, 11, and 12, 1915.

Dr. CHARLES A. FIFE, of Philadelphia, in the Chair.

The Statistical Study of Respiratory Diseases as a Factor in the Causation of Infant Mortality.

—Dr. WILLIAM C. WOODWARD, of Washington, D. C., believed that the importance of diseases of the respiratory system as a causative factor in deaths in the first year of life was not appreciated. The degree of prevention of such deaths by the present known methods was yet to be determined. Since much prophylactic work had been done in diseases of nutrition, including diseases of the digestive tract, through "infant consultations," for the prevention of still births and deaths due to complications of labor and diseases incident thereto, through the same agency and through prenatal nursing, the next step toward lowering the infant mortality should be in the direction of establishing machinery and the adopting of at least tentative methods for the prevention of respiratory diseases. He called attention to the fact that in the registration area of the United States in the calendar year, 1913, 15.85 per cent. of the total mortality in the first year of life was due to diseases of the respiratory system. This was approximately one quarter of the total mortality from these diseases at all age periods taken together. Therefore, one quarter of the total mortality from diseases of the respiratory system came within the purview of the conservation of infant welfare. Bronchitis and pneumonia were said to cause ninety-five per cent. of all deaths in the first year of life from diseases of the respiratory system. The prevention of infant mortality from diseases of the respiratory system obviously had claims on the work of the prenatal nurse, the obstetrician, the midwife, the pediatricist, etc., and the infant welfare station.

The Prevention of Respiratory Diseases.—

Dr. ROYAL STORRS HAYNES, of New York, recognized two important factors in the prevention of respiratory diseases: 1. Destruction or exclusion of the infecting organism; 2. preservation of the resistance. Transference by contact, which was said to be the method of infection in most instances, could be avoided by real cleanliness. In the preservation of the resistance, the maintenance of a perfectly functioning vasomotor system was said to be of the greatest importance. In the prevention of respiratory diseases the speaker would suggest the appointment of a committee whose duties might be (a) supervision of the conduct of an intensive investigation of respiratory affections in a selected area in a selected city. By such an investigation it should be possible to determine the relative etiologic importance of various factors and the value of prophylactic measures. The investigation should embrace the work of social workers, physicians, physiologists, sanitary engineers, and bacteriologists. (b). To arrange for publication through the medical and lay press of articles acquainting the laity with the economic loss and that of health and life caused by these diseases. (c). To investigate the various State laws upon health and improve legislation where desirable. (d). To carry on an education campaign by lectures for those not reached by the printed page. (e). To stimulate the care of the child before the school age by placing greater emphasis upon his medical supervision between the milk station and school age.

The Treatment of Respiratory Diseases, with Special Reference to the Value of Fresh Air.—

Dr. JOHN LOVETT MORSE, of Boston, referred to the apparent confusion in the use of the term "fresh air," the understanding of some that it was pure air without regard to temperature; of others, cold air without regard to its purity; of still others, air which was both pure and cold. The speaker believed that fresh air might be defined as air which was cool, dry, and in motion. Cool air was differentiated from cold air, and the action of the latter divided into its effect upon the respiratory mucous membrane, and upon the system as a whole. Doctor Morse concluded that in the early stages of acute nasopharyngitis, cold air increased the irritation of the mucous membrane, but later relieved the discomfort; cold air predisposed to affections of the ears; fresh air was of advantage. In acute laryngitis, cold air had a strong irritant action upon the inflamed mucous membrane, but did no harm in the later stages. In the early stages of acute bronchitis, cold air increased the cough and the sense of constriction of the chest and of heat under the sternum; the cough was less troublesome when the air was moist than when dry. During the later stages cold air ceased to act as an irritant, but there was no apparent advantage in cold air over air which was warmed. The comparative disadvantages of cold air as an irritant to the mucous membrane and its advantages as a vasomotor stimulant must be weighed in each case. In bronchopneumonia, while there was no contraindication to the use of cold air, there was no advantage in its use, unless there was vasomotor paralysis, and even then its value was questionable. Since in lobar pneumonia the bron-

chial mucous membrane was not involved, there was no contraindication to the use of cold air, and its general stimulant effect was of advantage, and children with lobar pneumonia should be treated out of doors or near open windows, but it was doubtful whether the mortality of this disease had been lowered by the cold air treatment. Fresh air was said to be of advantage in the treatment of all diseases of the respiratory tract; it was also of advantage to have the air pure; cold air was of advantage in some conditions, but harmful in others, and must be used with discretion. It was not possible to treat all diseases of the respiratory tract in the same way.

Dr. L. EMMETT HOLT, of New York, strongly emphasized the importance of quarantining the infant, especially the premature infant, when other members of the family had colds, and pointed out that efforts against the contagiousness of pneumonia should be directed to raising the resistance of the infant. He believed that almost as many deaths had been caused by cold air as there had been cures effected, and agreed with Doctor Morse that great discrimination should be observed in its application. Especially in young infants he had seen much harm done in the treatment of acute respiratory diseases by exposure to cold air.

Dr. S. MCC. HAMILL, of Philadelphia, recognized the value of the foundation for the fight against infant mortality given in the papers. He ventured a word of caution in the use of vaccines in the prevention of colds, feeling that the whole question of vaccine therapy was at the present time so unsettled and its dangers were so manifest that the subject should never be presented without a word of caution against their promiscuous use. The use of the nasal douche in the prevention of the common cold also called for a word of caution, because in the final analysis this method was apt to do more harm than good. He was in entire sympathy with Doctor Morse in his belief that fresh or cold air had been incautiously employed. In pointing out that in the treatment of all conditions, the individual and not a group of cases, should be treated, he felt that Doctor Morse had covered the subject. He believed that the proper way to obtain "cool, dry, and moving" air defined by Doctor Morse as fresh air, was through the open windows, and not by a ventilating system.

Dr. J. P. CROZER GRIFFITH, of Philadelphia, said it had never been proved to his mind that the universal employment of cold, fresh, or open air for the treatment of pneumonia or other respiratory diseases was the correct measure. When a number of years ago, he had ventured to make this statement, he had stood without support, and he was glad to note the present changed sentiment. In explanation of such change of sentiment, he said that a human failing was that of the following of fads; the excessive use of cold air for the treatment of respiratory diseases had been a fad, and as such had gone beyond the medical profession into the hands of nurses, hospital managers, and the laity in general. If among medical men there was doubt concerning cases in which this treatment was indicated, obviously the measure was not safe in other hands. He advocated fresh air in the treatment of many diseases of the respiratory system, but emphasized the need of great judgment in its use. He agreed with Doctor Holt that many cases were made worse by

its indiscriminate use, while others improved only by this treatment.

Dr. CRESSY L. WILBUR, vital statistician of New York, said that the foundation of the work of the prevention of infant mortality was the registration of births and deaths. He thought it a shame to the country that such registration was not made. The only exception to this lack was in the State of Pennsylvania, the people of which Commonwealth should be congratulated upon having compelled such legislation.

Dr. GODFREY ROGER PISEK, of New York, felt that fresh air and exposure to cold air should be differentiated that there might be no confusion in the minds of nurses and social workers upon the apparently unsettled question.

Doctor EMMERSON, of New York, said that respiratory diseases incident to the epidemic of measles that had swept over that city during the present year would give a higher infant mortality than there had been at any previous time. That the death rate in hospitals had been larger than in homes in which the babies had been cared for by the visiting nurse and physicians was due to the fact of the great number of children necessarily sent to the hospitals because of mothers working away from the home. The rule had been established that children of this age were not to be referred to the hospitals, unless this was made necessary by the home conditions. The influence of prenatal care upon the resistance of the young child was a matter to be emphasized.

Doctor HOOVER, of New York, thought it possible to classify by observation the two groups of cases spoken of in the discussion, comprising those who did well under outdoor treatment and those who did not. A child, whose hands and feet were cold and who was uncomfortable when out of doors, regardless of the amount of clothing it wore, would obviously do better in the ward. Likewise a child, perfectly comfortable and breathing well in the ward, which became dyspneic when taken into the cold air, should be returned to the ward.

Dr. ABRAHAM JACOBI, of New York, said that much he had heard in the discussion convinced him that some sixty years ago he had not been so stupid as, twenty-five or thirty years later, he had taken himself to be. At the former time he had been of the opinion that to speak of the treatment of "pneumonia" was a misnomer; the several pneumonias being not the one and the same thing. In speaking upon this subject it was his custom to tell his students that they had in this disease a patient to deal with rather than a pneumonia. Unless every case was studied individually, the best results could not be obtained. The aim of teachers should be to make good doctors of their students. The principal thing in diagnosis—and in the head of the doctor—was brains. So long as the doctor was not able to impress his nurses with the fact that he was their superior in knowledge, that he knew what he was about in a given case, the nurses would be his superiors in the management of the case, and he would be in the peculiar position of being run by the nurses and the hospital managers.

Doctor WOODWARD confessed to disappointment in the trend of the discussion, which had been that of curing pneumonia rather than of the prevention of diseases of the respiratory system. Such

prevention he felt to be summed up in the matters of clothing, housing, exercise, and personal cleanliness. When the association could present these four factors to those responsible for the care of babies and children, a reduction in diseases of the respiratory system might be hoped for.

Doctor HAYNES recalled the case of a nursing infant who had not taken whooping cough from the mother who had the disease; in another case care and cleanliness had prevented infection of the baby when every other member of the family had whooping cough. Both cases emphasized Doctor Holt's remarks upon precaution against infection of the nursing child. In deciding which ill children should be subjected to treatment by cold air, their passivity should be carefully considered. The dryness of air mentioned by Doctor Morse should be qualified, and he was in accord with Doctor Hamill regarding treatment by the vaccines and postnasal douching. He had not recommended these methods of treatment, but had simply stated that they were employed.

Doctor MORSE admitted the difficulty of the differentiation of cold air and cool air. It might be said, however, that air of a temperature of 50° F. was cold air; above that, cool. He wondered whether the gentlemen who had spoken upon quarantining the baby, had realized what a hole they were getting the doctors into; with the isolation of the infant from the children coming from school, the dismissal of the nurse with a cold, logically, the doctor when he had a cold, would have to give up his practice and his income. In connection with what had been said by dressing the children in the morning by the thermometer rather than by the calendar, it had been forgotten that in Boston it was not possible to know in the morning what kind of clothing would be needed in the evening. In the question of fresh, pure, and cold air, a child should have fresh pure air. There remained, therefore, only the question of temperature, and this, obviously, should be regulated according to the disease and the individual patient.

Education, Licensing, and Supervision of the Midwife.—Dr. J. CLIFTON EDGAR, of New York, said that the midwife, for traditional, social, and economic reasons, attended about forty per cent. of confinements in this country, and was at the present time a necessary evil. The solution of the question in the rural districts was the inclusion of midwifery service, should a physician not be available. In illustration of this the proposed course of midwifery in the Washington University Hospital in St. Louis was mentioned. The only legitimate functions of the midwife were those of a nurse plus the attendance upon a normal delivery, when necessary, and she should never be regarded as a practitioner. Unlicensed women should not be permitted to practise, and even as a temporary measure, only properly qualified women should be granted a license. He advocated the supervision of licensed midwives by the local department of health, as prevailed in Buffalo, Pittsburgh, and Providence, which system followed closely that operative in England and New Zealand, in which countries infant mortality was conspicuously low. A recent study of the midwife question in England, made by Miss Carolyn V. Van Blarcom, secretary of the New York Committee for the Prevention of Blindness, it was said, had been used as a basis for midwife control in this country.

Is the Midwife a Necessity?—Dr. J. M. BALDY, of Philadelphia, said that this country contained several groups of foreigners who had been accustomed to the midwife, and that until immigration ceased and these people became evolved into Americans, the midwife would be demanded. The question resolved itself into the proper education and control of the midwife. Results were to be obtained by meeting and improving existing conditions. There was no State, city, or town in the United States in which by the passage of laws it had been possible to eliminate the midwife. Any measurable degree of success attained had come only through education and control.

Progress toward Ideal Obstetrics.—Dr. JOSEPH B. DELEE, of Chicago, asserted his opposition to every movement to perpetuate the midwife, declaring her to be a relic of barbarism, and that her continuance demanded a compromise between right and wrong. He regarded her as a drag upon the progress of the science and art of obstetrics, her existence stunting the one and degrading the other. He believed that the foreigner was becoming enlightened as to the value of medical attendance and was demanding it. The visiting nurse did an amount of maternity and prenatal work not fully recognized. He believed there were thousands of young physicians who would take cases now cared for by midwives, were it not considered undignified work, and also undignified to accept such small fees for the service as were received by these women. In educating the midwife, he felt that the profession assumed responsibility for her, lowered the standards, and compromised with wrong, and personally he refused to be *particeps criminis*.

Dr. WILLIAM R. NICHOLSON, of Philadelphia, believed that without inspection of every case of labor the midwife could not be controlled. He said that in Philadelphia five inspectors, graduates in medicine, inspected every case after delivery. He believed that the association could do a larger amount of good if all its members worked upon a common ground. There appeared to be a division of opinion—for and against the midwife. To Doctor Nicholson the question at issue was the benefit of the women now attended by the midwife. He did not believe that the midwife could be eliminated at the present time; all they were doing in Philadelphia was carrying out a *police* supervision—there was no other word for it—the women being brought to account for any infraction of requirements, and this work was regarded only as a temporary expedient. He favored the training of a certain number of English speaking, intelligent young women as nurses to care for women in labor, believing that in this way the places of a number of the midwives could be taken. Nine women were at the present time in such training. Doctor Baldy had given permission for the experiment, and it was believed that the results would be satisfactory.

Dr. J. WHITRIDGE WILLIAMS, of Baltimore, believed that in the big cities, unless the man at the head of the inspection of midwives were a man like Doctor Baldy in forcefulness, failure would result. The development of prenatal work was one of the greatest advantages in modern obstetrics. Further development was in the oversight of the woman after confinement. The prenatal and postnatal work in-

volved the work of the obstetrician, the pediatric, and the social worker. The crux of the matter lay in the education of doctors to be competent obstetricians. It was just beginning to be understood in this country what the obstetrician was. He was much more than a "man midwife." The inventor of the obstetrical forceps, Hugh Chamberlen, called himself "Hugh Chamberlen, man midwife." Man midwife and *accoucheur* were two terms that raised his ire. The man midwife had disappeared, and the *accoucheur* was disappearing. That which was wanted was the scientific obstetrician. Such a person could be obtained only by the development of medical education. There was needed a large, thoroughly equipped woman's hospital, where everything pertaining to woman and child bearing was studied from the viewpoint of teaching that which was now known, and for the acquisition of new knowledge for the future. Such a hospital lately endowed in Pittsburgh should set the pace for other cities.

Dr. S. JOSEPHINE BAKER, of New York, thought the discussion which had been held for the last five years was just as near solution as it had ever been, and this was because of failure to get together upon fundamental principles. Her interest in the midwife was solely to make her as nearly fit as possible to give to mothers and babies their essential care. She believed it an absolute impossibility to abolish her in the city at the present time. The situation in New York had been misinterpreted, and she assumed that Doctor DeLee, in speaking of the high mortality and morbidity following the work of the midwife, was expressing his personal opinion. The statistics of New York did not bear out this opinion. In proportion, the mortality and morbidity were less than among the women attended by physicians. In the interim of securing the better education of the medical student, Doctor Baker said the effort was being made to do that which seemed to be most efficacious in protecting the mother and baby, and asked if those who would eliminate the midwife had anything better to offer. That which was needed was a practical, working program, better than the one in operation at the present time. The midwife was being eliminated, and the complete elimination would come by making the standard so high that the ignorant and untrained women could not attain it. Since, at the present time, the women would practise, licensed or unlicensed, she thought it infinitely better to see that the care given by them to mothers and babies was at least proper. Her experience was that in prenatal work the midwives gave efficient cooperation in referring mothers for instruction. Contrary to what had been said, the women did engage the midwife as early as women engaged the doctor. Altogether the midwives in New York were beginning to look upon the health department, not as a body to be feared, but as something which was a definite help to them. By such cooperation Doctor Baker believed more effective reforms would be secured than by radical measures.

Dr. ARTHUR B. EMMONS, of Boston, said that in Massachusetts nothing was being done specifically to eliminate the midwife; their law required the registration of physicians, and if a midwife wanted to qualify before the Board of Licensure she must pass

the examination. The daughter of one midwife had already taken a course in medicine and qualified as a physician. This plan operative in Boston solved the question of the elimination of the midwife. He referred also to a plan of prenatal clinics and conference which had been worked out in that city. From the graduates of the lying-in hospital a number of young physicians attended the women, receiving from five to ten dollars, depending upon the section of the city in which the patients lived. The follow up work was done by the visiting nurse, and the results had been altogether satisfactory. He felt that Pennsylvania led in the requirements for medical licensure.

Dr. ABRAHAM JACOB, of New York, was interested only in the poor woman of the people. In the last report of the Lying-in Asylum of New York, it was stated that 6,000 women had been cared for in their homes and in the institution. From other sources he had read that 52,997 women had been confined in their homes by midwives. That, he felt, told the whole story—53,000 in New York, and more than a million in the United States, who must have midwives. If the midwife was to be eliminated, then the women whom they had attended must be provided with just such service as they wanted and could afford to pay for. Doctor Jacob knew well what he was talking about, for he had been a "midwife" himself fifty or sixty years ago—and at a five or ten dollar fee. He questioned whether his audience knew what a midwife was at that time; he attended the woman through her confinement and washed the baby. He washed the baby the next day and for eight or nine days—nine days was the usual time. He did not know whether his hearers had heard of those antediluvian times.

Dr. GEORGE W. KOSMAK, of New York, differed with Doctor Baker in her belief that the problem of the midwife was no nearer solution than when the discussion was new. Advance had been made in that those who had favored the midwife now admitted that she must be eliminated. For this elimination there was no stronger argument than that she should be under supervision.

Doctor WILLIAMS, health commissioner of New York, said that in the rural districts there was no demand for obstetric hospital and dispensaries, but that there was a demand for good midwives. If the midwife was not available, the farmer's wife could get only the neighboring farmer's wife to look after her in confinement. He expected to see for some time the midwife in the State of New York, and it was his intention that there should be established some such supervision as that developed by Doctor Baldy in Pennsylvania.

Election of Officers.—The following officers were elected: President, Dr. S. MacC. Hamill, of Philadelphia; president-elect (1917), Dr. W. C. Woodward, of Washington; first vice-president, Dr. Joseph S. Neff, of Philadelphia; second vice-president, Dr. Thomas McCleave, of Berkeley; secretary, Dr. Philip VanIngen, of New York; treasurer, Mr. Austin McLanahan, of Baltimore; executive secretary, Miss Gertrude B. Knipp, of Baltimore.

The place of next meeting is Milwaukee.

(To be concluded.)

Letters to the Editors.

A MEMORIAL OF ANGELO CELLI, THE LEADER OF THE GREAT ITALIAN CAMPAIGN AGAINST MALARIA.

BALTIMORE, February 3, 1916.

To the Editor:

The following notice, issued by the Italian Society for the Study of Malaria, has recently been sent to me by Sir William Osler:

SOCIETY FOR THE STUDY OF MALARIA.

The Society for the Study of Malaria, of which Professor Angelo Celli was the founder and the animating and guiding spirit, has decided to start a subscription for the purpose of erecting in his memory a monument which will perpetuate the record of his accomplishments for all time.

It is believed that such a monument should stand on the Roman Campagna, the field of the studies and the object of the most loving care of Angelo Celli; on the spot where he has redeemed man and earth from the scourge of malaria.

The society turns not only to its members, but to the scientists, the physicians, the proprietors and improvers of the soil, to the agriculturists, to the teachers; to all who have admired the profound labors and the innumerable beneficent activities of Angelo Celli.

Gifts may be sent to the treasurer of the society, Professor Alessio Nazari, via Agostino Depretis, 92, Roma. President, Leone Caetani Principe Di Teano; councilors, Professor Amico Bignami; Professor Antonio Dionisi; Giustino Fortunato; Leopoldo Franchetti; Professor Ettore Marchiafava; secretary, Professor M. Levi Della Vida.

It has seemed to Sir William Osler and to me that we in America, who owe so much to the lifelong and persistent studies of the great physician who was the leader of the Italian campaign of prophylaxis against malarial fever, should play our part in contributing to this well deserved memorial. May we not appeal to the physicians of America to join in honoring this great benefactor of the race?

Any contributions which are sent to the undersigned will be forwarded to the Italian committee. It is hoped that there may be a generous response and any sum, no matter how small, will be gratefully accepted.

WILLIAM S. THAYER, M.D.

406 CATHEDRAL STREET.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Orthopedic Surgery. By EDWARD H. BRADFORD, M.D., Consulting Surgeon to the Children's Hospital, Boston, and to the Boston City Hospital; Professor of Orthopedic Surgery Emeritus in Harvard University; and ROBERT W. LOVETT, M.D., Professor of Orthopedic Surgery in Harvard University; Surgeon to the Children's Hospital, Boston; Surgeon-in-Chief to the Massachusetts Hospital School, Canton. Fifth Edition. Profusely Illustrated. New York: William Wood & Co., 1915. Pp. 884 (10). (Price, \$3.75.)

This well known work has reached a fifth edition. While the subject matter is largely the same as in the edition of two years ago, much new material has been introduced to bring the work abreast of the times. The views of other authors have been in great measure omitted so that the reader has the advantage of an exposition of the personal opinions of the two distinguished collaborators based on their own experiences as practical orthopedic surgeons. On the method of treatment which they have found successful are given in detail, although appreciative mention is made of the work and methods of other authors. The book in its present form will unquestionably retain the popularity secured by the previous editions, and continue to be perhaps the best short treatise published in this country. The chapters devoted to lateral curvature with a full description of Albee's method are of

special interest. The prevention of deformities is constantly impressed upon the reader, and it is therefore a book which the general practitioner, as well as the orthopedic specialist, will find most valuable.

The Development of the Human Body. A Manual of Human Embryology. By J. PLAYFAIR McMURRICH, A.M., Ph.D., LL.D., Professor of Anatomy in the University of Toronto, Formerly Professor of Anatomy in the University of Michigan. Fifth Edition, Revised and Enlarged. With 287 illustrations, Several of Which are Printed in Colors. Philadelphia: P. Blakiston's Son & Co., 1915. Pp. x-493. (Price, \$2.50.)

The fifth edition of this manual has kept its original size in spite of the inclusion of many additions to the text. It gives a clear and concise account of developmental changes in the human subject beginning with the fertilized ovum. Comparative embryology is naturally made extensive use of. It can be highly recommended as a textbook for students and a review for the practical physician. The author gives at the end of every chapter a list of authors and their works which have served as the basis for this volume and which may be consulted for further details. The illustrations are numerous and helpful.

Wounds in War. Their Treatment and Results. By D'ARCY POWER, M.B. (Oxon.), F.R.C.S. (Eng.), Surgeon to and Lecturer on Surgery at St. Bartholomew's Hospital; Lieutenant-Colonel R. A. M. C. (T. F.). Pp. 108. (Price, \$1.)

Surgery of the Head. By L. BATHE RAWLING, M.B., B.C. (Cantab.), F.R.C.S. (Eng.), Surgeon and Senior Demonstrator of Operative Surgery, St. Bartholomew's Hospital; Major R. A. M. C. (T. F.). Pp. 150. (Price, \$1.25.)

Wounds of the Thorax in War. By J. KEOGH MURPHY, M.C. (Cantab.), F.R.C.S., Surgeon to the Miller General Hospital for South-East London, Surgeon to Paddington Green Children's Hospital; Staff-Surgeon R. N. V. R., Late of H. M. Hospital Ship *Soudan No. 1*. Pp. 156. (Price, \$1.)

Gunshot Injuries of Bones. By ERNEST W. HEY GROVES, M.D., M.S. (London), F.R.C.S. (Eng.), Surgeon to the Bristol General Hospital; Consulting Surgeon to the Cossham Hospital; Captain R. A. M. C. (T.). Pp. 128. (Price, \$1.25.) Oxford War Primers. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915.

The Oxford War Primers are of great interest in that they take up the more common forms of gunshot injuries and are written by men actively engaged in military surgery in connection with the present war. It is to be recommended that the reader begin with *Wounds in War*, by D'Arcy Power, who gives a résumé of these wounds in general, their nature, complications, and treatment. His description is concise, but complete, and gives a clear idea of the present war surgery, both on the battlefield and in the military hospitals.

The volume devoted to *Surgery of the Head*, by Doctor Rawling, is of special interest to the neurologist and dental surgeon. It takes up the various types of fractures, intracranial hemorrhage, and infections, and closes with a chapter on craniocerebral topography and the technic of operations on the skull and brain. It is written by a practical surgeon and applies the principles of head surgery in peace to the conditions in war.

The volume on *Wounds of the Thorax*, by Doctor Murphy, is particularly instructive and well written. It gives his own personal experience with this class of injuries. The last chapter devoted to the bacteriological therapeutic methods is complete and gives the reader an excellent résumé of the present views on this important branch of treatment.

Gunshot Injuries of Bones, written by Doctor Groves, had to be considerably condensed on account of the uniformly small size of the volumes. It is the least valuable of the series. The x ray plates so necessary to a description of fractures and other bone injuries are very few in number and poorly executed. The splints employed are in many cases crude and not up to the standards of American surgeons. Very little can be obtained from this volume that is either new or of practical value to the general surgeon desiring information on special injuries of bones in the present war. As a whole, the series is of great inter-

est, and it is to be hoped that other volumes will appear dealing with the remaining parts of the body subject to gunshot injury.

Practical Prescribing and Treatment in the Diseases of Infants and Children. By D. M. MACDONALD, M.D., F.R.C.P.E. Oxford Medical Publications. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. 199. (Price, \$1.50.)

The author of this little book has the laudable aim of making an improvement in the methods of prescribing of drugs for the diseases of infants and children; at the same time it is intended to help the beginner to avoid the temptation to use proprietary medicines. In addition to information on doses, infant feeding, formulae, and various emergencies, there is an important chapter on tuberculin and the tuberculous child. Throughout the volume the British Pharmacopoeia is taken as the basis, a fact which lessens its value to the American physician. The book is well printed and attractively bound, and should prove of service to British practitioners.

The Medical Record Visiting List or Physicians' Diary for 1916. Newly Revised. New York: William Wood & Co.

This little volume, really of pocket size and well bound in leather, contains in addition to the diary itself valuable tables of comparison of metric and avoirdupois measures and weights, maximum doses of drugs, the treatment of poisoning and other emergencies, as well as an obstetrical calendar. Each page accommodates thirty names and two pages are allowed for each week of the year.

Interclinical Notes.

In the *Outlook* for February 22, there is editorial reference to health conditions at Sing Sing, where for many years the cells have not been fit to keep animals in. Each cell contains only 168 cubic feet of air, one third of the proper amount, yet prisoners have frequently been doubled up in such quarters—about the size of a taxicab. Three fresh tomatoes and one and a half ear of Indian corn are said to have represented the annual allowance per capital of fresh vegetables to prisoners.

* * *

According to Colonel L. M. Maus, in an article in the *Medical Times* for February, "the use of alcohol as a beverage among troops contributes more to camp diseases and detracts more from efficiency than even poor camp sanitation. This was true during the recent Spanish war and Philippine insurrection, when at one time the admission sick rate reached 3,000 cases per 1,000." We do not think that the Colonel, even in so good a cause as a crusade against alcoholic beverages, should permit himself such exaggerated statements.

* * *

The ingenuity of the editor of the *Nurse* is exemplified in the issue for February, in an article by Edith Kathleen Jones on What Can I Find to Read Alone? An excellent list of books is given. Thus is solved an important problem of the nurse, one that is not touched upon in the hospital curriculum. Among physicians who contribute to this number are Dr. Thompson Frazer, Dr. S. Adolphus Knopf, Dr. Donald McCaskey, Dr. Frederick C. Warnshuis, Dr. Anne E. Perkins, Dr. Thomas Grant Allen, beside our admired friend and contributor, William Renwick Riddell, LL. D.

* * *

Leslie's for January 27th contains, as usual, unique and most interesting war pictures, obtained from its own exclusive correspondents. A letter from James H. Hare tells of the sufferings of the Serbians, recalling vividly our own letters from Dr. Rudis-Jicinsky, in which stress was laid on the riddling of the Serbian ranks by war and disease. Dr. Landerborough Findlay, of the British Red Cross, describes his journey into Albania. "Men, horses, oxen, and donkeys were lying dead in the roadways." He states that "Serbian soldiers and Austrian prisoners would cut flesh from dead horses and cook and eat it. The second day the party marched twenty-three miles from 5 a. m. till 10 p. m., but it proved to be so exhausting to the women that next day only seven miles was covered and the fourth day had to be one of rest as blisters were developing on the feet and the want of proper nourishment was telling on them. But on

the fifth day another start was made and sixteen miles were covered by night. They started each day at five in the morning, hoping to end the walk by nightfall, but darkness usually found them far away from any town and it was late at night always before they found any place to sleep in. Finally with a fifteen mile tramp, they reached Monastir and slept in beds for the first time in thirty-five days."

* * *

Dr. J. Howard Beard leads the list of writers of good things in the *Scientific Monthly* for February, 1916. His paper is on the avoidable loss of life, a topic familiar to physicians, and one we hope will interest the educated layman to the benefit of unfortunate children and poverty stricken adults. Professor George J. Peirce writes entertainingly on Hunger and Food, and points out the danger to a country of not being absolutely self supporting—England and Germany being apparently both in that parlous state. Professor W. S. Franklin's studies of the flight of a baseball ought to interest a wide audience, from mathematicians to "fans."

* * *

After reading about the Trouble at Panama in the *Outlook* for January 26th—the beautiful special number—it is brought forcibly to mind how Nature has fought against man in the construction of the Canal. She vanquished the French with disease, and when our advancing medical science became too strong for her, discovered her winged snipers and annihilated them, she adopted methods more tremendous and threw tons of rock and earth directly into the Canal. Well, we serve notice on Madam Nature that we shall outwit her at that game, too.

Meetings of Local Medical Societies.

MONDAY, February 14th.—New York Ophthalmological Society; Society of Medical Jurisprudence; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society; New Rochelle, N. Y., Medical Society.

TUESDAY, February 15th.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Academy of Medicine; Oswego Academy of Medicine.

WEDNESDAY, February 16th.—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medicolegal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society.

THURSDAY, February 17th.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society of Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, February 18th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 2, 1916:

Bryan, William M., Passed Assistant Surgeon. Granted three days' leave of absence from January 21, 1916, under paragraph 193, Service Regulations. Fricks, L. D., Surgeon. Directed to represent the Service at the conference of State health authorities, to be held in Salt Lake City, Utah, February 2, 1916; also to return via Bitter Root Valley, to arrange for continuing work relating to Rocky Mountain spotted fever. Frost, W. H.,

Passed Assistant Surgeon. Granted one day's leave of absence, January 30, 1916. **Grimm, R. M.**, Passed Assistant Surgeon. Detailed to deliver an address on general sanitation, at Bowman, S. C., February 19, 1916. **Heterick, R. H.**, Passed Assistant Surgeon. Ordered to proceed to Vineyard Haven, Mass., and assume charge of the Service at that port; also granted eight days' leave of absence on account of sickness, from January 19, 1916. **Perry, J. C.**, Senior Surgeon. Granted one day's leave of absence, January 26, 1916. **Schwartz, Louis**, Passed Assistant Surgeon. Directed to proceed to Clarksburg, W. Va., to make a reexamination of a detained alien woman. **Wheeler, G. A.**, Assistant Surgeon. Directed to proceed to Columbia, S. C., and assume temporary charge of pellagra investigations. **White, J. H.**, Senior Surgeon. Authorized to deliver a series of lectures at Peabody College, during the month of February. **Wille, C. W.**, Surgeon. Directed to proceed to Buffalo, N. Y., to act as member of Coast Guard Retiring Board.

Boards Convened.

Coast guard retiring boards convened for the examination of members of that Service who may be directed to present themselves before the boards, as follows: Marine Hospital, Stapleton, N. Y. Senior Surgeon G. W. Stoner and Passed Assistant Surgeon C. P. Knight, members; Marine Hospital, Wilmington, N. C. Surgeon J. B. Stoner and Assistant Surgeon T. E. Hughes, members.

United States Army Intelligence:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the week ending February 5, 1916:

Allen, William H., Captain, Medical Corps. After arrival in the United States, and upon expiration of such leave of absence as has been granted him, will proceed to the Presidio of Monterey, Cal., and report in person to the commanding officer of that post for duty. **Brechemin, L.**, Colonel, Medical Corps. Reports departure from Medical Supply Depot, New York, on leave of absence per paragraph 1, Special Orders 10 c. s., for three months and twenty-five days. **Coffey, Albert McD.**, First Lieutenant, Medical Reserve Corps. Granted two months' leave of absence, effective on or about February 1, 1916; reports departure from Pharr, Texas, on two months' leave of absence, Special Order 14, Headquarters Southern Department, c. s. **Coffin, Jacob M.**, Captain, Medical Corps. Will report by letter to the commanding general, Western Department, for assignment to duty pertaining to the annual inspection of the sanitary troops, Organized Militia of the State of Montana. **Ford, Clyde S.**, Major, Medical Corps. Reports on two months' sick leave from the Letterman General Hospital, on surgeon's certificate of disability, effective January 5, 1916; address care of Doctor Kingsbury, Boulevard, St. Louis, Mo. **Mudd, Leo C.**, Captain, Medical Corps. Granted leave of absence for two months, with permission to apply for an extension of one month, to take effect on or about April 4, 1916; after arrival in United States, and upon the expiration of such leave as has been granted to him, will proceed to the Letterman General Hospital, the Presidio of San Francisco, Cal., and report to the commanding officer of that hospital for duty. **Roberts, William M.**, Major, Medical Corps. Granted four months' leave of absence on surgeon's medical certificate. **Sparrenberger, Frederick H.**, First Lieutenant, Medical Reserve Corps. Leave of absence heretofore granted is extended two months. **Simpson, James A.**, First Lieutenant, Medical Reserve Corps. Directed to proceed from Camp Sergeant Shaffer, Mission, Texas, to Pharr, Texas, for temporary duty. **Van Kirk, Harry H.**, Captain, Medical Corps. Now on duty at the Presidio of Monterey, Cal., will report to the commanding officer of that post for duty with Ambulance Company No. 2. **Von Kessler, W. C.**, First Lieutenant, Medical Corps. Reports departure from Camp Gaillard, Canal Zone, en route to the Philippine Islands, aboard the United States Army transport *Logan*, accompanying the Twenty-seventh Infantry, per paragraph 1, General Orders Headquarters, Twenty-seventh Infantry, Fort Grant, Canal Zone.

Births, Marriages, and Deaths.

Married.

Breuer—Strejc.—In Table Rock, Neb., on Monday, January 3d, Dr. Miles J. Breuer and Miss Julia Strejc. **Locke—Ober.**—In Portland, Oregon, on Saturday, January 22d, Mr. George M. Locke and Dr. Marion Ober. **Spurbeck—Headley.**—In Two Harbors, Minn., on Tuesday, January 25th, Dr. Roy G. Spurbeck, of Proctor, Minn., and Miss Ruby Headley. **Weaver—Cotey.**—In Los Angeles, Cal., on Monday, January 17th, Dr. Don D. Weaver, of Oakland, Cal., and Miss Amaryllis Cotey.

Died.

Bissell.—In Crestwood, N. Y., on Friday, January 28th, Dr. Daniel A. Bissell, of Gloversville, N. Y., aged sixty-two years. **Book.**—In Detroit, Mich., on Monday, January 31st, Dr. J. B. Book, aged seventy-two years. **Brackett.**—In Boston, Mass., on Monday, January 31st, Dr. Humphrey F. Brackett. **Brock.**—In West Lorne, Ont., on Thursday, January 27th, Dr. William W. Brock, aged seventy-three years. **Burditt.**—In Houston, Texas, on Monday, January 24th, Dr. J. B. Burditt, aged forty-three years. **Camerer.**—In Paris, Ill., on Saturday, January 20th, Dr. Daniel M. Camerer, aged ninety-two years. **Cason.**—In Colusa, Cal., on Thursday, January 20th, Dr. George I. Cason. **Curran.**—In Brooklyn, N. Y., on Saturday, January 20th, Dr. Peter Jerome Curran, aged sixty-two years. **Edwards.**—In Grand Rapids, Mich., on Wednesday, January 26th, Dr. James S. Edwards, aged fifty-nine years. **Ellis.**—In Essex, Mass., on Wednesday, January 26th, Dr. William A. Ellis, aged thirty-one years. **Evans.**—In Columbus, Ohio, on Tuesday, January 18th, Dr. Ephraim S. Evans, aged seventy-six years. **Eve.**—In Savannah, Ga., on Friday, January 21st, Dr. William R. Eve, of Beaufort, S. C. **Gregg.**—In Brattleboro, Vermont, on Wednesday, February 2d, Dr. James W. Gregg, aged seventy-two years. **Kitay.**—In Weehawken, N. J., on Tuesday, January 25th, Dr. Morris Kitay, aged twenty-five years. **Langs.**—In Niagara Falls, N. Y., on Thursday, January 20th, Dr. Major S. Langs, aged eighty-one years. **Mansfield.**—In Santa Barbara, Cal., on Friday, January 28th, Dr. Lois Fitch Mansfield, aged eighty-six years. **Martin.**—In South Bend, Ind., on Sunday, January 30th, Dr. Jacob S. Martin, aged eighty-three years. **Moore.**—In Omaha, Neb., on Friday, January 28th, Dr. Richard Channing Moore, aged seventy-five years. **Murch.**—In Westbrook, Me., on Thursday, January 27th, Dr. Albert F. Murch, aged sixty-nine years. **Parrish.**—In Philadelphia, Pa., on Wednesday, February 2d, Dr. Henry Parrish, aged sixty-eight years. **Rowe.**—In Boston, Mass., on Sunday, January 30th, Dr. George H. M. Rowe, aged seventy-five years. **Russell.**—In New Haven, Conn., on Wednesday, February 2d, Dr. Thomas H. Russell, aged sixty-five years. **Singletary.**—In Baton Rouge, La., on Sunday, January 23d, Dr. Thomas P. Singletary, aged fifty-six years. **Smyser.**—In Brooklyn, N. Y., on Thursday, January 27th, Dr. Eugene Miller Smyser, aged seventy-four years. **Van Bender.**—In Penn Yan, N. Y., on Thursday, January 20th, Dr. Joseph Lee Van Bender, aged seventy-four years. **Vaughan.**—In Brooklyn, N. Y., on Saturday, January 20th, Dr. John A. Vaughan, aged seventy years. **Wadsworth.**—In Collinsville, Ill., on Wednesday, January 26th, Dr. James L. R. Wadsworth, aged seventy-seven years. **Walbrach.**—In Denver, Colo., on Sunday, January 16th, Dr. Carl E. Walbrach, aged forty-two years. **Waterman.**—In Omaha, Neb., on Thursday, January 20th, Dr. Leonard Waterman, formerly of Norman, Neb., aged twenty-eight years. **Watson.**—In Cincinnati, Ohio, on Sunday, January 16th, Dr. Joseph Watson, aged sixty-two years. **Weaver.**—In Concordia, Kansas, on Thursday, January 27th, Dr. Asa J. Weaver, aged sixty-eight years. **Webber.**—In Calais, Me., on Wednesday, January 12th, Dr. Stephen E. Webber, aged fifty-six years. **Webster.**—In Hubbard Woods, Ill., on Sunday, January 23d, Dr. Edward H. Webster, aged sixty-five years. **Williams.**—In North Grosvenordale, Conn., on Saturday, January 20th, Dr. C. W. H. Williams, aged seventy-nine years. **Wischart.**—In Snow Hill, Md., on Saturday, January 20th, Dr. E. E. Wischart, aged twenty-nine years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 8.

NEW YORK, FEBRUARY 19, 1916.

WHOLE No. 1942.

Original Communications.

SHOES, PHYSIOLOGICAL AND THERAPEUTIC.

BY DEXTER D. ASHLEY, M. D.,
New York.

Our conception of a beautiful foot is well defined as recognized in Nature and depicted in art. Our conception of the beautiful shoe, as revealed by the fashion plate, would sadly cripple, constrict, and distort this foot. The writer believes that the present conception is a fad—a fancy—just as the wasp-like waist of a few years ago was a misconception of beauty in the human figure, and that, if we realized the amount of harm inflicted by bad shoes, we should soon make them conform more nearly to the outline of the untrammelled foot.

The fashionable dress shoe is not alone the offender. The ordinary shoe, generally considered to be built with good lines, has many faults, while the so called "orthopedic shoe" is considered by several distinguished orthopedic surgeons to be the cause of a large increase in the number of sufferers from painful foot conditions.

Many persons, variously estimated as from seventy-five to ninety per cent. of our city populations, are sufferers from weak, deformed, sensitive, or painful feet. The general conclusion of an x ray study made by the writer is that the strictly normal foot in an adult is an exception. Many of the variations from the normal are slight, and the sedentary habits or occupation of the individual do not accentuate the condition; though the great majority of the workers are sufferers, with reduced mental and physical capacity to perform their daily tasks.

Many diseases contribute and are considered causative factors, such as rheumatism, rickets, gonorrhea, osteoarthritis, obesity, and paralysis. Fractures and the severe tax upon the foot of some occupations while standing upon unyielding surfaces, are also important factors. The great majority of deformities and painful conditions of the feet are due to the shoes and the weakened muscular development caused by unphysiological footwear.

To illustrate the generally poor judgment in selecting footwear, Munson¹ gives an account of a battalion of U. S. Infantry that marched eight miles the first day, went into camp, rested twenty-four hours, and marched back. At the end of the first

day, thirty per cent. of the men had severe foot injuries; at the end of the second day's march thirty-eight per cent. Some required hospital care. Of the 10,000 men discharged every year from the German army because of disability, 4,000—forty per cent.—have foot defects due to bad shoeing. The same authority quotes Brandt as "calculating that seven per cent. of the annual draft for the German army are found unfit for military service by reason of foot defects due to bad shoeing."

A great many of the infirmities of the feet are started early in life. Few people can go through that stage of existence when the feet seem to offend without inflicting some permanent injury by wearing shoes that pinch and restrain. These facts indicate the necessity for more consideration of this subject by parents and medical examiners of school children.

It is the intent of the writer to avoid discussion of symptoms and treatment of foot conditions. He would not ignore or minimize the importance of manipulation, massage, exercises, strapping, scientifically applied braces, and operative procedure in treatment of pes valgus, rigid feet, and the efficiency of rest for painful, sensitive feet; but in this brief study he hopes to demonstrate the cause of much discomfort and suggest the remedy for many cases in physiological and therapeutic footwear.

The normal foot in the child (Fig. 1) and in primitive man (Fig. 2) is narrow at the heel and becomes broader forward, the greatest width being across the ball of the foot and distal extremity of the little toe. When in action this form becomes more apparent. The inner line of the foot is straight, the outer slightly rounding, the distal end of the fifth metatarsal being the most prominent bony point.

Looking at the bottom of the skeleton of the foot, we find several arches which have been described as the internal and external longitudinal, internal arch, transverse arch, and anterior metatarsal arch.² These arches are real bony structures (Fig. 3) with buttress and keystone, tied together with ligaments, and anchored with fasciæ and ligaments—a bowstring arch. They vary in height and strength in the individual, being modified by age, occupation, race, and heredity. When the subject is standing with relaxed muscles, these arches are lowered. Loose jointed persons and those with lax ligaments are likely to have low arches.

While the arches add strength, grace, and mobility to the form of the foot, they protect muscles, deep

¹Munson, *The Soldier's Foot and the Military Shoe*, p. 2.

²Whitman, *Orthopedic Surgery*, p. 200.

vessels, and nerves from pressure and wounds. The massive os calcis suggests strength to support the body. The anterior foot, comparatively light in structure, gives spring and elasticity to the step. Three massive layers of muscles and two interosseous layers are arranged longitudinally to fill the arches, sustaining the foot and arch in plantar flexion. Only one comparatively weak muscle, the transversus pedis (Munson), exerts a binding influence.

Certain weak points in the human foot should be recognized.

Considering the centre of the astragalus to be in the vertical plane occupying the centre of the foot, the bearing surfaces of the calcaneus, the inner and outer tubercles, will be to the outer side of the centre. This position of the calcaneus tends to facilitate pronation in the standing position with muscles relaxed—the attitude of rest, of Whitman. The calcaneus rotates inward upon the inner tubercle carrying the astragalus, putting a strain upon the ligamentous structures of the foot. The internal longitudinal arch is



FIG. 1.—Plantigrade foot at ten years of age. Inner line of foot is straight. 1, Great toe is but slightly bent outward. 2, Little toe has suffered more—pointed in and upward. 3, Joints clear, surfaces appear not in contact (normal). 4, Bone strong. 5, Metatarsals. 6, Phalanges.

slightly lowered, the internal arch eliminated or reversed.

This position of the calcaneus in relation to the centre of the foot is partially rectified by the inner tubercle being larger than the outer, which tends to cant the calcaneus to the outer side. Again, the formation of the calcaneo-astragaloid joint, the sub-astragaloid (Figs. 4 and 5), sloping from within outward, directing the astragalus outward, reinforced by the strong lesser process—the sustentaculum tali—tends to restore the balance.

As demonstrated by Doctor Osgood, the calcaneo-astragaloid joint permits the movements of pronation and supination in the heel. The movements of varus and valgus are peculiar to the mediotarsal joint, and flexion and extension to the tibiotarsal or ankle joint.

Pronation or abduction may be considered a position of weakness, this position being maintained, as remarked before, by ligamentous support, with the least muscular effort. Anything that produces an increased leverage upon the sub-astragaloid joint will be a mechanical strain upon the foot structures. A glance at Fig. 5 will convey an idea of the greater leverage placed upon this joint by the high heel or flaring outer edge and wedge heel high on the outer side.

The mediotarsal joint is a combination of two joints—the calcaneo-scapoid and calcaneo-cuboid

articulation (Fig. 6). Motion is principally in the direction of varus and valgus, as remarked. This joint is especially reinforced on the plantar surface by the long and short calcaneo-cuboid and inferior calcaneo-scapoid ligaments and the plantar fasciæ (Fig. 7). Fig. 6 demonstrates the weakness of this articulation, there being a break in the continuity of all other joints crossing the foot.

Another source of weakness in the mediotarsal joint is the arrangement of the strong ligaments (Fig. 7), the long and short calcaneo-cuboid, on the outer side of the foot, entering into but slight support of the calcaneo-scapoid part of the joint, the first metatarsal, and consequently of the inner longitudinal arch. This apparent weakness is compensated to a degree by the central position of the origin of the plantar fascia (Fig. 9), this being attached to the inner tubercle of the calcaneus with the strong flexor brevis digitorum. Again, the adductor muscles are strong and the abductors are comparatively weak. This fact accentuates the necessity of cultivating a strong muscular development to maintain the balance of the foot and the integrity of the mediotarsal joint.

The inherent weakness of the inner arch, compared with the relative strength of the outer longitudinal arch, is guarded when the foot is permitted



FIG. 2.—(Cf. Hoffmann.) Photograph of plaster cast of foot of Hagood boy that had worn shoes a few months (A) contrasted with foot of an adult Hagood who had never worn shoes (B). B, Axis of foot passes through centre of foot in untrammelled foot; A, axis selected in foot that has worn shoes.

to function to a degree approaching the normal; that is, when the anterior foot, brought to the front, is the fulcrum in the action of the leg and foot flexor muscles in lifting and propelling the body. In this action, as the weight bearing foot approaches the forward thrust, it rocks to the outer side, by

necessity shifting the weight to the outer side, since the outer metatarsal bones and toes are considerably shorter than those of the inner side, forming an oblique bearing surface with the great toe. When the anterior foot is wedged and turned outward in

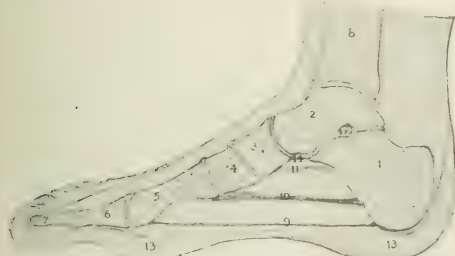


FIG. 3.—The arches of the foot are real arches. A longitudinal section through the inner side of the foot will show that the key-stone is the astragalus. Each bone is bevelled and lipped and set at an angle to sustain the one above. The arch base is anchored by the plantar fascia and farther tied by the long and short calcaneocuboid ligament and the calcaneoscapoid ligament. A brace that presses upon the plantar fascia, carrying weight, must stretch the plantar fascia.

The bowstring arch. 1, Calcaneus; 2, astragalus; 3, scaphoid; 4, first cuneiform; 5, metatarsal; 6, proximal phalanx; 7, second phalanx; 8, tibia; 9, plantar fascia; 10, long calcaneocuboid ligament; 11, short calcaneocuboid ligament; 12, interosseus ligament; 13, fibroconnective tissue cushion; 14, inferior calcaneoscapoid ligament, "spring ligament."

walking, the weight thrust is not shifted, but must be sustained by the weaker inner longitudinal arch.

Viciously formed shoes, debility, chronic or weakening diseases, improper attitudes long maintained, a short tendo Achillis—the muscle bound foot—ankylosis of the ankle joint, are some of the causes producing mechanical strain upon supporting

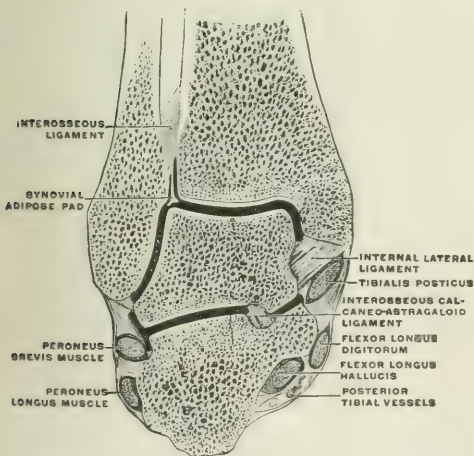


FIG. 4.—Coronal section through the ankle joint and the calcaneosubastralgoid articulation (Poirier and Charpy). Note slope downward of lower articulation.

ligaments resulting in malposition, structural changes, arthritis, in the mediotarsal joint.

The inferior calcaneoscapoid ligament (Fig. 3) is one of the first structures abused by loss of balance in the foot. As this gives way, the calcaneus

becomes more pronated. The mechanical efficiency of structures entering into the construction of the "bowstring arch" is weakened. The long and short calcaneocuboid ligaments, the calcaneoscapoid, the plantar fascia, and supinator and flexor muscles sustaining the arch in balance, work at a disadvantage in the position of pronation. The strain comes especially upon the inner fibres of the ligamentous structures, which are stretched like a bowstring. The inferior calcaneoscapoid—the "spring ligament"—is stretched at every step when the foot is not in balance.

With the relaxation (stretching) following constant pounding strain, the calcaneus becomes more horizontal—the heel is elongated. The foot rocks inward upon the inner tubercle of the calcaneus, the subastralgoid joint becoming more nearly horizontal from side to side, bearing more weight through the astragalus upon the sustentaculum tali. In this movement the astragalus descends inward and downward to the navicular process of the scaphoid and then carries the scaphoid and cuneiform bones inward. The tarsometatarsal joints, especially the proximal ends of the metatarsal bones, securely held by the long and short calcaneocuboid ligaments, appear to rotate outward. This movement is really a buckling of the inner side of the foot. The x ray reveals the tarsal bones bulging the inner line into convexity. The proximal ends of the metatarsals are apparently swung outward, and the distal ends of the metatarsals swung inward, projecting the first phalanx of the great toe against the inner side of the shoe, necessitating another angle and facilitating bunion formation and hallux valgus. A transverse study reveals the long calcaneocuboid and plantar fascia casting a distinct shadow, with the many changes described above.

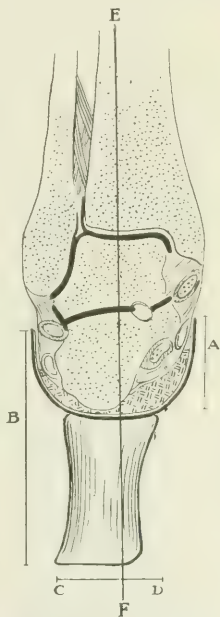


FIG. 5.—A, marks the length of the lever tending to pronate or supinate the subastralgoid joint in the unshod foot; B, marks the length of lever by addition of the high heel; C, D, marks the disproportion in the levers tending to pronate or supinate the heel when the outer edge of the heel has a flange; E, F, line passing through centre of astragalus falls to inner side of centre of the high heel.

The anterior foot provides the base for the anterior metatarsal arch, which is bound together by the comparatively weak transverse metatarsal ligament. This arch becomes flattened in the standing position, forming five props or bases of support to the longitudinal arch. When subjected to constant

stress, inflicted by the weight of the body in high heeled shoes with concave soles, the arch becomes permanently concave from above downward. The consequences of this reversal of the anterior meta-



FIG. 6.—Oblique section of the articulations of tarsus and metatarsus, showing the six synovial membranes. (Gray.) 1, Astragalo-scaphoid; 2, calcaneocuboid; together regarded as one point, the transverse tarsal or more usually called the mediotarsal joint. In this joint motion principally of varus and valgus occur. Note that all other joints, tarsal and tarsometatarsal, are broken in their continuity across the foot.

tarsal arch and the action of the "turned sole" are well illustrated in patients who suffer with hallux rigidus; the rigid toe elevates the inner leg of the



FIG. 7.—Ligaments of the plantar surface of the foot. (Gray.) The anterior longitudinal arch and the mediotarsal articulation are supported by the long and short calcaneocuboid ligaments.

arch. In this deformity the weight thrusts the extremities of the metatarsals down, producing severe metatarsal irritation and callosities upon the second and third metatarsal extremities. The "turned

sole"¹³ and "rocker sole"¹⁴ usually produce a metatarsal thickening upon the fourth and third metatarsal extremities. The toes are held in flexion (Figs. 10 and 11), crowded together, and pushed backward and upward in dorsal flexion at the metatarsophalangeal articulation. This sharply upward deflection of the proximal phalanges weakens the anterior metatarsal arch and uncovers the metatarsophalangeal joint, which is subject to pressure. In extreme cases the tendons of the flexor brevis digi-

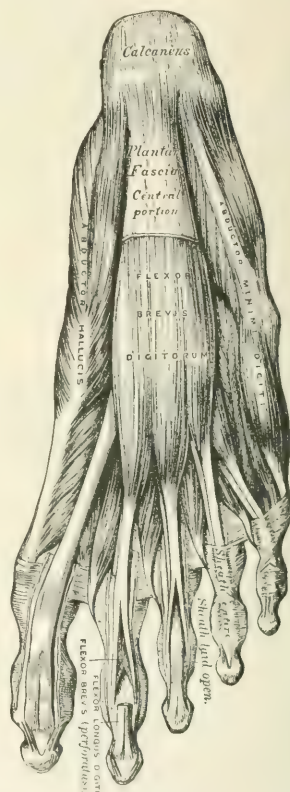


FIG. 8.—Muscles of the sole of the foot, first layer. (Gray.) Plantar fascia and flexor brevis digitorum have their origin upon the inner tubercle. They tend to compensate the position of the long and short calcaneocuboid ligament. These strong flexor muscles and the two layers of flexor muscles under them are put out of action by our viciously formed shoes.

torum and the flexor longus digitorum are crushed out of their bony grooved channel and fibrous sheath at the metatarsophalangeal articulation.

In many patients who would be astonished and offended if told that they had a deformed foot, the flexor and extensor muscles have become permanently shortened and atrophied—almost functionless compared with the wide range of motion imparted to the toes and anterior foot by the muscles

¹³The "turned sole" is a term applied to the sole of a shoe which is concave from above downward from side to side. This is the prevailing form in light shoes worn by women.

¹⁴The "rocker sole" is concave from before backward.

in the normal foot. Most of the excursions permitted in the anterior foot of these individuals are

one having a small knowledge of mechanics, that the more upright leg making the more acute angle with the line of action will bear the greater weight; the more divergent leg or legs will be more in the nature of balancing supports, or props.

In assuming the various positions from the plantigrade to the equinus, the foot will be changing constantly the relation of its line of action and the angles which it will make with the metatarsal bones. In the exaggerated equinus position the line of support would approach the metatarsal legs of the tripod, and consequently the weight would be borne upon the comparatively weaker legs, which must suffer if the weight is excessive and long continued.

The problem of the foot, when considered from a therapeutic or mechanical point of study, must take into consideration its twofold function—elastic propulsion and balancing support.

As a machine of elastic propulsion of the human body, the foot structures are most efficient.

We have inherited this foot from our primitive ancestors, whose requirements of life were met in the chase and later in fol-

made by the action of the leg muscles. These atrophied muscles have been eliminated by viciously formed shoes and meddlesome arch props.

Starting with the premise, "man is a plantigrade," as incontrovertible, it may be supposed that the mechanical construction of the foot facilitating support and progression is adapted to functioning in this position with greatest economy of mechanical strain and conservation of energy. To reduce the problem to a mechanical one, estimating the forces, we must take into consideration many modifying influences of the various tissues combining to make up this mechanical entity. If it were only the bones, united by capsular ligaments of equal length and strength, the problem would be easier. We have the varying strength of long and short, strong and weak muscles, whose origin and insertion give varying leverage and varying strength on the excursions of the foot. The fascia, ligaments, capsular ligaments, and muscles make a complex problem which must modify our findings. Our error will be in not finding the total mechanical disadvantage of the unphysiological position.

Further study of the mechanical structure of the foot accentuates the relative adaptability of support and elastic propulsion of the parts, the feet functioning as those of a plantigrade. Not only will the comparatively massive calcaneus suggest support, but its architectural position and structure as the sustaining column of the tripod are apparent. A continuation of the line of support, or, stated mechanically, the line of action, must pass through the astragalus, making an acute angle with the posterior leg of the tripod, or calcaneus, compared with the more open angle made by the metatarsal bones, the anterior legs of the tripod. It is evident to any

one having a small knowledge of mechanics, that the more upright leg making the more acute angle with the line of action will bear the greater weight; the more divergent leg or legs will be more in the nature of balancing supports, or props.

Long maintenance of the upright position in contracted quarters, on hard floors, or sitting on cushioned chairs with pendent extremities encased in constricting, unphysiological shoes which inhibit muscle function and blood stream and result in varicose veins, are conditions unlike those existing through eons of primitive life; then the formative influences were shaping this extremity, and we are forced to conclude that the weak foot is the result of our civilization in industrial and business life, combined with the action of unphysiological shoes. Most likely, then, we shall find the weakness of this structure manifest

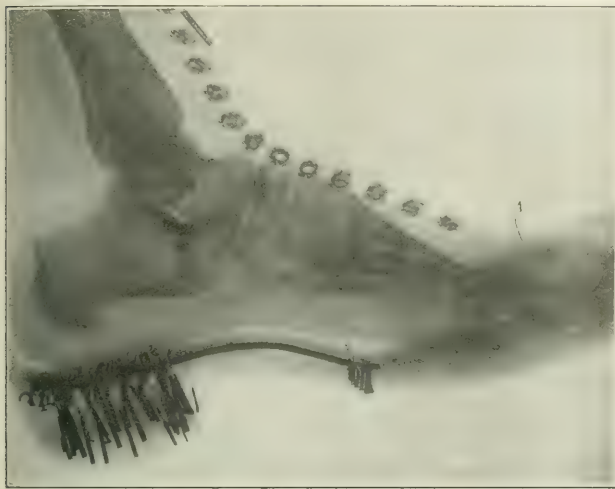


FIG. 9.—Deformed foot of woman twenty-eight years old, suffering from effects of digitigrade progression. Now wearing short shoe with heel considered by wearer to be very low. Heel of shoe extends too far back. Toes permanently flexed in position of hammer toe. Muscular control of anterior foot lost. Rocker sole.

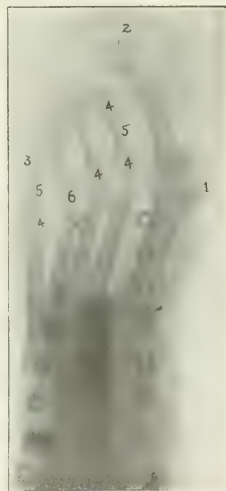


FIG. 10.—Same foot as in Fig. 9. Note narrow, short shoe crowding the foot. Patient suffers with painful feet and metatarsalgia. 1, Bunion well started. 2, Valgus or out turning great toe tending to overlap second toe. 3, Little toe crowding, overlapping fourth toe. 4, Joints distinct due to thinning of bone. 5, Dumbbell appearance of proximal phalanges.

when a standing position is most urgent, and, as the city demands most unnatural habits and requirements of the foot, it is here that we find the machine most sadly and frequently out of gear.

Again it is natural, with this understanding of the development of the foot, that we should endeavor to cure the weakness by modifying the calls of civilization, as far as economic and industrial life will permit, while removing all unnecessary inhibiting influences that prevent physiological action of the parts.

In continuation of this thought, the writer considers it not wandering too far afield should he refer to the sociological aspect of the subject. To this end, the employer should be made to realize the loss of efficiency in his employee when the latter is suffering from foot strain, thereby enlisting his ready cooperation in making conditions more comfortable and practical for the well being of the feet of the workers. As far as possible, the employee should be given a recess during the long hours in cramped quarters and a vitiated atmosphere, that he may restore the circulation and muscular tone of his feet by brisk walking, dancing, or running upon a yielding surface. Chairs should be provided for use when possible. The floor should be yielding, covered with cork, nonflammable wood fibre, asbestos, carpets, rubber, something that breaks the solid impact of the foot in contact with the bearing surface. Above all, the workers should be educated to select a physiological shoe, and taught to stand and walk in the position which guards the foot best from strain and deformity. It is cruelly beyond measure to formulate such rules as make standing for long hours a necessity.

The psychological aspect of the matter cannot be overlooked. Any one who treats these patients can attest the profound mental depression attending afflictions of the foot, the irritability and breaking of the spirit which change the whole mental bent of the individual, providing a ready soil for the reception of the seeds of extreme socialism and anarchy.

346 LEXINGTON AVENUE.

PEDOLOGY AND ITS POSSIBILITIES.*

The Study, Treatment, and Education of Children Requiring Special Attention.

By E. BOSWORTH McCREADY, M. D.,
Pittsburgh,

Director, Wildwood Hall; Pedologist, South Side Hospital, Juvenile Court of Allegheny County, Eastern District Associated Charities, and Gusky Orphanage and Home.

Many great medical movements have been initiated by laymen, who by attempting a task for which they are inadequately fitted by training and experience, stimulate the interest of our profession through the creation of a demand for more complete investigation. Thus many developmental defects in childhood giving rise to retardation and deviation in mental and physical development received but scant attention from physicians until the necessarily incomplete investigations of psychologists and edu-

cators showed the necessity for their participation in the development of this large and important field.

Unless men with medical training familiarize themselves with the factors involved in retarded and deviate development, making a careful scientific study of etiology, treatment, and prophylaxis, they will leave unfulfilled a duty they owe humanity, for the solution of many of the problems besetting the sociologist and educator lies with the medical profession.

In early life body and mind are soft and pliable, capable of easy moulding in the potter's hands, though allowing for limitations and variations inherent in the clay. "Just as the twig is bent, the tree's inclined." Trite, but as true in child culture as in horticulture. The physician, often the family counselor in matters not only medical but legal, business, religious, and domestic as well, seems sometimes to exert little influence where important problems relating to the child's physical and mental welfare are concerned, except when these involve active disease states. The fault rests not entirely with the parents. The physician himself is too apt to limit his interest in the child to occasions in which his attention is claimed by acute infection or other condition calling for therapeutic intervention in the more strictly medical sense.

It is not to be expected that the busy general practitioner, pediatricist, or neurologist will have the time, inclination, or facilities effectively to study and treat the numerous classes of physical and mental variation with which he may meet. Hence the necessity for a branch of practice which will combine some of the functions of the pediatricist and neurologist with some of those of the psychologist and pedagogue. Upon the pages of medical and pedagogic history stand out prominently the names of physicians who have filled these joint functions with credit to themselves and benefit to humanity. Guggenbühl, Itard, and Sequin, though pathfinders who sometimes led their followers through devious ways, left to posterity a legacy which will never be dissipated. In our own day the name of Dr. Maria Montessori stands out as perhaps the best known, though there are many others, both in this country and abroad, who, approaching the subject from a somewhat different angle, by adding to our knowledge and stimulating interest in this subject, are accomplishing much in this field of endeavor. Two most excellent works from the pens of physicians of your own city, *The Backward Baby*, by Dr. Herman B. Sheffield, and *Child Training as an Exact Science*, by Dr. George W. Jacoby, have appeared in the last year or so.

It would seem that the field is sufficiently comprehensive and important to warrant a distinctive appellation for those who confine their practice to this medicopsychological pedagogic function. I have for some time made use of the term "pedology." According to Dr. Henry W. Cattell (1), the editor of *Lippincott's Medical Dictionary*, the term pedology, first used synonymously with "pediatrics," later made to designate "child study," may now be defined in a more restricted sense as "that branch of pediatrics in which the physical and mental defects of child development are especially studied and treated

*Read at the session before the Medical Association of the Greater City of New York, October 12, 1917.

by the physician." It is not intended that the pedologist shall usurp the field of, nor attempt to crowd out the clinical psychologist who, as Haberman (2) says, "must first and foremost be a physician." The pedologist must depend upon the highly specialized functions of the clinical psychologist, as



FIG. 1.—Peculiar sellar deformation in undersized boy, fourteen years old, whose irregularities of conduct brought him into the Juvenile Court.

upon those of other specialists for much that he converts to his own use.

The South Side Hospital of Pittsburgh has recognized "pedology" as a branch of medical practice by creating a staff position of "pedologist," which it has been my honor to occupy for the last three years. A clinic conducted in connection is known as the Pedological Clinic. The Juvenile Court and other agencies coming into close contact with children have given similar recognition.

As in other fields of medical endeavor, the first step toward accurate diagnosis and rational treatment is thorough study of the individual patient. Notation of gross somatic abnormalities with superficial examination of eyes, ears, nose, and throat, and the application of the Binet-Simon, Healy, or other tests is not sufficient, except for the purpose of selecting suitable cases for further study and as a prelude to more thorough investigation. These tests merely allow us to determine faulty function of one of the body's most important organs—the brain. They do not inform us regarding the cause of the disorder of function any more than the clinical thermometer tells us the nature of the pathological process behind a hyperpyrexia. Among those whose resources the pedologist must call to his aid are the ophthalmologist, laryngologist, röntgenologist, serologist, microscopist, and biological chemist. He must, to an extent, direct the line of their investigations, interpret their findings, and correlate them with his own observations.

The influence of defects of vision and hearing and of nasal obstruction upon mental development, particularly as a causative factor in aphrosia, is well known, though it will usually be found that these are simply manifestations of the more general hypoplastic condition. The examination of the fundi oculorum may give much information of diagnostic and prognostic value. Röntgenology not only allows us to determine deformity of the sella turcica with possible dyspituitarism, a condition in varying degree not rarely encountered, but, through a radiograph of the wrist, shows us the stage of epiphyseal development as well. Congenital syphilis may be detected by the Wassermann test or one of its modifications. A serological test offering the promise of unlimited possibilities, though its exact status has not yet been determined, is the Abderhalden reaction. Its chief value for our purpose would lie in enabling us to recognize conditions of faulty organization of the glands having an internal secretion, particularly, those which some believe are the cause or at least accompany dementia præcox. Any procedure which enables us to recognize the unfortunate persons predisposed to this common and terrible affliction sufficiently early to admit of even slight hope of therapeutic and prophylactic measures being of service, merits our serious consideration. Studies of the constituents of the blood stream may give much information, such as, for instance, the polycythemia and lymphocytosis observed in the class of cases mentioned above. Deviation from the commonly accepted normal in the chemical constituents of the urine is a matter sometimes of great significance, indicating metabolic disturbances the interpretation of which in correlation with data obtained through other sources may throw light upon conditions otherwise obscure. Information gained through the various diagnostic aids mentioned above must be amplified and extended by examinations and investigations undertaken by the pedologist himself.



FIG. 2.—Large sella turcica with eroded posterior clinoid process in feeble minded girl of six years with frequent attacks of petit mal.

The family history should be as complete as it is possible to obtain, though, as often elicited, it is of little practical value. In the large mass of institution cases we should expect to find—and do find—a history of alcoholism, insanity, tuberculosis, etc., in immediate and remote ancestry, though we find

these conditions also in the ancestry of the supposed-normal inmates of orphan asylums and industrial homes. In private practice it is not always so easy to find a scapegoat, as defects are usually either less frank in expression or are more carefully glossed over and require either personal observation or in-

a rule in all except evident cases to give nothing except a tentative opinion without at least a three months' period of such study and observation. It not infrequently happens that I find it necessary almost completely to revise early impressions.

It is now generally conceded that the chain of ductless glands is of the greatest importance in the development of the cerebrospinal and osseous systems in early life, and that impairment of function of one or another of these glands underlies the disorders of nutrition which inhibit proper development. Under the caption, *The Ductless Glands and Constitution*, Falta (3) says, "we must not accept the ductless glandular system for itself alone, but must regard it as a constitutional component; the ductless glands as vegetative organs together with the nervous system regulating their functions." While our knowledge of the normal action of these glands is still somewhat hazy, yet they are found to preside, in some manner, over certain correlations of the body. These correlations are exceedingly variable, and this variability is most apparent when and where circumstances are abnormal. The adjusting mechanisms of development are more or less reciprocal; thus a ductless gland not only influences development, but is itself influenced by changes in general development. There is reason to suppose that in the harmony produced through the concerted action of the ductless glands, the leading role is played by the thyroid, which supplies the stimulus



FIG. 3. Small deformed sella turcica in neurotic girl of twelve years.

timate knowledge of individual family members for their detection. Of more comparative value to my mind, is the developmental history, especially when this is made to date, as it should, from the earliest moment of conception. The mother of a constitutionally inferior patient of mine attributes her son's defects to frequent hypodermic injections of morphine administered by her family physician during the early months of her pregnancy, though I attach even greater weight to the fact that she herself has been operated upon for cancer and that her husband shows acromegalic symptoms, though of mild and stationary character. Birth conditions, digestive disturbances, convulsions, age of sitting up, of walking, talking, etc., are all of diagnostic importance and are worthy of detail, as are all facts connected in even remote ways with the mental and physical development of the child. The physical examination should be thorough, from the top of the head to the soles of the feet, careful note being made of stigmata of degeneracy, gross and minor abnormalities and variations from the commonly accepted normal in any degree.

In this day of "standardized" tests I may be considered iconoclastic in stating that in the matter of the mental examination, not so much depends upon the method of testing employed as upon the individual equation of the tester. It is upon his interpretation of all collected data, his almost intuitive recognition and selection of essentials, that the proper evaluation of psychic factors with their complex physical interrelations rests. For purposes of classification, for rapid or routine determination of approximate mental capacity, such tests are indispensable. The surest knowledge, however, is gained through prolonged observation of the child's reaction to a given environment, his adaptability to new problems and conditions, aided by such tests as experience may select. In private practice I make it

for bodily metabolism. As a check upon the influence of the thyroid in infancy and childhood, the thymus, the general lymphatic system, and perhaps the pineal gland, become active. In addition, these produce that delay of sexual activity which is essential to the proper maturation and stability of the somatic functions. In due time the adrenal system stimulates the sexual organs to activity, and hastens as well the growth of the muscular and skeletal systems. Of great importance at this time is the action of the pituitary gland, which stimulates every organ of the body. So much may



FIG. 4. Long epiphyseal fingers and delayed epiphyseal ossification in case of acromegaly (shown in Fig. 13).

be postulated regarding the influence of the internal secretions upon somatic development; their equally important influence upon psychic development is shrouded in a greater degree of obscurity, though our knowledge is rapidly increasing.

I believe it may safely be stated that all conditions of retarded and deviate development, except those due to purely accidental and environmental causes, have their immediate origin in a faultily organized physical constitution, which I have—following the example of Noble (4)—been accustomed to design-



FIG. 5.—Thymic-thyroid syndrome in a stutterer of fourteen years. Relative thymic dullness as outlined.

nate as hypoplasia. This faulty physical organization may be due to causes distinctly hereditary in origin, to antenatal agencies affecting the child *in utero* or to a combination of these with exciting factors, toxic, emotional, or traumatic, operating *post partum*. Thus conditions, having a vitiating influence upon cell development, result in growth disturbances in the developing embryo, and as a further interference with growth forces, in the first few weeks of fetal life, when the ductless glands begin to appear, the cells of which they are composed also grow imperfectly; and as they fail to secrete to the extent to which they were destined, further defective development ensues. As the result we have constitutional inferiority, infantilism, hy-

used without the qualifying adjective. "Infantilism" has come to be considered a clinical entity. "Degeneracy," from long misuse, carries with it a stigma of moral obliquity. "Hypoplasia," on the other hand, seems to be a generic term admitting of wide application. Hypoplasia may affect any organ and any structure and to almost any degree. Thus hypoplasia of the nervous system gives us the idiot at one extreme, and the so called neurotic make-up at the other. The various stigmata of degeneracy are somatic manifestations of hypoplasia. Certain neuroses and psychoses, drug habits, alcoholism, etc., if not the direct result, are prone to occur in persons presenting symptoms of hypoplasia. Chlorosis, appendicitis, tuberculosis, and a host of other dyscrasias, diatheses, infections, and morbid states are common in the hypoplastic. Harrower (5) states in his excellent book: "At a recent Italian congress an official report was made and adopted, in which it is deemed established that the 'endocrinous system'—the internal secretory system—exerts an influence on anomalies of growth, morphogenesis, and organic metabolism, and on nutrition and inherent excitability of the nervous system, and on resistance to infections and intoxication, and



FIG. 7.—Modified sleeping porch. An ideal arrangement for delicate children, as by closing windows and turning on heat, a warm room for dressing is provided. Note sleeping garments of nurse and child.

also that it has a preponderating influence on the causation of dyscrasias and morbid tendencies. The equilibrium of the nervous system, the sympathetic in particular, is also regarded as maintained by the internal secretions. In nervous diseases *per se* they act probably as indirect or predisposing factors." Falta applies Wunderlich's classification of *stabile*, *debile*, and *labile* vegetative nervous systems to the ductless gland system, and suggests the intimate relations that exist between both systems lead us to expect that the same type of constitution would very often be found united in the same individual, or that where one is present the other is at least suggested. Lack of space forbids further discussion of this phase of my subject, though to me it seems most important, as it is upon the conception of constitutional anomaly (hypoplasia) as a basis, that the proper understanding of conditions of defective and deviate mental and physical development rests.

The hypoplastic child is distinguishable from his



FIG. 6.—Child taking sun bath. Note black shade over eyes, which serve to prevent untoward effects.

poplasia, degeneracy—call it what you will—in varying degree. Of these terms I prefer "hypoplasia." Constitutional inferiority is liable to confusion with Dr. Adolph Meyer's more specific term, "psychic constitutional inferiority," which is often

more normally constituted fellows by anatomical, physiological, and psychic characteristics, the interpretation of which serves to implicate the glands of internal secretion as factors of etiological significance. The clinical picture most often seen is the undersized, badly nourished child, whose unstable nervous system is still further handicapped by the effects of reflex disturbances arising from nasal obstruction, defective vision, or perhaps phimosis. Other symptoms are delayed epiphyseal union (as revealed by the x ray), hypotonicity of ligaments and muscles, postural defects, visceroptosis, and hernia. Incontinence of urine and feces is frequently present. Deficiency of the eyebrows in the outer third, the *signe du sourcil*, is considered a symptom of thyroid deficiency. Delayed sexual development is common, though sexual precocity may be found, suggesting hypophyseal involvement. Premature



FIG. 8.—Outdoor sleeping tent. Note boy of sixteen years, a case of infantilism with pituitary insufficiency; small sella turcica, polyuria and high carbohydrate tolerance. Gained 1½ inch in height in three months under pituitary feeding.

eroticism leading to sexual misdemeanors is frequent in hypoplastic children, especially in emotional, psychically inferior girls with enlarged thyroids. The high arched palate, produced by yielding of the palatine bones, owing to their relative poverty in calcium salts, is a fairly constant symptom of hypoplasia, and dental malocclusions are likewise common. Variations in bodily temperature are frequently found; in hypothyroidism, especially, the temperature is apt to be subnormal at times, with cold extremities, clammy skin, and chilliness, evidences of deficient oxidation and nutrition. Low blood pressure, Sergeant's white line, adynamia, sometimes with slight bronzing of the skin and decreased resistance to infection, point to underdevelopment of the adrenals. Anomalies of bony development hint at absence or defective development of the thymus.

I shall not attempt a classification and description of all the various conditions of childhood which require the attention of the pedologist. A brief discussion of a few, either of especial interest or of frequent occurrence, may not be amiss.

Feeble-mindedness or amentia is defined by Tredgold as "a state of mental defect from birth or from an early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position of life to which he was born." In the lower grades the diagnosis is usually a matter of little difficulty, as the condition presents physical and mental anomalies which "he who runs may read." In the highest grade, however, the moron, the borderland case, the determination of the character of the defect, its differentiation from psychopathy, from heboid states, constitutional psychic inferiority (used in a restricted sense), from retardation due to removable causes, or from merely slow rate of development, is a matter sometimes requiring much study.

When we have demonstrated that feeble-mindedness is present, we do not fulfill our whole duty by stating our diagnosis and recommending special educational methods, for this condition, while essentially incurable, is improvable to an extent difficult for those who have not followed the progress of such cases under intensive cultural methods to realize.

Speech defects or, more properly, defects involv-



FIG. 9.—Apparatus to correct mouth breathing.



FIG. 10.—Folk dancing.

ing the zone of language, include stuttering or stammering, word blindness, word deafness, idioglossia, and lisping.

Stuttering. Although stuttering is generally considered to be a purely psychic condition, depending upon incoordination of the mechanism controlling the organs of speech, I am still inclined to follow

Claiborne's (6) suggestion that it should be classed among the conditions having as their basis congenital defects in the special centres controlling speech. Scripture (7) has observed that practically all stutterers habitually speak in a monotone, that they lack the power of speaking rhythmically. Several years ago I (8) suggested that there exists a distinct relationship between stuttering and a partial congenital amusia.

The hypothesis advanced by Browning (9) that stammering is associated with an enlarged thymus which produces the defect in speech by a reflex inhibition of the ordinary respiratory rhythm, is not untenable with my theory, as what Browning speaks of as "a stammer diathesis or complex" is what I should call hypoplasia, in which an enlarged thymus, as well as other ductless gland anomalies, are not unusual.

Word blindness. Medical literature contains but little reference to congenital word blindness previous to 1896, though Clara Harrison Town (10) finds that Broadbent, as early as 1872, described a case which combined total word blindness with very limited power of speech. In 1896, both James Kerr and W. Pringle Morgan reported examples of this condition, followed by Thomas, Fisher, Stephenson, Hinshelwood and others. In 1909, I (11) was able to collect descriptions of forty-one cases, to which I added one with which stuttering was associated. I have since studied a number of other well marked cases, and sufficient have been described by other observers to show that the condition is relatively common. The most satisfactory explanation of the cause is that congenital word blindness is due to a biological variation, an isolated defect of structure, or, we might say, is one of the stigmata of degeneracy (hypoplasia) in the visual word centre, and is closely related to such condi-

word blindness presents little difficulty, though as word blindness is a manifestation of hypoplasia, it is necessary for prognostic purpose to determine whether it exists as an isolated defect or whether sufficient other defects are present to constitute feeble-mindedness, in which condition it is frequent-



FIG. 12.—Esthetic dancing.

ly found. Treatment consists in the application of special educational methods and treatment of the underlying hypoplasia.

Congenital word deafness has received less attention than congenital word blindness, though Gall (12) as early as 1861 described a class of children, which, in my opinion, exhibited many of the symptoms of this condition. It is obvious that the child who, although possessing the ability to hear ordinary sounds, is unable to appreciate and retain impressions of spoken language, will fail to acquire the faculty of speech. To differentiate mutism resulting from word deafness from that which is entirely motor or peripheral in character, often requires close and prolonged observation.

Partial word deafness gives rise to speech so peculiar as to give the impression that the child uses a language of his own. To this condition the name of "idioglossia" has been given by Hale White and Golding Bird (13). The speech of the child with idioglossia is almost unintelligible, except to those who have become accustomed to it. While upon analysis it will be found that in each individual the sounds substituted are always the same for the same words, our first impression is that we are listening to meaningless gibberish. The condition must be differentiated from defective speech due primarily to mechanical causes and to partial deafness. This condition, like word blindness, is common in those presenting the symptom of complex feeble-mindedness, though usually in the feeble-minded its characteristics are different. Treatment, as in the other conditions mentioned, consists of measures directed toward stimulation of the forces underlying development and the institution of highly individualized special training.

General treatment of the hypoplastic consists of various, 1, hygienic, 2, medical, and, 3, educational measures, directed toward the stimulation of the correlative development of growth forces and the maintenance of somatic and psychic equilibrium.

Hygienic measures. Regular habits of sleeping and eating, of bathing and exercise cannot be inculcated too early, in fact much in this direction may



FIG. 11.—Dancing.

tions as color blindness, lack of musical sense, impairment of ocular fusion sense, etc. Of word blind children, about one half are also letter blind, while but a small proportion are unable to recognize figures. Poor visual memory for figures may exist independently of word blindness. The diagnosis of

be accomplished in early infancy. Stimulation of metabolism and of growth may be brought about by air, rain, and sun baths, and by various hydrotherapeutic measures. Radium, in the form of emanation drinking water and baths, seems to exert a beneficial influence in quieting excessive nerve irritability.

*Blood analysis of boy of sixteen years of heredit type. Positive
Aberhalden reaction to sexual and pineal gland tissue.*

Name.	Date 3/19/1915.
ABSOLUTE COUNT.	
Hemoglobin (Salk)	105
R. B. C.	6,512,000
W. B. C.	8,000
DIFFERENTIAL COUNT.	
	Per cent.
Neutrophils	39
Lymphocytes—	
Small	26
Medium	20
Large	20
Eosinophils	2.5
Basophils	4.5
Monocytes	4.5
Transitional	8
Total	100.0
Remarks.—Blood pressure 120. Wassermann, March 19, 1915, shows slight inhibition; Wassermann, March 30, 1915, shows slight inhibition.	

ity and stimulating general metabolism. Swimming and bathing in open air pools (I have little use for those indoors) is a valuable adjunct to treatment. Swedish and other gymnastics, massage, folk and esthetic dancing, the medicine ball and bean bag, and various other sports and activities all have their value as means, not only of stimulating the forces of growth, but in correcting defects of posture and psychomotor control. Open air sleeping I consider a necessity for hypoplastic children. At this place I wish to state that while proper treatment may be approximated in the city it can almost never be carried out to the same advantage as in the country, where the supply of fresh air and sunshine is at a maximum. Hit or miss methods of feeding children beyond the stage of infancy are still prevalent. The diet of the hypoplastic child should be based upon scientific principles. Not only should the caloric value be regulated according to his needs, but the proportions of proteins, fat, and carbohydrates as well. These children, as a rule, make bet-

Chemical analysis of urine of child of six years, whose large sella turcica is shown in Fig. 2. Uric acid and neutral sulphur are high, hence the nitrogen is also small. Note.

This child has frequent attacks of petit mal.

Volume	200 c
Reaction	Acid
Specific gravity	1.0272
Color	Pale
Nitrogen	3.70 grams
Nitrogen (cal)	35.38 grams
Urea	2.81 grams
Uric acid	2.88 grams
Creatinine	.081 grams
Total solids	1.333 grams
Proteins	2.41 grams
Albumin	2.41 grams
Glucose	2.41 grams
Fructose	2.41 grams
Sucrose	2.41 grams
Galactose	2.41 grams
Lactose	2.41 grams
Maltose	2.41 grams
Total chlorides (as Na Cl)	6.642 grams
Inorganic chlorides (as Na Cl)	3.666 grams
Organic chlorides	.060 grams
Magnesium	Low
Iron	Low
Aluminum	None
Silica	None

ter progress on a diet relatively free from animal proteins.

Medical measures. I have come, after a number of years of fairly wide experience in the treatment of hypoplastic children, to rely upon but few drugs.

The iodide of iron, nux vomica, and other tonics and alternatives may have their temporary use, antisyphilitic remedies are, of course, indicated in congenital lues, but my chief reliance is upon such physical measures as are outlined above and upon the administration of the glands of internal secretion. We are far removed from the crude empiricism of the days of Brown-Séquard and his overenthusiastic followers. A fund of knowledge has been acquired that has placed endocrinology upon a rational foundation and has furnished concise indications for the administration of definite gland substances in definite diseased states. In cretinism, thyroid is indicated, in infantilism of the dystrophia adipose-genitalis type or the type Lorain, pituitary gland is of value. Kerley and Beebe (14) report a case of greatly retarded physical development in a boy in which thymus apparently gave brilliant results. Dana and Berkeley (15) have reported the results of investigations in

Menu for three meals with caloric values and proportions of various ingredients estimated.

BREAKFAST.					
Food.	Amt.	Cal.	Pro.	Fats.	Carbo.
Shredded wheat...	1 1/2 oz.	33.3	4	1	28.3
Sugar	1 1/2 oz.	11.66	12	...	11.66
Milk	2 oz.	34.4	4.7	2.4	18
Scrambled eggs...	3/4 oz.	13.08	0.9	7.9	4.8
Toast	1 1/2 oz.	62.5	5.7	13.7	43.1
	4 1/2 oz.	152.94	26.4	25	101.54
		150	30.57	20.38	101.06
		+2.94	-4.17	+4.62	-4.2
DINNER.					
Food.	Amt.	Cal.	Pro.	Fats.	Carbo.
Lentil soup...	1 oz.	17.76	1.6	...	11.7
Lima beans...	1 oz.	45.89	9.49	1.8	34.6
Beets	1 oz.	11.6	2.7	.3	8.6
Cottage cheese...	1/2 oz.	18.7	0.95	6.2	2.55
Graham crackers...	1/2 oz.	0.145	12.55	43.03	...
Milk	2 oz.	21.6	8.5	1.6	12
Stewed pears...	1 oz.	25.1	.7	1.1	23.3
	7 oz.	209.1	42.20	24.01	135.8
		200	40.41	20.94	134.7
		+2.1	-1.88	-2.93	-1.1
SUPPER.					
Food.	Amt.	Cal.	Pro.	Fats.	Carbo.
Sliced tomatoes...	1 oz.	6.7	1	1.1	4.6
Buttered beans...	1 oz.	32.7	8.3	.7	23.7
Milk	2 oz.	21.6	8	1.6	12
White bread...	1 oz.	76.4	0.3	3.7	63.4
Butter	1/16 oz.	1.5	.13	12.37	...
	5 1/16 oz.	140.0	26.73	10.47	100.7
		150	29.97	10.08	99.0
		1	-1.24	-5.1	+3.8

which pineal gland was fed to a number of defective children in whom no grave organic brain defect existed. Though their cases showed a steady and gratifying improvement, such improvement as reported was no more marked than I have observed in cases treated with other glandular substances, alone or in combination. It is my opinion that the benefit is derived through the stimulation of metabolic processes by bringing into equilibrium the various glands with their common though tangled relationship, rather than through any selective action upon a particular gland. Usually it is impossible to imitate any one gland, though there are numerous cases in which the symptoms involving one gland are more prominent. With a pluriglandular disorder to treat, the indication is for polyopotherapy. I am in the habit of administering to hypoplastic children small doses of pituitary, thymus, thyroid, and adrenal glands in combination. For male children, testicular substance is added, for females ovarian and mam-

mary. These combinations are put up for me in tablet form by a well known English firm. A later formula has the addition of pineal gland. The description of surgical measures for the correction of deformities and of removal of sources of reflex disturbance and nasal obstruction, or of mechanical aids to treatment, as orthodontia, fitting of glasses, etc., are not within the scope of this paper, though they should be used whenever they are indicated.

General educational measures. It is a difficult matter to separate education, in its broader sense, from hygiene, especially from mental hygiene, for education, according to the new *Standard Dictionary*, "includes not only the narrow conception of instruction, to which it was formerly limited, but embraces all forms of human experience, owing to the recognition of the fact that every stimulus with its corresponding reaction has a definite effect upon character." Every act of the child's daily life should be utilized for educational purposes in the systematic development and cultivation of the normal powers of intellect, feeling, and conduct. Froebel's appeal, "Come let us live with our children," would, if intelligently answered, be of untold educational and prophylactic value.

Hypoplastic children, more than others, require measures directed toward the instillation of habits of self reliance and fearlessness. I know of no better methods of developing these characteristics than the activities mentioned under *hygiene*. Vague and even definite fears tend to disappear when a day of healthful, purposeful activity is followed by a night in the open under the stars. If the fundamental primitive fear instinct alone, as Boris Sidis (16) believes, is the source of all psychopathic maladies, it should be the first aim of education to cultivate the traits of character which would lead to its subjection. In the application of more formal educational measures the specific requirements of the individual child must be considered. For the child not yet ready for the three R's and for many who are, the methods in use in the kindergarten and in the Montessori system offer much that may be used advantageously. As both of these systems are essentially group activities, to use either in its entirety interferes with the individualization necessary in hypoplastic children. For this reason Mrs. McCready and I are accustomed to choose from each what is suited or may be applied to our needs, combining with it the other special measures required. The special educational and corrective principles and methods involved in the treatment of stuttering, lisping, word blindness, word deafness, idioglossia, deafmutism, postural defects, etc., require more detail of description than the reader's patience, already overtaxed, would permit.

REFERENCES.

1. HENRY W. CATTELL: *Personal letter*, Sept. 26, 1913.
2. J. VICTOR HABERMAN: The Intelligence, Examination, and Evaluation. *Journal of M. A.*, July 31, 1915, footnote 3.
3. WILHELM FAULT: The *Butteless Glandular Diseases*, page 46.
4. CHARLES P. NOBLE: Hereditary Hypoplasia in Man, Due to Degeneracy. *Journal of M. A.*, Feb. 13, 1909.
5. HENRY R. HARROWER: *Practical Home Therapy*, 1914, 4-6.
6. J. HERBERT CLAIRBORNE: *Journal of M. A.*, July 16, 1910.
7. E. W. SCRIPTURE: Treatment of Stuttering and Stammering. *Medical Record*, March 21, 1908; *Stuttering and Lispings*, pp. 11-33.
8. E. BOSWORTH MCCREADY: The Etiology of Stuttering to Anoxia. *Journal of M. A.*, July 16, 1910.
9. ROBERT T. BROWNING: *Neurographia: A Series of Neurological Studies, Cases, and Notes*, 1, 4.
10. CLARA HARRISON TOWN: Congenital Aphasia. *Psychological Clinic*, Nov. 15, 1911.
11. E. BOSWORTH MCCREADY: Congenital Word Blindness as a Cause of Backwardness in School Children: Report of a

Case Associated with Stuttering. *Pennsylvania State Medical Journal*, January, 1910.
- 12. CLARA HARRISON TOWN, quoted by: Congenital Aphasia. *Psychological Clinic*, Nov. 15, 1911.
- 13. *Med. Chir. Trans.*, March 10, 1891 (quoted from Guthrie's *Functional Nervous Disorders in Childhood*).
- 14. C. G. KERLEY and S. P. BEEBE: A Case of Delayed Development in a Boy Treated with Thymus Gland. *American Journal of Medical Sciences*, Aug. 1, 1912.
- 15. CHARLES L. DANA and WILLIAM N. BERKELEY: The Functions of the Pineal Gland. *Medical Record*, May 10, 1913.
- 16. BORIS SIDIS: *Psychopathology of Neurosis*, NEW YORK MEDICAL JOURNAL, April 24, 1915.

908 KEENAN BUILDING.

SIR KENELM DIGBY AND HIS POWDER OF SYMPATHY.

BY WILLIAM RENWICK RIDDELL, LL. D.,

Toronto,

Fellow, Royal Historical Society, Etc.

Of the many singular theories in the history of medicine, not the least curious is that of the Powder of Sympathy associated with the name of Sir Kenelm Digby.

Digby (1603-1665) was thoroughly educated, as education was then understood in England; was a mathematician of note and well skilled in the natural sciences. He was a man of fine presence, great stature, and bodily strength; gifted, too, with a graceful courtesy of manner and fluency of speech which won him many friends. A successful naval commander, he got his country into trouble by his too great success as a privateersman. An expert swordsman, he never hesitated to give and never refused a challenge, although by no means quarrelsome. A Royalist, he was employed by Cromwell on foreign missions, and on the Restoration was received into favor. He is most celebrated for his powder of sympathy; this was used to apply to the weapon which had caused a wound (the wound itself receiving no treatment, except to be kept cool and clean), and wondrous cures were the result. These cures were as well vouched for as the most striking cures by Christian science, faith cure, new thought, or other methods not acknowledged by the regular profession; and in many instances the proof is overwhelming.

Digby, in a formal address at Montpellier, France, in 1657 (not 1658 as the *Encyclopædia Britannica* and the *Dictionary of National Biography* have it), explained the theory of the powder. This was almost at once printed in London, and twelve years afterward appeared a volume before me as I write, in which fifty-nine pages are a reprint of this address. The title page reads: "A Discourse in a Solemn Assembly at Montpellier, made in French by Sir Kenelm Digby, Knight. 1657. London. Printed for John Williams. 1669." There is a subtitle, *A Discourse of the Cure of Wounds by the Powder of Sympathy*.

The secret of the powder, he says, he got from a Carmelite friar, who had been in China, Persia, and the Indies, and had done many marvelous cures with it. It was simply powdered "vitriol," i. e., impure iron or copper sulphate.¹

The theory, Digby bases on seven propositions:

1. The whole air is filled with light, and he says he can prove that light is a material and corporeal substance—Sir Isaac Newton's "corpuscular theory,"

¹The reaction when a sword was immersed in a solution of the powder, indicates that it was copper sulphate, "blue vitriol."

which did not receive its quietus till a century and a half after Digby's time.

2. The light when it strikes any body makes some small incisions, and, separating small atoms from the body, carries them away with it when reflected. This is the real basis of the whole theory, and it is demonstrably false.

3. The air is therefore full of small bodies or atoms—this is not far from the truth, but not from the reason Digby assigns.

4. Every body, however small, is divisible *ad infinitum*. This is pretty much the basis of our atomic theory and the theory of molecules, and, within moderately wide limits, is true.

5. Small bodies or atoms are "drawn aside," i. e., attracted "to a road altogether differing from that which their universal causes should make them hold." Leaving aside the metaphysics, this means that they are subject to attraction, which is undoubtedly true. The examples given show the state of physics at the time. Magnetic and electric attraction are well enough; but when our author instances sucking and the siphon as cases of attraction, rather than of *vis a tergo*, he is far astray. The state of medical science, too, is illustrated by some of the examples of "drawing" which are given at this stage: "'Tis upon this foundation that Physicians ordain the application of Pigeons or Puppy's or some other hot Animals to the soles of the feet, or the hand wrists or the stomachs or the navils of their Patients, to extract out of their bodies the wind or ill vapours which infect them."

The celebrated Doctor Sydenham (whom his biographer accuses of "having obtained a medical degree with little or no knowledge of medicine") about this time in cases of the "iliac passion" (volvulus) was accustomed to "order a live kitling to be always upon the naked belly"; and the still more celebrated John Wesley, three quarters of a century later, recommended to "hold a live puppy constantly on the belly." I ventured to suggest that this treatment might be quite reasonable as supplying a steady heat, at the same time giving the patient something to think of beside his abdomen;² but the theory was quite different.

Digby then gives the case of a nun (reported by Petrus Servius, physician to Pope Urban VIII.), who by excessive fasting, etc., had so wasted her body that she seemed all one fire. This heat drew into her body the air; the air got into that part where there is the most "serosity," i. e., the bladder. There the air was rendered into water "among her urine" in an incredible quantity, and she for some weeks voided more than 200 pounds of water every twenty-four hours. Twenty gallons a day was not bad; but the extraordinary features of the story are the ideas that fire or heat could draw air, that air could be transformed into water, and that, by the bladder. Of course Malpighi had not yet published his immortal discoveries as to "glands."

6. The sixth principle follows. When fire or heat draws air, and the air has in it any atom of the same nature as the drawing body, such atoms are more powerfully attracted than if they were of a different substance; and "they stay, stick, and mingle more

willingly with the body which draws them," because of "their Resemblance and Sympathy they have one with the other." The loves and hates of the different forms of matter were a constant study and a constant puzzle to the alchemists; they could not understand why water should refuse to unite with olive oil and yet eagerly unite with oil of vitriol. The pseudoscience of Digby was equally helpless but greatly daring. Crystallization he makes an effect of "resemblance of figure." "Ordinary salt forms itself alwaies in cubes of four square faces; salt-peter in forms of six faces; Ammoniac-salt in Hexagons, as the Snow doth, which is sexangular. Whereto Mr. Davison attributes the pentagonary form of every-one of those stones which were found in the bladder of Monsir Peltier to the number of fourscore." When one has burned his hand, it is an ordinary thing to hold the hand near the fire—the ignited atoms of the fire and of the hand draw one another, "the fire being the stronger, has the mastery and draws out the fire of the hand, which is thereby eased." "'Tis an usual course though a nasty one of those who have ill breaths to hold their mouths open over the Privy as long as they can; and by the reiteration of this remedy they find themselves cured at last, the greater stink of the Privy drawing to it and carrying away the lesse, which is that of the mouth." On the same principle the head of a viper or scorpion is placed over a wound caused by its bite; the humble and inoffensive toad (as it is now known to be) was then supposed to be full of poison; accordingly "The Farcy is a venomous and contagious humour within the body of a Horse: hang a toad about the neck of the Horse in a little bag and he will be cured infallibly: the Toad which is the stronger poyson drawing to it the venome which was within the Horse." Wine in the cellars makes a kind of fermentation when the vines are in flower, and a table cloth "spotted with Mulberries or red Wine is easily whitened again at the Season that the Plants flower." This forms an easy explanation of moles and birthmarks generally, as well as of the contagiousness of yawning.³

Digby gives the original theory of a custom, not yet extinct, vicious in essence and not seldom of evil consequence: "Where there are great dogs or Mastiffs, if any be bitten by them, they comonly use to be kil'd, though they be not mad, for fear lest the leven of the canine choler which remains within the body bitten might draw to it the malignant spirits of the same dog should he afterwards chance to be mad."⁴

He is not quite sure of the alleged fact that artificial noses made of the flesh of other men putrefy as soon as these other men die. In this he is more skeptical than Van Helmont, who tells the story of

²An example, "interesting if true," of attraction is here given, after speaking of "the notable affinity betwixt Gold and Quicksilver," so that "if Gold be touches Mercury, that sticks close to it and whitens it so that it scarce appears Gold but *silver* only," the author says, "Take then a spoonful of Mercury . . . and finger it with one hand; if you have a Gold ring on the other it will become white and covered with Mercury. . . . Moreover, if you take a leaf or two of Gold in your mouth and put but one of your teeth upon a Vessel where Mercury is, the Gold in your mouth though you shut your lips never so close, shall turn white and laden with Mercury." Of course, these statements are absurdly and demonstrably false, as was so much of the "natural philosophy" of Digby's day and long after.

³I omit Digby's cure for warts; it seems to me distinctly inferior to the early Missouri method of which Mark Twain tells, i. e., using "spunk-water," uttering at the same time the cabalistic incantation: "Barley-corn, barley-corn, Injun meal shorts."

⁴Spunk-water = urine water, scalded three weeks.

Gaspard Tagliacozzi (Latinized, Taliacotus), an Italian surgeon and professor of anatomy and surgery at Bologna, Italy, where he died in 1599. While not the originator of autoplasty, he was quite the most renowned practitioner in the operation for restoring lost noses, ears, etc.—called after him the "Taliacotian operation."

"A certain inhabitant of Brussels, who in a combat had his nose mowed off, addressed himself to Tagliacozzus, a famous chirurgion living at Bononia (Bologna, Italy), that he might procure a new one; and when he feared the incision of his own arm, he hired a Porter to admit it, out of whose arm, having first given the reward agreed on, at length he dig'd a new nose. About thirteen months after his return to his own country, in a sudden the ingrafted nose grew cold, putrified, and within a few days dropt off. To those of his friends that were curious in the explanation of the cause of this unexpected misfortune, it was discovered that the Porter expired, neer about the same punctilio of time wherein the nose grew frigid and cadaverous. There are at Brussels yet surviving some of good repute, that were eye witnesses of these occurrences."

Samuel Butler gives this in a poetic form, but with the facts (?) a little different:

So learned Taliacotus from
The brawny part of porter's bum
Cut supplemental noses which
Would last as long as parent breech;
But when the date of Nock was out
Off dropt'd the sympathetic snout.

Hudibras, Canto 1, 281-286.

Every one knows the amusing story on the same theme by Edmond About, *Le nez d'un notaire*.⁵

7. The source of those atoms not only attracts them to itself but also all that accompanies, sticks to or is united with them.

This explains the common custom of throwing salt on the cinders when milk has boiled over. When the milk is burning, the cow's udder whence it came attracts the atoms of the milk and the accompanying fire; unless some precaution is taken, the udder will become hard and ulcerated, the cow will suffer from hematuria (Digby uses plain Saxon terms), and she will be in danger to die. Now, salt is "of a nature clean contrary to fire, the one being hot and volatili, the other cold and fixed, in so much that where they use to encounter, the salt, as it were, knocks down the fire"—and there you are.

So both in France and England, physicians in selecting a foster mother, test her milk by tasting, smelling, etc., but no experienced wet nurse will allow them to boil it—"but those of whose milk this experiment hath been made have felt themselves so tormented in their Paps, while their milk was a-boiling, that having once endured this pain they would never consent" again to this test.

In like manner take the excrement of a dog and throw it into the fire; he becomes heated and moved, panting and sticking out his tongue. If the experiment is too often repeated, the dog, "not being able to take any nourishment, his flanks cling together and he dies." Digby warns his hearers not to divulge this to persons likely to use the knowledge

to do mischief, as the same result would follow in the case of men.

Van Helmont has the same example (*A Ternary of Paradoxes of the Magnetic Cure of Wounds, Nativity of Tartar in Wine, Image of God in Man*, Written originally by Job. Bapt. Van Helmont and Translated, Illustrated and Amplified by Walter Charleton, Doctor in Physick and Physician to the late King: London: 1650). This is what he says: "Hath anyone with his excrements defiled the threshold of thy door and thou intendest to prohibit that nastiness for the future, do but lay a red hot iron upon the excrement and the immodest sloven shall in a very short space grow scabby in his buttocks: the fire torrifying the excrement and by dorsal magnetism driving the acrimony of the burning into his impudent anus."

Digby gives a concrete case of the child of a neighbor in England; he had a burning fever, was inflamed all over, "strove to go to stool, but could do little and that little covered with blood; he refused the breast," and his parents were most anxious. Digby found that the nurse was in the habit of throwing the child's feces into the fire, and the mystery was solved; because he knew of a like case a few years before in the case of "a child of one of the most illustrious Magistrates of the Parliament of Paris." The appropriate treatment was obvious; the excrements were "put into a bason of cold water and set in a cool place." The inevitable result followed; "the child began to amend the very same hour and within four or five daies became perfectly well recover'd."

Overfat cattle whose hoof has swollen and has a putrefied core are cured on the same principle. Put a turf upon which some of the corrupt matter from the hoof has been pressed out, "exposed in some proper place to receive the dry cold blasts of the northern wind," and the trick is done and a cure effected.

Now comes the complete theory of the operation of the sympathetic powder: "Vitriol is composed of two parts, the one fixed, the other volatili; the fixed, which is the salt, is sharp and biting and caustique in some degree; the volatili is smooth, soft, balsamical and astringent . . . they who well know how to draw the sweet oyl of Vitriol, which is the pure volatili part thereof, know also that in the whole closet of Nature there is no balm like oyl." Easy, Sir Kenelm!

Now take some vitriol (Vitriol of Rome or Cyprus preferred, and some add Gum of Tragacanth), dissolve it in fountain, or better, rain water; into this water "put a clowt or rag embued with the blood of the party" if the rag was dry; "if the rag was still wet and moist with the reaking blood, there was no need but to sprinkle it with the powder of the same vitriol." Keep the rag in a cool place, renewing the water or the powder from time to time. The explanation is simplicity itself, granting Sir Kenelm his premises. The light strikes the vitriol and the blood, tears off atoms of both, the wound attracts the atoms of blood and with them the atoms of vitriol, "the spirits of the vitriol which is of a balsamical virtue," enters the wound and it "thereby is immediately refrest and eas'd." The same cure is effected "by applying the remedy to the

⁵See A Seventeenth Century Surgeon and His Fee, NEW YORK MEDICAL JOURNAL, March 2, 1912.

Blade of a Sword which has wounded a body, so the sword be not too much heated by the fire."

Any one can easily see that "in this Sympathetical Cure there is no need to admit of an action distant from the Patient," for there is "a real communication 'twixt the one and the other, viz., of a Balsamical substance which corporally mingles with the wound . . . *Nec Deus interit, nisi dignus vindice nodus inciderit.*" Here Digby definitely parts company with Van Helmont and his kind, who all insisted on action of one body upon another at a distance and in whose theory God was constantly appearing—the *Deus ex machina* always in evidence.

The very great comparative success of the sympathetic powder will excite no astonishment with those who know the villainous treatment *secundum artem* of the regular surgeons of the time.

With a belief not dead till Lister killed it, and in full vigor in my day as a medical student, that pus was a good thing in itself, so long as it was "laudable pus" and not too abundant, the faculty of the seventeenth century used every effort to bring it forth—and many times, indeed, thought it sufficient to cure the wound if the surgeon had the skill or good fortune to excite a sufficient quantity of this laudable which some therefore called also healthy and benign pus; so the surgeons applied a "digestive." But they were not content to rely upon the pus-exciting medicament alone, but often applied a most celebrated vulnerary balsam which was approved by Paulus Barbet, an acknowledged master of the art of surgery—and this balsam was composed of many ingredients, turpentine, gum galbani, gum elemi and hederæ, frankincense, gum mastich, myrrh, aloes, galingal, cloves, cinnamon, nutmeg, and cubebs. And this ointment was considered both "digestive, sarcotic, and epulotic"—for the turpentine, gum elemi, frankincense, and mastich are digestive, the gum galbani, gum elemi, myrrh, aloes, cloves, and nutmeg were thought sarcotic, and aloes, myrrh, and mastich to be also epulotic.

This foul mess applied to the wound, the surgeons firmly believed had much virtue; but the result of such an application can be contemplated only with a shudder by one trained in the ultracleanly methods of modern surgery. In Digby's method there was no topical application to the wound; all that was done to it, was to wash it carefully from time to time with fair clean water, cover it with a clean, soft linen cloth, and cleanse it once a day from pus and other impurities—the purer the water, the cleaner the cloth, the better. And the beneficial result which Digby referred to the vitriol followed from *vis medicatrix Naturæ*, old Dame Nature's own remedy.

OSCAR D. HALL.

Treatment of Diphtheria.—Romulo Cabrero, in *Semana Medica* for December 30, 1915, summarizes the treatment which has given the best results in the Children's Hospital in Buenos Ayres. When treatment is begun on the first day, 10,000 to 12,000 units are given, and a second dose is rarely needed. When the case is seen only on the second day or later, much larger doses are required—from 25,000 to 120,000 units; 50,000 are used at the first dose, and are best given intravenously. Large doses are harmless.

AN APPARATUS FOR THE ADMINISTRATION OF GAS-OXYGEN.

New, Simple, Light in Weight, Accurate, Portable, But Complete; With or Without Chloroform or Ether Sequence; Employing Hydrostatic Regulation and Some Other New Principles,

By WILL WALTER, M. D.,
Chicago.

The now proved value of gas-oxygen anesthesia and analgesia and the great interest in its development leads me to place before the profession an apparatus which we have perfected and which is giving satisfaction.

The noteworthy points are its simplicity, its portability—and it is portable in the sense that a physician's satchel is portable—its efficiency, its freedom from pressure, its addition of humidity, its accuracy, the washing of the gases, the warming of the gases, the absolute visible evidence of the ratios between the gases and a new provision for rebreathing of the mixture with or without ether sequence and without the removal of the mask.

The fundamental designs in its construction make for safety and economy. It differs from other types of apparatus in many particulars.

As seen from Fig. 1, which represents the apparatus in its assembled form, it is about the size and shape of a medium sized camera box set on end, two wings being added at the top to carry the reducing valves. These valves are fixed and unchangeable for a pressure of about twelve pounds. Beyond these are the retaining frames, bearing in-set tubes for the attachment of the gas cylinders.

Originally we had two bottles hung upright between the tanks, but as we now use tubes instead and only one water compartment, and as the small tanks were found to be of varying lengths, we found it advantageous to lean them obliquely back, and thus is made an immovable tripod support, the apparatus and the two tanks constituting the three bases.

The gases are passed through water by means of their respective tubes and the evidence of the quantity of gas is afforded by the levels of the water in the tubes. Originally we made the bubbles show the ratios, but this proved to be so variable and difficult to estimate, that we have changed to this level scheme and it has proved to be an accurate and absolute "sight feed." The flow of gases is indicated directly by the levels and, as these vary with the volume of gases, direct evidence is afforded; and this, in contrast to the usual "indications" by the opening or closing of valves to a greater or less extent, is both more positive and more reliable. The gases mix in the chamber above the water and pass thence to the inhalation and rebreathing apparatus.

The gases are warmed by water which is warmed by a coil, and this seems superior to the direct heating of the gases by passing over warm coils.

In the interest of safety there is also provided between the gas tubes, a hydrostatic safety valve. This is so arranged as to give vent to the gases when the pressure in the bag is equal to four or five ounces. This

makes for safety, since by no possible chance could gas be forced into the lung of the patient under high pressure; and as we are dealing with pressures from 800 to 1,500 pounds, this is a matter of greatest importance. In all ways, therefore, the apparatus employs hydrostatic regulation, and not only by furnishing humidity, and by warming the gas and affording evidence of ratios, but as a means of safety in the control of the escape of gases should their pressure be raised. All of these things are very desirable refinements in such an appliance.

The apparatus ready for application of the tanks weighs only fourteen pounds, fits into a hand case,



FIG. 3.—Showing mouthpiece for operations on the nose.

place, and this leakage is one of the chief causes of waste and expense in using gas-oxygen. Tanks which are left idle are frequently found empty, but if they are attached to this apparatus, leakage will always be evidenced by the show of bubbles.

Lastly the apparatus is supplied with a table of ratios. This table is placed in view between the gas tubes and for any given volume of nitrous oxide as evidenced by the level, the desired percentage of

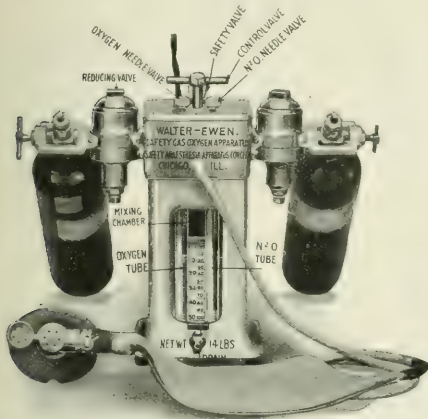


FIG. 1. Walter-Ewen apparatus for the administration of gas-oxygen.

and will do anything which the more elaborate and expensive types will accomplish beside carrying the added refinements. All of these refinements make for safety, for accuracy, and for economy; and for economy, not only in construction, and thereby lower cost to the profession, but in administration of the anesthetic and hence a saving to the patient.

Incidentally the passing of the gases through water enables us to see where leakage is taking



FIG. 4.—Showing nose mask for operations on the mouth.

oxygen for that particular level may be read and instantly provided by readjustment of the oxygen valve. After the desired ratios are determined and the levels fixed, the control is by the middle valve handle, which gives one hand control of the on and off flow of the mixture.

This handle also serves as convenient carrier for the apparatus.

I am indebted to my friend, Mr. M. F. Ewen, an expert engineer on gases under pressure, for co-operation in its design.

TECHNIC OF APPLICATION.

The apparatus is made complete and there is nothing to do but attach the gas tanks. When used away from hospital or office, we order the tanks



FIG. 2.—Showing the whole face masked for general purposes.

delivered direct from the dealer, and we have then only to carry the apparatus in its case, together with the contained mask and attachments.

The tanks are attached, after which warm water is poured in up to the marked water line. The hydrostatic safety valve is always open at the top, and as the water is poured through this opening it first fills the safety cup and then overflows into the main chamber.

For operations of twenty minutes' duration or less, we depend upon the previously warmed water for the heating, but for longer cases we attach the plug of the heating coil to a convenient socket.

Both needle valves are now closed and the out-flow valves on the tanks are fully opened, also the one hand control valve. The pressure of gases is now at the needle valves and ready for the determination of its flow by opening these valves. The nitrous oxide needle valve is first opened to the required flow and the level is noted, after which the oxygen needle valve is set at the desired percentage. The control valve is now closed and we are ready.

The proper mask is applied to the patient, mouth piece if for nose operation, nose mask if for mouth operation, and the whole face mask if for general work.

The control valve is now opened and the breathing bag allowed to fill with the mixture of gases. This is accomplished by closing the outlet valve of the mask. The outlet valve is then opened, allowing to and fro breathing. For rebreathing, the control valve is turned off and the outlet valve closed; or both the control valve and the outlet valve may be partially opened to give partial rebreathing and partial to and fro breathing, all according to need.

When it is desired to add ether, the ether cylinder is slipped on and ether dropped into the cup as desired. The amounts of ether and gases and the degree of rebreathing are always under control of the anesthetist and without the removal of the mask. A detail of the rebreathing mask which is a part of this outfit is given elsewhere.

This mask is available alone as an ether rebreathing mask, and is a genuine closed method of ether administration.

APPLICATION IN AMERICAN TWILIGHT SLEEP.

There is much local interest in this branch of anesthesia or more properly, for this use, analgesia, and some of my confrères have used the earlier models of this apparatus in their obstetrical work with so much satisfaction that the slight variations in technic may be of interest. This has been worked out by Miss Lorena Craig, a registered nurse who has administered it for them. The technic as described by her in the *Chicago Medical Recorder* for September, 1915, follows:

As the end of the first stage of labor approaches, or whenever the physician deems it advisable, the gases are turned on, using about one tenth of oxygen to nine tenths of nitrous oxide. The breathing bag is filled with this mixture, and just before the uterine contraction comes on, the nose piece or face mask is applied and the patient is directed to breathe deeply and rapidly, keeping the lips firmly closed (if the nose piece only is used) so that none of the gases escape through the mouth. Usually six or

eight breaths are sufficient to produce analgesia, and the patient is able to work with her pains and yet be unconscious of painful sensations.

With a little practice one soon determines the number of breaths required to carry the patient through each pain; in fact the patient is able to control the administration almost entirely herself.

Just before the expulsion the face mask is applied and a deeper anesthesia is brought about by the use of two per cent. oxygen and ninety-eight per cent. nitrous oxide. At this time ether or chloroform vapor may also be added in a small cup at the side of the mask for this purpose and the vapor inhaled with the gas oxygen without the removal of the mask.

The most striking thing to me is the tranquillity of the subjects and their anxiety to cooperate and particularly the often expressed paradox that they felt the pain, but that it did not hurt.

Aside from the safety of this apparatus, which is free from pressure, and its ease of control of percentages of the gases, the most useful element is the rebreathing bag valve. By its use the bag is held full of the analgesic or anesthetic mixture and placed beside the patient; so that, upon the first sign of approaching pain, she may have the mask applied and by opening the valve begin the inhalation. She may even do it herself; in fact she may control the degree of her own analgesia voluntarily and with ease at all times, and she is able to describe the sensations accurately.

122 SOUTH MICHIGAN BOULEVARD.

DIATHERMIA; A PHYSIOLOGICAL SPECIFIC.

By ALBERT C. GEYSER, M. D.,
New York,

Professor of Physiological Therapy, Fordham University Medical College; Instructor in Electrotherapy and Radiography, Cornell University Medical College; Etc.

A specific in medicine is an agent which has a selective, curative influence on an individual disease. It must be admitted at once that the word disease conveys to us the thought that there is present a deviation from what is usually considered normal to something that is abnormal. Giving to the term disease this wide scope, it will be simple to view disease, not so much as an entity, but as a condition. This condition, furthermore, is pathological as distinguished from physiological. Anything, therefore, that is normal is physiological, while everything that is abnormal is pathological.

Unfortunately the condition recognized under the term "inflammation" has been for a long time and still is considered by many as pathological. It is absolutely necessary that we rid our minds of this error. *Inflammation is a process of reaction by living cells to some agent or condition inimical to their normal existence.*

A proper appreciation of the inflammatory process is the foundation of physiology, pathology, and therapeutics. It is physiological for injured tissue to react with an inflammatory process; it is Nature's main weapon for the production of a cure. It is because of failure on the part of the cellular system to react, that the disease process is able to injure or even destroy the cells. Such a failure leads to changes in the cellular system, the science of which is pathology. *The intent of an inflammatory process is to cure.* No injury to living cells can be recovered from unless through the intervention of an inflammation. The only difference between an in-

flammation and a general fever is one of magnitude; one is a local, the other a constitutional reaction.

Let us consider briefly what an inflammation really is. "The process of inflammation is the succession of changes which occurs in a living tissue when it is injured, provided that the injury is not of such a degree as at once to destroy its structure and vitality." This process of reaction is usually accompanied by the four cardinal signs, redness, heat, swelling, and pain, to which might be added loss of function. In reviewing these cardinal signs, it will be found that some of them may be entirely absent in a given case. Pain, while a frequent sign, is equally often absent, in fact, it is only a concomitant sign and is really the result of the previously sustained injury which called forth the inflammatory process. Swelling is another sign frequently absent and so is loss of function.

That leaves as important signs, redness and heat. These two remaining signs are so closely related that it is impossible to have one without the other. Of the two, heat of course is the more important, for we may have heat without being able to see the redness, while if we see the redness, we know that heat is present.

Heat is the result of arrested energy. If the head of a nail is struck with a hammer, heat is the result. If a cannon ball is fired through resisting media, heat is the result. If a lightning bolt strikes a sand pit, the heat is so great that the sand melts around the entrance. *Heat, in other words, is the result of expended energy.*

When the temperature of the body is higher than normal, the patient is said to be in a state of fever. When a local part of the body is red and hot, we are dealing with a local inflammation. This fever or local inflammation is the result of energy. One thing is certain; it is not the result of the injury, since the injury tended to disable or kill the cells. It must therefore emanate from the uninjured cells. It is this energy from the uninjured cells which constitutes the inflammation and the fever; it is therefore a conservative, a reparative process. It is not a pathological, but a physiological process.

Let me repeat, then, that no injury, whether it is chemical, thermic, traumatic, or bacterial, can be recovered from, except by or through the intervention of inflammation. Let us suppose now for a moment that we possessed an agent which could give rise to all of the essential elements of an inflammation without the cells of the body being obliged to receive an injury in order to stimulate them into reaction. Such an agent would have to be able to create heat and redness, not only upon the surface of the body, like the rubefacients and counterirritants, but the heat must be able to penetrate all of the internal tissues. Not only that, this heat engendered must not cause injury to the cells; it cannot, therefore, be chemical, thermic, traumatic, nor bacterial. It must be a means or an agent that is capable of calling forth at our will a physiological inflammation, which is the result, not of injury, but of energy artificially supplied. Two important factors would at once be supplied, the physiological inflammation and yet the saving of waste of energy on the part

of the economy so that we should have physiological rest plus an inflammation available for therapeutic or curative purposes.

What is diathermia? As the name implies, it is "heating through." No one denies that thermic influences have a decided effect upon the human economy. Heat or cold in some form has been used for ages, either for the purpose of mitigating pain or to interfere with the progress of some inflammatory process. The former, the mitigation of pain by the application of heat, is at least symptomatic, while the latter, e. g., in the application of ice bags for the purpose of interfering with an inflammatory process, in the light of present knowledge seems of questionable value. I do not wish to be misunderstood. "Too much of a good thing is good for nothing." This applies to a process of inflammation as it does to anything else. It is very seldom that an inflammatory process is excessive. We might as well speak of a person "as being too healthy" or a patient recovering "too quickly." For purely symptomatic treatment heat is as frequently indicated as cold. On general principles, if pain is deep seated, heat is the remedy, while if superficial, cold is indicated. Abdominal cramps, being deeply seated, are usually relieved by the application of heat over the abdomen. In superficial burns of either degree, there is no known agent that will relieve the suffering so completely as the immersion of the part in ice cold water. There are many erroneous ideas concerning the use of thermic influences. Only a short time ago, I was in conversation with the dean of a medical college; this austere gentleman still harbored the now musty idea that by the application of the ice bag over the region of the appendix he could pass the cold through the abdominal wall, through the intestines and their contents, to affect the appendix, which was hiding against the anterior surface of the posterior wall. This gentleman is a surgeon, but not a physiological therapist, else he would have known that the thermic influence is appreciated only by the terminal nerve filaments ending in the skin and so through these nerves carried reflexly inward to the organ corresponding to the skin area. As we see, this is the application of thermic influences upon the skin and this influence remains and exerts its main effect upon the skin and its appendages. Such measures could not be considered as diathermic, for, as we have seen, *they neither heat nor chill through anything.* They are purely thermic influences. The heat or cold is always greater than the body temperature; in other words, the greatest heat or cold is always on the outside, while little or nothing penetrates to the inside. Diathermia is the reverse; practically no heat is applied to the outside, but on the contrary all of the heat is created on the inside of the tissues. There is still another and more important difference. All thermic influences applied as local measures are intended to reduce the normal resistance of the tissues so treated. Heat is applied over a forming abscess to assist in the breaking down process. Cold is applied locally for the purpose of benumbing or devitalizing the tissue. Cold of moderate degree will inhibit painful sensations from reaching the sensorium, or the cold may be applied with such in-

tensity, as in the application of carbon dioxide snow to an epithelioma, that a localized slough will form and so remove the growth. *All of such treatment is devitalizing and destructive in its nature, while diathermia is vitalizing and constructive if used within physiological limits.*

Tissue may be "heated through" beyond physiological limits and coagulation or even charring may be produced. Before considering this phase of the subject it will be essential that we become acquainted with the use of diathermia within the range of physiological or curative applications.

INSTRUMENT.

A few years ago it was necessary to import the better class of instruments from France or Germany. Even with this better class of instruments the regulation of the current strength was anything but perfection. All instruments using a long spark gap are entirely inadequate because of the high voltage produced by the long spark. Of the multiple spark gap variety the modified deKraft interrupter is the best. In the old deKraft type silver points were used, which would oxidize and the silver oxide would cause short circuiting of the current. With this older model the heat generated in the sparking device was enormously high and a continued source of annoyance.

In the new type of interrupter the silver points have been replaced by tungsten. This metal stands heat better than any others so far tested. Originally the price was almost prohibitive. The latest model of spark gap manufactured in New York is reasonable in price and perfect in operation from the viewpoint of the user. It requires no attention as it cannot get out of order. So much time has been devoted to the sparkgap because it is the same as the governor to the steam, the carburetor to the gas, or the heart to the human engine.

The next improvement in the American high frequency machine was the adjusting apparatus of the strength of the current. In the new high frequency machine, this device is perfection itself. In fact it is so perfect from a mechanical point of view that description is unnecessary. While the voltage in this machine is lower than in any of the foreign machines, the amperage is correspondingly higher. The sum and substance of diathermia is low voltage with high amperage. It is the amperage of the current that is useful in tissue heating. The voltage is merely the means to the end. The voltage is the pressure which is necessary to overcome the resistance of the tissues in order to deliver the amperage. When a hypodermic syringe is filled with a solution of morphine, pressure upon the piston is necessary in order to deliver the solution into the tissues; the lower this pressure but the greater the quantity of the morphine, the greater is the effect.

Let us see what is meant by "high frequency." In electricity we distinguish between D C, direct current, and A C, alternating current. A direct current is a unidirectional current, it flows from the positive to the negative without ever changing its direction; this current may be interrupted, but no change in direction takes place. An alternating cur-

rent flows for a certain length of time in one direction, then changes or reverses its direction and flows for the same length of time in the opposite direction. The number of times that this change occurs is spoken of as the "frequency" of alternations. A flow in one direction for a certain length of time with a reversal for an equal length of time is known as a "cycle." The ordinary, commercial current has sixty such cycles a second or 120 alternations a second or 7,200 alternations a minute. It must be admitted that anything that alternates its direction 7,200 during each minute has acquired considerable speed. Yet this is a very low frequency compared with the frequency employed for therapeutic purposes. In wireless telegraphy the most suitable speed seems to vary from 200,000 to 400,000 vibrations a second. We notice here considerable difference between 120 vibrations a second and 400,000 vibrations a second. Again, by comparison, even this enormous rate is inadequate for therapeutic purposes. At the present time mechanical ingenuity has made it possible to produce alternations amounting to two million a second. That is an inconceivable figure. The question is pertinent, "Why do we use such enormous frequencies?" The answer is, "We need an agent that is in harmony with the physiology of the human body." The agent that possesses the power to produce the most physiological effects is the one that must possess therapeutic qualities in a corresponding degree.

Are such vibrations as two million a second physiological? If we compare the rate of vibrations of a living cell to those of a high frequency machine, then indeed the latter are very low. How do we know the rate of vibrations of a living cell? Of course, we do not know the exact rate, but we can approximate it sufficiently closely for all intents and purposes. When a tuning fork is struck, or a string upon the piano or violin is set to vibrating, the human ear recognizes that as sound. In order to recognize continuous sound, the vibrations must be at least 18 a second. If they are fewer in number, there is not a continuous sound as far as the human ear is concerned. Vibrations may reach the sum of 40,000 a second and still be audible, but if they go above that number, the organs of Corti are no longer able to vibrate in harmony with them and there is silence. In other words, there is no reaction by the cells composing the auditory mechanism to vibrations below eighteen a second nor above 40,000 a second.

The human eye is so constructed that the lowest rate of vibrations appreciable is 500 trillion, giving us the appearance of the red rays, while the highest rate appreciable is 750 trillion a second, or the violet rays. A further increase in the number of vibrations a second, while perfectly feasible, gives us the ultraviolet rays, which appear to us as darkness. We can appreciate their presence only by their chemical effect upon certain substances. A still further increase would give us the x ray or the radium emanations. Neither the x ray nor the rays from radium stop to excite any of our senses, but pass right through all substances according to their specific densities. Nevertheless individual cells are

affected by these agents. Though no human eye has ever seen the x rays or radium emanations, we are well aware of their effect for good and evil on living cells.

It will therefore be seen that the nerves of the ear and eye can only respond to rates of oscillations falling within certain well defined limits. A muscle will respond to individual stimuli up to about thirty a second. As muscular contractions and relaxations require time for their performance, when the rate of stimuli is higher than thirty a second, there is not enough time for complete relaxation and the muscle assumes a condition of tetanus. This tetanic condition becomes more and more manifest as the oscillations increase in frequency until they reach about 3,000 a second, and is stationary or at its maximum up to 5,000 a second. If the rate of vibrations is still increased, the muscle gradually returns to a flaccid condition because it can no longer respond, it no longer appreciates the stimulus, consequently there is no reaction.

Such observations compel us to accept the vibratory theory of all living cells. Biologically all cells are fundamentally alike; they may differ in construction, size, or function, but their vibration is their manifestation of life, their rest is death. Since then the function of a cell is governed by its rate of vibrations, does it not seem equally reasonable that rates of vibration ought to influence the functioning of cells? We have seen abundant evidence that this is so.

The cells of the auditory apparatus responded within range of vibrations, the optic nerve performed its function within a certain range, and the muscle cell responded from a single impulse to 5,000 impulses. We shall see later that even the osseous tissue responds by a reaction in a not uncertain manner.

It must naturally follow that, if all of the tissues so far mentioned, nerves of special sense, sensory, and motor nerves, muscle cells, and even bone cells respond to vibrations, reparative processes may be inaugurated in a similar manner.

We have also demonstrated that every attempt at repair or recovery is essentially a physiological response on the part of the uninjured cells. This response or inflammation may embrace many phenomena, but the essential one is heat. With heat, all the various manifestations may be present; without heat, not one can manifest itself. Another important point is this, the heat must not be applied from the outside. That would be heating the tissues by contact and conduction of radiant or thermic energy. What we need in order to have a *physiological specific* is something that will cause a functioning of all of the deeper lying tissue. This functioning must express itself in the production of heat. This heat must originate within and be conducted outward, and not applied externally. It must be the result of cellular activity responding to a nonpathological stimulus. Such an agent we have in the high frequency current, with its millions of alternations a second when applied for diathermic purposes.

231 WEST NINETY-SIXTH STREET.

THE CLINICAL SIGNIFICANCE OF A GASTRIC ANALYSIS.

First Communication,

BY LOUIS WINFIELD KOHN, M. D.,
Philadelphia.

The medical world is daily realizing the importance of gastric analyses in enabling them to attain more accurate information in the diagnosis of the various conditions of the stomach which have in the past appeared obscure, owing to the position which this organ occupies in the human economy; it being only within recent years that any reliable information has been acquired by this method.

The operation of evacuating the stomach by means of the stomach tube was conducted in 1869 by Kussmaul entirely from a therapeutic standpoint, and it was not until two years later, in 1871, that Leube utilized it for diagnostic purposes. He, however, confined himself to a study of the supposedly empty stomach and acquired information of value pertaining only to the time of digestion. The results which he attained proved conclusively to the profession the true value of this work, and served to stimulate students to greater efforts along these lines, but it fell to the lot of Riegel to recommend the use of the stomach tube in the analyses of various conditions with which the stomach is affected. By devising a standard test meal which he introduced into the stomach and, at the height of digestion, examining the chemical phenomena of the stomach contents, he was enabled to obtain information of relative value after comparing these results with those acquired in the normal stomach. Since then such men as Jaworski, Ewald, Boas, and others have achieved notable distinction because of exceptional efforts in this field of endeavor, and they are responsible in a great measure for the intelligent understanding that we now have of the significance of these chemical gastric findings. Associates of these men, Von der Velden, Edinger, Cahn, and others have also submitted valuable contributions on this subject.

There was a time not far remote when affections of the gastrointestinal tract were considered to be dependent more or less and even proportionately upon the degree of anatomical change as a result of morbid processes, or, as we would say, the pathological anatomy, and no doubt these pathological variations in the anatomy of these organs have a pernicious influence, but it is not to be forgotten that the general nervous system is a potential factor in the regulation of the physiological functions of the stomach, and therefore it must be taken into consideration that disturbances in any portion of this great system may secondarily affect gastric secretion, gastric motility, gastric peristalsis, gastric sensibility, and gastric absorption. Similarly also, the intestines and other allied organs are influenced. We can readily perceive, therefore, the important role that the nervous elements assume in the production of the complicated pictures that present themselves to our view for diagnosis.

This perversion of the nervous mechanism, which to a degree controls the physiological functions of

the gastrointestinal tract, produces a disturbance in one or more of these functions to which the majority of the symptoms complained of can be attributed. It follows, therefore, that we should first determine the immediate causes of the symptoms and then afterward seek the true primary cause.

It is also incumbent that a contrivance be devised which will enable us to reduce this complication to its component parts, and a means which suggests itself forcibly to the attaining of this end, is gastric analysis, which consists of a macroscopic, microscopic, and chemical examination of the contents of the stomach recovered by the stomach tube following a period of fasting as well as after a test meal. Within recent years, the analysis invariably was confined to an examination of the contents following a test meal. Since then, another valuable acquisition has been made in the form of the fasting stomach test. The importance attributed to gastrointestinal diseases compels every conscientious medical man to resort to a gastric analysis as well as to consider every other available angle from whence information may be derived.

THE FASTING STOMACH TEST.

The fasting stomach test consists of an examination of the fasting stomach contents of a patient who has absolutely denied himself or herself any food or nourishment for a period of ten or twelve hours. This method has been in vogue since the time that motor disturbance had been recognized as directly or indirectly concerned with gastrointestinal affections.

As ordinarily performed, the patient is instructed to eat a small plate of rice cooked in milk (approximately six tablespoonfuls) about 9.30 p. m. and then to avoid food or drink until the next morning at 9.30 a. m. (twelve hours later), at which time the fasting stomach contents, if any, are removed by means of a stomach tube and analyzed.

Some of the most eminent European authorities maintain that the quantity of the contents in the fasting stomach has a varied significance. Boas considers from ten c. c. to 100 c. c. normal. Others, again, consider either an empty stomach or up to twenty or thirty c. c. normal, whereas an excess to any great degree would indicate either hypersecretion; obstruction either organic or spastic; or an insufficiency of some kind. It is evident that an empty stomach may be found in cases of hypermotility and achylia. Some contention, however, regarding the significance of the amount of this residuum has arisen even lately, since Rehfuess, by means of his tube, has shown rather large proportionate amounts of fluid residuum in the normal fasting stomach, which fact would naturally deprive the "quantity of residuum" of its significance. (The author, however, while conducting his investigations at the Johns Hopkins Clinic, failed to witness any appreciable increase in the fluid residuum in a series of cases in which he had employed this tube, compared with the ordinary tube.¹)

The appearance of the residuum is ordinarily that of a clear or slightly cloudy fluid, which may be yellow, green, or colorless, with a small or large

flocculent precipitate; at times, it may be red or brownish in color. To what is this coloration due? When yellow or green, it may be the result of an admixture of gastric juice with some regurgitated duodenal contents, being yellow because of the bilirubin, or green because of the biliverdin. Again, very often this greenish or yellowish tinge may be due to some chemical processes occasioned by the presence of organisms of the mould type or to the presence of various chlorophyll-containing organisms. In cases where we have definite food remains as a result of retention, the coloration will also vary. A red, brownish, rusty, or coffee brown color, if uniform throughout the fluid, may indicate the presence of blood due either to a gastric erosion, ulcer, varix, or a malignant degenerative state. A bright red color may suggest a hemorrhagic ulcer, a ruptured varix, or an abrasion from the tube. A dark red color would not suggest such active bleeding and may be found in carcinomatous conditions and in some ulcer cases. When small blood clots or small streaks of blood are seen, it usually means an abrasion by the tube. In heart cases, where more or less passive congestion of the stomach often exists, the lining membrane is of a vulnerable nature and prone to bleed more or less profusely upon apparently slight irritation or trauma produced by the stomach tube.

The residuum may vary in consistence from watery to thick and viscid. When watery in nature, it usually consists of more or less pure gastric secretion, and when thicker it may suggest an admixture with duodenal contents. A watery fluid may also be found in conditions of motor insufficiency and may possibly consist of some of the fluids imbibed before the test began. It is also possible that a watery fluid devoid of acid or pepsin may be found, which is a secretion simulating that produced by Leube in his stimulatory tests in certain cases. Mucus renders the fluid thick and tenacious, and when present in large proportions, evidently means gastric mucus and suggests a possible associated gastric catarrh. Sputum and saliva also affect the consistence somewhat and their presence is recognized by air bubbles. The presence of food remains will also affect the consistence. An excess of mucus is often associated with cancer, chronic gastritis, and achylia.

The reaction of the fasting stomach contents is usually acid, but it may be either alkaline or neutral. When acid, most often it is due to free hydrochloric acid, although lactic, acetic, or butyric acid, the result of abnormal conditions, may be the cause. At times, the reaction may be alkaline, owing to the absence of acid and to the presence of either gastric mucus, regurgitated duodenal contents, etc., as the case may be. The reaction may be neutral, owing to the neutralization of the stomach fluid by an excess of mucus, saliva, duodenal fluid, or possibly some other and unexplained substance.

The odor of the residuum also may vary. At times it has no definite odor, then again it may have a slightly sour odor. In cases of intestinal involvement, where abnormal fermentation or putrefaction is going on, or where some pathological change has taken place, there may be a strong offensive or even fecal odor. In cases where definite food residue is

¹It is probable that the amount of fluid in the stomach is reported more or less in proportion to the length of the tube used and the water

found in the stomach proper, there are usually associated therewith products of fermentation or putrefaction, which give off characteristic odors such as butyric acid (rancid butter), acetic acid (vinegar), by the former process and hydrogen sulphide gas (rotten eggs) by the latter process.

Usually a more or less whitish, milky precipitate, about one to five c. c. in quantity, consisting mainly of thick mucus, salivary secretion, or sputum, is found. At times, again, definite starch particles in small or large amount are found. If in small amount, it may suggest slight motor disturbance such as atony, temporary or alternating pylorospasm, etc. In true higher grades of motor disturbance, such as pyloric obstruction, the result of more or less persistent pylorospasm, pyloric or duodenal ulcer, high grade ptosis with high fixed duodenum, atony, gastric dilatation, healed pyloric ulcer scars, malignancy and hourglass contractions, we may find a much larger precipitate assuming the proportions of definite food residue or remains, very often food particles of two or three days before being found in the stomach.

At times, though seldom, pus may be visible, which if not swallowed as in pyorrhoea alveolaris, sinusitis, and other purulent infections, may probably mean a phlegmonous gastritis, a sloughing surface of an ulcer or carcinoma, or a rupture of an abscess from a neighboring organ. Rarely, foreign bodies such as hairs, round worms, and the like may be seen, but have no especial significance. If bile is very much in evidence and should be found repeatedly upon numerous evacuations of the stomach, there is good reason to suspect a duodenal occlusion of some form or other.

Thus far, I have discussed only the macroscopic phase of the analysis. The next procedure would be to examine microscopically the precipitate of the residuum by a slide and cover glass preparation, either in its native or stained state (iodine and Sudan, 111).

In cases with no true motor disturbance, where there is a scanty or even a prominent flocculent precipitate, we may often find microscopically a few leucocytes, flat epithelium of squamous or alveolar type, salivary corpuscles, free nuclei (other portions of cell being digested), so called spirals (small mucous masses), and myelin globules. These morphological elements have no particular significance as pertains to the gastric status. Their presence signifies only a contamination with either saliva or sputum. Still, other elements of saliva and sputum may at times be found in the stomach. Mucus is always present normally in the residuum in small amount, and in larger quantities may suggest a catarrh. When in great amounts we have mucous gastritis, either simple or complicated.

Red blood cells in small quantity may be present, owing to an abrasion by the tube, but if in large quantities they would usually be associated with a general discoloration of the fluid and due to one or more of several causes, such as passive congestion, erosions, ulcer, malignancy, anemias, cholemiæ, and arteriosclerosis. These red cells ordinarily take on a brownish coloration, from the hematin they contain, and do not show their or-

dinary hemoglobin color because of alteration through the presence of hydrochloric acid.

Few leucocytes are found normally, but when present in large proportions suggesting pus, we immediately think of the possibility of their having been swallowed and having had their origin from some other source, but if this can be eliminated, then we must consider the likelihood of a phlegmonous gastritis, rupture of an abscess from a neighboring organ, sloughing ulcer, or carcinoma.

Food particles are absent normally and when present denote their import by the quantity and quality. When, as often occurs, a few starch cells are found, we are aware that slight motor disturbance prevails, probably due to pylorospasm associated with some other condition such as gastric or duodenal ulcer, hyperchlorhydria, or appendicitis, or to muscle atony and ptosis with a high fixed duodenum. When food remains in large quantity, it is patent that a more grave motor interference exists. In such instances, the amount of food remnants goes hand in hand with the degree of disturbance. Very often the remnants of food eaten from three to five days or more before the fasting test meal was taken can be found. Some of the food particles that can be seen microscopically from time to time are fat droplets (neutral fat), muscle fibres (not digested or only partially so), starch cells (either undigested or partially so), other vegetable cells, cellulose, and other debris. When these food remains are found in the fasting stomach, it brings to mind many possibilities, such as pyloric obstruction, either benign or malignant, hourglass contractions of the stomach of either spastic or organic type, chronic gastric dilatation or a high degree of ptosis, particularly where the duodenum is high fixed (has not compensated by dropping), thus acting as a mechanical obstruction.

In these cases of food stagnation or retention, many vegetable parasites and microorganisms of the mould, yeast, and bacterial types are often found. Yeast cells either isolated or sprouting may be found and signify fermentation. *Sarcinæ*, another form of vegetable organism, may be seen most often where carbohydrate fermentation manifests itself. The Boas-Oppler bacilli are often present in association with lactic acid fermentation, and of late have by some workers been considered identical with the ordinary lactic acid bacilli. Whenever any of these vegetable parasites are present, we at once know that a retention of gastric contents has occurred, but just how that retention came about or what its cause is, must be determined by further study.

Occasionally various types of crystals are seen in the fasting stomach contents, such as bile acids, cholesterolin, fatty acids, leucin, tyrosin. These bile acids and cholesterolin are present in cases where the bile contents have regurgitated into the stomach, or in cases of duodenal occlusion or duodenal ulcer where a partial or temporary obstruction exists. The fatty acids, leucin, and tyrosin correspond to either the fermentative or putrefactive changes that have taken place in the retained contents.

At times small shreds of mucous membrane may be discovered in the gastric contents, and if carefully studied may be of value for diagnosis as in the case of carcinomatous tissue. There are occasional in-

stances where unicellular parasites are seen in the fasting stomach contents, such as amebas and flagellates, and they are said to be found also in gastric cancer, particularly in the nonobstructive type.

The final consideration to which the fasting stomach contents are subjected, is a chemical examination. This examination, however, is not given the same weight as a chemical examination of the contents after a test meal. It is really done more as a matter of routine. However, some important points may be elicited, and convey definite knowledge which might enable us to arrive at a more correct diagnosis. It must be taken into consideration that we cannot obtain absolute information regarding the digestive power of the stomach by this test, but are at times enabled to acquire some valuable relative information. Therefore, we may draw inferences from the degree of acidity (free, combined, and total) only after other phases in the case have been studied.

It is not impossible that some of the contents that give a very low acid, neutral, or alkaline reaction, may originally have been mixed with duodenal regurgitant fluid or influenced to some extent by an increased secretion of gastric mucus. On the other hand, it is also possible that the stomach may contain a large amount of fluid contents with a high degree of acidity, which is probably due to prolonged and increased glandular activity with resulting pylorospasm, which in turn, by interfering with evacuation, leads to an accumulation of acid fluids. It is therefore evident that a highly acid fluid in the fasting stomach is not always a purely secretory matter, but is more often also concerned with some motor involvement. Such acid contents may be found in the fasting stomach of patients suffering from continuous hypersecretion, pylorospasm, or gastric atony. Pylorospasm, the result of irritation from a near by or even remote source, plays an important role and produces this same condition in such affections as gastric erosions, gastric or duodenal ulcer, malignant degenerative ulcers, appendicitis, gallbladder disease, etc. In cases of chronic gastritis, a low acid, neutral, or alkaline fluid is ordinarily expected in the fasting contents, but the reaction here has no special value because it so closely approximates the normal. In cases of duodenal occlusion below the papilla of Vater, as in duodenal ulcer and new growths, we may find a more or less constant regurgitation of alkaline duodenal contents. From what has already been said, it can be seen how difficult it is to ascertain, from a purely chemical analysis of the fasting contents, the exact condition present, since, as already stated, the normal fasting contents exhibit such wide variations from alkalinity up to high acidity. Particularly in cases of food retention where organic acids may be present in rather large amounts, and where a high total acidity exists, it is plainly seen how falsely the acidity degree may impress us. It is not at all improbable that psychic influences (odor, sight, or thought of food) may also affect the quantity and quality of the contents of the fasting stomach. Since this is only a preliminary step in our chemical study of the gastric secretion, it is advisable to defer such further studies until the test meal contents are investigated.

When organic acids, such as lactic, butyric, and acetic, are found in the fasting stomach, we think immediately of carbohydrate fermentation and food retention, due possibly to some benign or malignant obstruction at the stomach outlet, hourglass contraction of benign or malignant nature, gastric dilatation, and atony.

The tests for the ferments, pepsin and rennin, are seldom performed upon the fasting stomach contents, but are confined nearly altogether to the test meal contents. We should not at all entertain the idea of depending upon the result of the examination of this fluid for definite information along these lines, since it is not in the fasting stomach that we could expect a true secretion of the ferments. However, we may at times find the ferments definitely present and in proper strength, although their absence from the fasting stomach contents would have no positive significance, except, like the absence of the acid fluid, to dispel a diagnosis of continuous hypersecretion.

A chemical test is often performed to determine the presence of occult blood, which, if found, would speak for some of the conditions already mentioned under the discussion on bleeding.

The macroscopic Hausmann test (tincture of iodine to fasting contents precipitate to which a large amount of water is added) by its intensity of color and number of bluish particles (starch), indicates the degree of retention which ordinarily follows pyloric obstruction, whether spastic or organic in type.

Such tests as deal with a chemical study of the products of carbohydrate and protein digestion, gaseous products, or soluble albumin (Wolf-Jungmann test), are more correctly applied to the contents after a test meal, although special indications may at times arise for their use even here.

In this communication the most simple test for the study of gastric motility has been considered; one which is regarded by many as most practical for the average practitioner. A paper will follow this, which will deal with an analysis of the test meal contents. Although slight mention has been made of the empty stomach, it is nevertheless not to be forgotten that an empty stomach is often found in the normal as well as other cases. I have discussed the conditions possible in cases only where the fasting stomach contents were present.

1402 SPRUCE STREET.

AUTOLYSIN.

Its Formula, Method of Preparation, and Some Remarks on What May Be Expected from Its Use,

By S. P. BEEBE, PH. D., M. D.,
New York.

The writer has published two papers in the *NEW YORK MEDICAL JOURNAL*, giving some of the facts about the remedy named autolysin, and the results which it has produced in the treatment of inoperable cancer patients. In the first paper there was given a brief résumé of the history of the author's association with this method of treatment. The substances composing the remedy as the writer found

it were enumerated. This was followed by citations of the case histories of certain patients to whom the treatment had been administered, and there was some discussion of the limitations observed in the course of the treatment as at that time carried out.

In the second paper, the composition of the therapeutic agent was set down somewhat more fully, the reactions which it produces were described, and the type of therapeutic benefit which had been observed to follow its administration was given.

The autolysin treatment has been the subject of a considerable amount of discussion in recent months. It has been used by a large number of medical men, and the number of patients who have been treated by it number at present somewhat over 2,000. Its advantages and its limitations are better known than they were when the other papers were published; additional experience has been accumulated in its preparation, and there has been sufficient trial of the remedy, prepared in different ways, to enable us to draw some preliminary conclusions as to a satisfactory formula, so that on the whole it seems advisable at the present time to publish in detail the method of preparation of the remedy and to add some remarks regarding its place in the treatment of inoperable cancer.

The criticisms which have been made of the method by the medical profession are certainly interesting and to some degree amusing. There is on the one hand a group who decide that nothing should be published concerning so complex a method, until there have been completed a series of pharmacological studies designed to locate the active agent in the mixture, if such may be admitted to exist, and to determine its precise pharmacological action. A second group is equally insistent that anything offering relief in inoperable cancer should be made public in all its details as promptly as possible.

The first group seem to overlook the magnitude of the task which they impose. In fact, ordinary pharmacological experiments would be of small value in determining the therapeutic efficiency of a remedy to be used in inoperable cancer. To comply with the demands of the second group, would require a bulletin method of publication, which is not unknown in American medical literature. Those who resort to such a method, as a rule, are jealous of the advantages which are supposed to accrue as a result of priority, and are less interested in the advance of medicine than in their own careers.

Scientific men in the past have sometimes published results which they have asked to be accepted, and which it has been impossible for their colleagues either to confirm or refute because of a lack of control of the factors involved. As an example, a prominent investigator, some years ago, published results obtained in the course of his study of a type of infectious sarcoma, but retained in his own hands for a considerable period all the experimental material. Presumably a different code is to govern work with a therapeutic agent. Almost every conceivable motive has been ascribed to the writer for withholding up to the present time complete details

as to the method by which the extracts have been made.

In a former paper it was stated that a variety of methods of extraction had been employed, varying somewhat in small details, but that the injection material itself was essentially a saline extract of a powder having the composition outlined. In this paper it is not my purpose to review in detail all this preliminary work, but to state in full the method which we have used during the last few months, in the main since the publication of the former articles. This method has been found to yield an extract with a decided therapeutic action, which has given, in many instances, a surprising amount of relief to inoperable cancer patients. This method was developed in its present form about three weeks after the publication of the last article and has been in use since that time. It seems unnecessary to add that the work in this direction is in its beginning only, that changes in the method of making the extract are not only possible but probable, and that the composition of the powder from which the extract is made may be modified in the future. When such changes reach a satisfactory point, they will be made the basis of further publications respecting the method, and the reasons why the changes have been adopted.

In recent months we have used a combination of a saline extract with substances obtained by extraction with alcohol, and the details by which this combined extract is produced are given below. The powder from which the extract is obtained is prepared as follows:

	Grams
Menyanthes trifoliata (leaves)	8.0
Melilotus officinalis (leaves)	8.0
Mentha crispata (leaves)	8.0
Brassica alba (seeds)	20.0
Anemone hepatica (leaves)	7.5
Viola tricolor (flowers and leaves)	7.5
Anthemis (leaves)	7.5
Colecyth (fruit)	5.0
Quassia (wood)	7.5
Urtica dioica (whole plant except root)	6.0
Rheum officinale (root)	7.5
Hedge hyssop (whole plant except root)	7.5

These substances are ground to a fine powder and mixed in the proportions given above; 100 grams of the powder are extracted with 400 c. c. of a three per cent. neutral solution of sodium chloride. Extraction is carried on in the cold for a period of at least fourteen days, with frequent shaking. It may seem unnecessary to continue the extraction for so long a period, but we have found it desirable to do so. At the end of this time the extract is filtered through paper and nitrogen determinations are made to determine concentration. It is then filtered twice through Berkefeld candles and preserved in sterile flasks for further processes of preparation.

In preparing the alcoholic portion of the extract, 100 grams of the powder are extracted with 400 c. c. of ninety-five per cent. ethyl alcohol for a period of one week, with frequent shaking. At the end of this period the extract is filtered off into a previously sterilized glass; 100 c. c. of the alcoholic extract is now mixed in a sterile flask with 100 c. c. of sterile distilled water. The resulting mixture is

an emulsion of chlorophyll, lipoids, and extractive materials of a greenish white color. From this mixture the alcohol is removed by bubbling through the flask containing it a current of warm air, which has been sterilized previously by passing through a hot copper coil. This procedure removes water vapor as well as alcohol, and the constant bubbling of the air keeps the substances in a fine degree of emulsion. When the alcohol is entirely removed a sufficient quantity of sterile distilled water is added to the flask to bring its volume to the point originally occupied by the alcoholic extract; namely, 100 c. c. This 100 c. c. of emulsified alcoholic, soluble material is now shaken thoroughly with 100 c. c. of the previously filtered saline extract. This mixture of the two extracts is next measured into sterilized ampoules and sealed. Such an ampoule when finished contains per c. c. approximately six mgms. of nitrogen. The emulsion when freshly prepared is smooth and easily administered by a very fine hypodermic needle. After standing for some time, the alcoholic soluble portion separates to some extent, depending upon the temperature at which the ampoule is kept, and depending also upon the care with which the previously described manipulations are carried out. We had, at first, considerable difficulty in preparing the emulsion in such form as to be administered by hypodermic injection. Recently, however, such difficulty has not been so apparent. However, if the extract is frozen or the temperature gets above 50° C., the emulsion is destroyed. Ordinarily it will remain in a satisfactory condition for some weeks so that when warmed to body heat and shaken vigorously, it emulsifies again.

The reactions produced by the injection of autolysin have been described in a previous paper. It seems unnecessary to repeat them. The beneficial results were described in the *NEW YORK MEDICAL JOURNAL* for October 2, 9, and November 13, 1915, and have been repeatedly confirmed during the last few months. Certain of the statements there made seem to need additional emphasis. In the first place, the writer wishes to call attention to the fact that in neither of the two papers published previously has he advocated this method as a cure and reiterates the statement found in the second paper that "it is not as a cure that the writer suggests its administration." It would seem that a plain statement of this sort might be understood by an intelligent reader, but apparently such may not be assumed to be the case. Both physician and patient may be hopeful of cure, but no one at the present time is in a position to make any promise or prediction that such a happy event will be the outcome of the treatment. It is true that certain patients are clinically well as a result of this treatment, but it should need no explanation to the physician to enable him to differentiate between such a condition of affairs and a statement of cure. Even a layman appreciates that cure in cancer is a matter requiring some years to determine and a physician should not be less critical in his understanding.

The writer does not wish to have the term "cure" associated with this remedy in any way and a plain statement of fact should be accepted on its face.

We hope that some of the treated patients will remain well, and if such is the case after a lapse of sufficient time without recurrence, it may be possible to regard them as cured, but time alone can determine this, and the question of ultimate results should not be allowed to prejudice or begot the matter in any way. With a statement of this kind as a preface, it is unreasonable to expect an intelligent mind to start a dispute over the terms employed.

The question arises, therefore, whether any treatment short of cure is desirable in dealing with the inoperable cancer patient. It seems probable that fully eighty per cent. of the persons in whom cancer develops at the present time ultimately die of the disease, in spite of the methods of treatment now employed. This eighty per cent. forms an aggregate in this country each year of from 75,000 to 80,000 persons who reach a stage in the progress of the disease where further treatment is powerless to stop its progress or allay their suffering. This group of patients, as a rule, is not well cared for by the medical profession. They are neglected. They are in a hopeless condition. The majority of their difficulties of one sort or another are ascribed to the onward progress of the disease, and medical attention, as a rule, is given to them grudgingly. Very early in the downward course they are consigned to morphine until an intercurrent pneumonia finally settles the problem. Such a condition of affairs is true, not only of the inoperable cancerous poor to whom the doors of most hospitals are shut, for whose care scant provision is made in any way, but also of those who are able to care for themselves and pay for medical attention. It is a difficult and discouraging field of practice. A physician avoids the depressing atmosphere of a cancerous sick room when he can do little but give partial relief from suffering. Nevertheless, these sufferers are human beings; they belong to a class who deserve the best that we can give them. Society as a whole makes small provision for them, and the medical profession so far falls short of its duty in caring for them as to neglect them most shamefully when they have reached the inoperable stage. It is, in fact, almost a reproach to a physician to have it known that his practice is largely made up of inoperable cancer patients.

Repeatedly the writer has heard the sentiment voiced by responsible and intelligent men, that the only kind thing to do to an inoperable cancer patient is to allay his pain and hope for his early demise. Such a condition of affairs is a serious reflection upon a profession whose function is to preserve life and make it, from the standpoint of disease, as tolerable as possible.

If it be granted that a cancer patient, although inoperable and with our present method of therapeutics incurable, nevertheless is entitled to have his life prolonged, his suffering relieved, and his continued existence made as agreeable to himself, his family, and friends as possible, then we are justified in using a method of treatment which has promise of accomplishing these ends and which has demonstrated that this promise in a large percentage of cases is fulfilled. It is because the

writer believes that such results in this type of case are desirable, even though no promise can be made of a cure, that he uses and advocates the autolysin treatment for inoperable cancer.

The kind of effects which have been described in a previous paper (*NEW YORK MEDICAL JOURNAL*, October 2, 1915), namely, relief from pain, relief from the foul odor, if such is present, improvement in nutrition, gain in strength and weight, and in many cases marked diminution in the size of the growth, have been produced repeatedly in the writer's experience, and his experience has been and is being confirmed constantly by an increasing number of medical men competent to decide the questions at issue. These effects are positive in character; they cannot be explained on the basis of the psychological effect of the use of a new remedy. The writer is familiar with the psychological effects produced upon cancer patients by different methods of treatment, and is equally confident that the results obtained in this instance are not to be classed in character and degree with a mere psychological stimulus.

If, on the other hand, the inoperable cancer patient is not entitled to relief, and is considered by the more fortunate members of society to be a nuisance to himself and to the community at large, then morphine should be administered as at present, or possibly, if the conviction is firm enough, Osler's suggestion of chloroform treatment may be tried. With such a conviction autolysin should never be used. A medical adviser, is, however, not the only person to be consulted in deciding this matter. The patient himself often has certain preferences, and his relatives and friends not infrequently decide that if a cure is not possible, a prolongation of life, especially if it can be made agreeable to the patient and his family, is an outcome which they desire to obtain.

A prominent student of the cancer problem once said to me that if he could add six months of life to the inoperable cancer patient he would feel that he had made a tremendous contribution to the cancer problem. In my judgment autolysin has done this in many cases, and is doing it in many others. The physician is called upon to deal with many conditions of disease which he cannot cure, and yet his therapeutic efforts may relieve the patient and prolong his life. Such is the condition with diabetes. Diabetes is rarely, if ever, cured, but proper treatment prolongs the life of the sufferer, and enables him to continue as an economic factor in the community. The same is true of valvular heart lesions. A destroyed valve cannot be replaced by any method of treatment, and yet a large group of the medical profession finds in the treatment of such conditions opportunities for great service. Many other chronic, incurable conditions are suitable fields for therapeutic measures which never cure but only relieve. There is no justifiable reason for classing malignant disease in a category by itself and shutting the door of relief in the face of this large group of patients.

One editor has gone so far as to say that any chemotherapeutic measure advanced for the relief of inoperable cancer must be met by "an absolutely and

uncompromisingly nihilistic attitude" on the part of the medical profession. An attitude of this kind followed to its logical conclusion is an assumption that progress is not possible, and that the conditions of treatment prevailing at that time are those which must continue in the future. Carried into action, it is destructive to all ambition to better conditions. Its influence has been repeatedly demonstrated to the writer during the last few months. Physicians and surgeons who have spent days in my office examining evidence to be presented to them, have told me frankly that they believed the autolysin method of treatment was worthy of a trial and that they had patients in their own practice whom they felt it was their duty to treat in this way, and yet they have as frankly confessed that they dared not do it because of the nihilistic attitude taken by the editor in question. They have felt that the only safe course for them to follow was to abide by the worldly wise advice:

Be not the first by whom the new is tried,
Nor yet the last to cast the old aside.

The large body of the medical profession takes its conclusions ready made and does little thinking for itself. Nevertheless, Weil stated in his article on autolysin the proper attitude which a physician must take with respect to this matter if progress is to be made, and it is so directly opposed to the conclusions of this editor that it is worth quoting. Weil writes: "In dealing with a disease of the character of cancer, in many instances entirely beyond our power to influence, no one can question the advisability of trying any and every agent which holds out the slightest promise." No unprejudiced observer can review the totality of evidence with respect to the promise held out by the autolysin treatment and not be convinced that it is worthy of trial. Facts are stubborn things and the history of medicine is full of instances in which a dogmatic attitude has been wrecked by facts.

It seems unnecessary to add that the effectiveness of this method of treating inoperable cancer can be determined only by its effects upon human patients. The foundations for cancer research in this country have spent the largest portion of their income upon studies of cancer in the lower animals, such as mice, rats, chickens, dogs, etc. These studies have elicited facts of great biological interest, but have not thus far served in any marked degree to influence the treatment of the disease in human subjects. They have undoubtedly broadened our conceptions of the malignant process and stimulated new lines of thinking and research. The writer has devoted a considerable part of the past twelve years to such studies, and is familiar with the nature of the results and ideas which have grown out of such work, both in this country and abroad. Nevertheless, the cancer problem in human beings will be determined only by a study upon human beings. The reaction of lower animals to different therapeutic agents is not the same as is obtained in this highest animal form. However interesting the study of therapeutic agents in lower animals may be in itself, the results of such study cannot be applied directly to the treatment of disease in human subjects. Certain cancer investigators in this coun-

Contemporary Notes.

try and abroad have deliberately determined not to be concerned with human cancer. The intelligent medical reader should be able to decide for himself that the recent paper of Wood, who reported negative results from autolysin treatment of primary cancer in mice, in no way affects the status of this treatment upon human patients. This investigator was careful to draw the conclusion that the autolysin treatment in no way affected the malignant process in mice. It need only be pointed out that many substances of vegetable origin have quite a different physiological action on the lower animal forms than they do upon the human, so that while from the standpoint of completeness it is desirable to have such an investigation as has been reported, it does not influence this problem in its most important phase, namely, the human phase. It may be pointed out that the same writer has determined from somewhat similar studies upon the same species of animal that radium is not only without effect, but in most instances is positively dangerous in the treatment of malignant disease. Such a conclusion will probably not be accepted at the present time by physicians who have had much experience in the use of radium. Some years ago, the writer published an article describing the remarkable effects produced in the transplantable lymphosarcoma in dogs with mixed toxins, in which it was found possible to cure a large percentage of these animals by this method as well as by the use of other bacterial toxins. However, the statistics of Coley show that an extensive experience in the treatment of human subjects does not justify so favorable a conclusion in human disease. It will be recalled that the value of autolysin has been demonstrated on human patients; more than 2,000 patients having been treated during the last year. It should be remembered, too, that a large percentage of patients who have used the autolysin treatment thus far have been in a most desperate condition. Many of them have been so far advanced that no form of treatment could possibly repair the damage and permit the injured tissues to assume normal function. There is a marked individuality in the nature of the reaction of different patients. No reliable general conclusions as to doses, length of time treatment will be required, and rapidity with which beneficial effects will be obtained, etc., can be made. These are individual matters and can be determined only by actual trial. The available statistics show, however, that eighty per cent. of the inoperable cancer patients who have been treated by this method have been to some degree benefited. In some instances the benefit has been solely the relief from pain and malodor. In the most favorable group it has proceeded to such a degree as to make the invalid capable of resuming his normal activities and in some instances the term "clinically well" may properly be applied. A method which will accomplish this kind of result in so simple a way deserves study. A cancer patient deserves the opportunities for relief which it affords. Autolysin has demonstrated its ability to relieve in varying degree a large percentage of the inoperable cancer patients.

11 EAST FORTY-EIGHTH STREET

Popular Fallacies Concerning Squint.—There is a popular idea, asserts the *British Journal of Children's Diseases* for January, 1916, that children "grow out of squint." There is some truth in this idea. Many a very young child has been seen to squint when it is ill. Irritation may make it squint, but when the irritation is withdrawn the squint will disappear. These are temporary cases. Then there are children who grow up with a squint, and when they are well on through their teens, at the time of puberty, the eyes of a few of them will get straighter, or almost straight, and the squint will be noticed to be bad only when they are tired and in the evening. The temporary squint of the infant does no harm. But then it is a warning that there may exist a weak brain control of the eyes, and a hint to be watchful when the child goes to school or is attacked by fever. The case of the children who grow up with squint is very different. Even though their eyes should come straight they never recover the effects of the squint. They have lost their precious faculty of binocular vision, and the sight of the eye that was crossed is gone for all practical purposes; it is reduced to the level of a rabbit's eye; it has a field of vision, but no macula, and no fine visual acuity.

How to Cough.—Dr. A. A. Pleyte, attending physician, Wisconsin State Sanatorium, writes in the *Journal of the Outdoor Life* for January, 1916, on an accomplishment imperfectly mastered by many bronchitic and tuberculous students.

"Many times," he observes, "there is nothing so troublesome, nerve racking, and harmful to the lungs as cough. The doctor tries to locate the source of cough from the great variety of causative factors which may cause it. But troublesome cough very often exists for some time after the exciting cause for the cough is found and remedied. It is for these patients and all others who are forced to yield to the desire for coughing, after we have done all which lies within our power to prevent it, that we think a word of advice relating to the method of coughing will be useful. . . . Fold your handkerchief so that it is about five inches square. Place it flat in the right hand, if you are right handed, and with this hand hold it tightly over the mouth. Press the hand on the mouth, since to hold it loosely over the mouth will not accomplish the purpose. Now instead of coughing and trying to muffle the sound in your throat or mouth, muffle it with your handkerchief. Practise it until a person ten feet away cannot hear you. The sound made in coughing is due partly to air passing over the vocal cords, partly to air going through the bronchial tubes and trachea, and partly to the resonance produced in the chambers lying above the trachea. This sound can be almost wholly avoided and the irritation to the lungs and air passages prevented by keeping the air passages open and letting your handkerchief do the muffling. Now instead of expelling 120 cubic inches of air at each expiration, you will expel a smaller amount with more comfort to yourself and to those around you and with much less harm to your lungs."

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 19, 1916.

SCHOOLS AND HEALTH.

The crucial test of a satisfactory method of schooling is the possibility it affords for the concomitant normal development of mental power and physical health. Antiquity knew of the inter-relationship of these conditions. How to achieve the maximum harmony between them is the chief concern of the educator; how to balance the multifarious elements entering into the problem, at the least cost to the community, is the problem of the administrator. The fact that our schools sorely fail in many respects, and that the reeducation of the retarded children alone costs the city of New York more than the entire annual appropriation for the municipal department of health, justifies our raising the question whether our present school administration is sound. We should like to know the reason for this appallingly large amount of retardation. We should like to know whether the hundreds of thousands of physical defects we discover in the school children and which, in the majority of instances, remain unremedied are responsible for this condition. We should like to know further how the bad ventilation prevailing in our schools bears on the situation.

We are told that our children leaving the public schools know less than they should. Are faulty methods of instruction, which fail to develop brain

power, responsible, or is it the lack of interchange of study, work, and play, of mental exertion and body relaxation? Should there not be more concentrated responsibility in the Department of Education for the wellbeing of the children, or if this is impossible, should not the whole matter of the physical care of the children be turned over to the department of health? Should not our children have more opportunity for outdoor life than they now have, and have it under proper school control?

It is believed that the Gary system of school administration meets most of the problems pointed out, by recognizing the individual needs of the children and by abolishing the deadly routine of school procedure where everybody does the same thing at the same time, in the same way. Our schools are overcrowded because there is too little flexibility in their management; because they often lack playgrounds, open air spaces, gymnasiums, workshops, and laboratories where the mind and body of the child may find interest and relaxation, and which may be used by one set of children when the classrooms are given over to another group for ordinary studies. The Gary system has immense educational and health possibilities, and the experiments carried on in this city with a view of applying it generally to our school system, are worthy of serious consideration on the part of the profession.

THE CLINICAL EVIDENCES INDICATING
THE THERAPEUTIC INTERRUPTION
OF GESTATION IN HEMORRHAGE.

Generally speaking, the only real indication for induced miscarriage is when a disease, produced or aggravated by an existing pregnancy, threatens the life of the mother. But if we study the various discussions to which this question has given rise, it will at once become evident that it is quite impossible to formulate a rigorously precise indication, and in order to decide upon the necessity of the interference two important clinical symptoms must be relied on, namely blood examination and the condition of the pulse.

Bonnaire and Lemaire maintain that it is always proper to interrupt gestation when the number of erythrocytes has fallen below 2,000,000. They admit, however, that if the patient's condition is not too bad, we may wait until the number has reached 1,200,000 on condition that a blood count is made once daily, occasionally twice if the case requires it. If the general condition is frankly bad, if there is great prostration and considerable emaciation, temporizing is out of the question and interference should be resorted to when the count shows 2,000,000 erythrocytes.

As far back as 1904, Macé called attention to the importance of estimating the amount of hemoglobin as an indication for the interruption of gestation. There is always a diminution of hemoglobin in cases of hemorrhage, and when this coincides with a decrease in the erythrocytes, when there is a parallelism in the drop of each, there is no need for alarm; we should wait, and with the reappearance of the hematoblasts there is an indication of a regeneration of the blood. When the hemorrhage continues, there are cases in which the parallelism between the percentage of the red blood corpuscles and hemoglobin no longer exists; there may be a considerable fall in the percentage of hemoglobin, while the number of erythrocytes remains fairly good, 2,000,000 or even more, and still the patient's condition is disquieting, microscopical examination showing marked changes in the cells. Such clinical findings are an indication of serious anemia and point to interruption of the pregnancy.

Neither of these methods of blood examination can give really practical results, as both are beyond the means of the average practitioner, because they require special training and delicate technic. The count of the erythrocytes is only of relative service, because it requires a laboratory outfit and much time, and to be of value it should be done by the same operator using the same instruments.

As is the case with the blood count and percentage of hemoglobin, the amount of blood lost may likewise become an important indication for the induction of abortion or premature labor, but its estimate is sometimes difficult. Discoloration of the mucosa, nausea, and the majority of symptoms present in serious hemorrhage, are indicative of a grave condition of affairs, requiring urgent treatment, but none of them give such precise data as the pulse, and this alone can furnish the indication for interference.

When the pulse remains permanently at 100 or over, it is dangerous to temporize, and abortion or premature labor should be induced without delay, particularly so if the hemorrhage continues.

EMPLOYER LIABLE FOR TYPHOID CONTRACTED IN HIS SERVICE.

The Supreme Court of the State of Wisconsin has rendered a decision (*Vennen vs. New Dells Lumber Co.*, 154 N. W. Rep., 640) to the effect that an employer who furnishes to an employee drinking water which is contaminated with typhoid bacilli the use of which causes the development of typhoid fever, is liable for compensation under the Wisconsin workmen's compensation law. The court holds that in this particular case the illness and death of the employee are attributable to the undesigned and

unexpected occurrence of the presence of bacteria in the drinking water furnished him by the defendant, as an incident to his employment. It is pointed out that the cases wherein liability has been found distinguish between disease resulting from accidental injury and disease which results from an idiopathic condition of the system and is not attributable to some accidental agency growing out of the employment. The latter class of diseases is held not to be within the contemplation of the act. The court is of the opinion that in this particular case the fact that the employer furnished to the employee water that was contaminated with bacteria brought it within the former class, rendering the employer liable under the act.

It is interesting to note that Justice Barnes dissented, holding that it was not the intention of the legislature to include under the act the large class of cases that might result from sickness. His contention is, that had this been the intent of the legislature, this class of cases would have been included in express and unmistakable terms, and not by the use of language that is at least popularly understood not to include them. The dissenting opinion states that the great weight of authority is contrary to the decision and cites numerous decisions to support this contention. Among these is a decision that the inhalation of sewer gas resulting in enteritis was not a personal injury. The same view was held in regard to paralysis resulting from exposure to contact with lead; to an abscess in the hand produced by continuous rubbing of a pick handle; to inflammation and swelling caused by working with a blistered finger in red lead and oil; to copper poisoning resulting from contact with dust produced by filing; and to death from anthrax from handling animals.

This decision is a most important one, as it will greatly broaden the liability of employers under the act. It is of much more than local interest because Wisconsin was one of the pioneers in this kind of legislation, and decisions rendered under this law will undoubtedly be cited in the construction of similar laws by the judiciary of other States. From the physician's standpoint the etiology of typhoid fever is so well known, the steps which are required to prevent its spread are so clearly understood and so easily applied that it falls well within the category of preventable diseases; therefore the employer who through negligence furnishes contaminated drinking water to an employee is logically liable for damages arising from the use of this contaminated water. If these facts were established, we believe that financial responsibility could be placed upon the employer at common law. Notwithstanding the views expressed by the dissenting Justice, the decision seems to be in line with previous decisions

under the Wisconsin act. The courts of Massachusetts, of California, and of several other States have also ruled that the employer is liable for damages resulting from disease contracted by the employee while performing his duties.

THE TRUDEAU SCHOOL OF TUBERCULOSIS.

Announcements have been published and the prospectus of the first course of study issued of the Trudeau School of Tuberculosis, a worthy monument of the honored pioneer in the antituberculosis movement in this country, and one which the modest, unselfish nature of the man himself would have preferred to a more ostentatious memorial. Let us hope that this school of such potential usefulness and promise may be as enduring as a bronze bust or a shaft of granite.

It is a fact of some cultural significance and scientific import that at a time when Europe is torn with the primeval passions of a war of singular ferocity, and art and science are prostrate in the dust of conflict, it is America's privilege to found this, the first institution of its kind. If developed along the lines laid down by its founders, inspired by the traditions and ideals of Trudeau, it cannot fail to exercise a widespread influence wherever the fight is waged against tuberculosis.

It has been felt for some time among many careful workers that the popular educational campaign against tuberculosis had about spent itself and had accomplished its greatest work, and that something more was needed than a constant iteration of the familiar fresh air and hygienic propaganda to sustain and carry to a more successful issue the warfare against the white plague. Among the greatest needs have been the endowment of research work in tuberculosis and better opportunities for the training of physicians and medical students in early diagnosis and modern methods of treatment. It is believed that the Trudeau school will go far to supply these wants and will impart a new impetus and interest to every phase of the campaign.

The courses of study, which are arranged to extend over six weeks, are adapted to graduates in medicine, advanced students, and research workers, and will aim to present the most recent knowledge of the pathology and immunology of tuberculosis, correlating this with clinical problems. The facilities available for the purposes of the school include the Adirondack Cottage Sanatorium at Saranac, the New York State Hospital at Ray Brook, the Stony Wold Sanatorium at Lake Kashaqua, and the Sanatorium Gabriels, all in the Adirondack region and affiliated for the purpose of creating a research

and teaching institution of high rank. The name of the director, Dr. E. R. Baldwin, and the list of lecturers, among whom are Professor W. H. Welch, of Johns Hopkins University; Dr. H. M. Biggs, New York State Health Commissioner; Dr. Theobald Smith, of the Rockefeller Institute; Dr. H. R. M. Landis, director of the Henry Phipps Institute; Dr. V. Y. Bowditch, medical director of the Sharon Sanatorium of Massachusetts; and Professor E. P. Joslin, of Harvard University, inspire confidence in the success of the enterprise.

THE WORKING FORMULA OF AUTOLYSIN.

Some months ago, we published a communication from Dr. Silas P. Beebe, giving the results observed by him in the treatment of inoperable cancer with a remedy prepared from a mixture of several drugs. Later communications gave additional reports of cases in which this method of treatment had been used with apparent benefit. The names and amounts of the drugs used have already been given. In this issue the detailed working formula for the manufacture of the extract is presented by Doctor Beebe. This makes it possible for any physician who desires to give the method of treatment an independent trial to make the preparation himself, administer it according to the detailed instructions which have been printed in these columns, and judge whether the results obtained are satisfactory. The NEW YORK MEDICAL JOURNAL has carefully refrained from expressing an opinion as to the efficacy of the treatment. We have felt it our duty, however, to lay before the medical profession a complete account of the remedy and of the experience of those who have actually given it a trial, so that our readers might decide for themselves whether the hopes which Doctor Beebe and his associates entertain as to its usefulness are warranted.

THE LACK OF DENTISTS AT THE FRONT.

A dental surgeon, F. Newland-Pedley, writes to the *Lancet* for January 29, 1916, to the effect that he had read in the *Temps*, of Paris, that a bill was about to be introduced by the French Minister of War to provide an army dental service. It was proposed to incorporate the qualified dentists in the hospital service and to create an army dental corps with the rank of adjutant, providing a service at the front, in the hospitals, and wherever troops were likely to pass. Thus Australia, Canada, and France admit the need of a special corps, and no doubt they have found that at the front it is the dentist that is required more than the doctor. The English authorities seem determined to shut their eyes to one of the chief needs of the army at the present moment. We shall soon have millions of soldiers in the field, says the letter writer, yet it has been re-

cently stated that the number of army dental surgeons in France, exclusive of those with the Canadians, is only forty-three. Meanwhile many young unmarried dental surgeons and students will come under the new conscription law, and unless the authorities show a little better appreciation of the wants of the army nearly all these young men will be drafted into the ranks of the combatants, whereas they ought to be formed into an army dental corps, which is so urgently needed. Great indeed has been the obstinacy of the authorities in opposing this project.

AN UNUSUAL COLLECTION IN THE RECTUM.

Joseph Stark communicates to the *British Medical Journal* for January 1, 1916, a case which he says is of interest, owing to the fact that it was the second occasion on which the patient had swallowed the foreign bodies, and, in his opinion, they had not been introduced from below. The patient, a woman aged nineteen years, not pregnant, informed him that she was suffering from constipation and had taken purgatives, but with no definite result, owing chiefly to pain in the rectum during the act of defecation. Stark gave her calomel, grains v, and directed her, if it had not the desired result, to remain in bed. The next day he was called to her house, and, before examining her, he elicited the following history. The bowels had not moved for fourteen days; she had swallowed during a day and night, about fourteen days before, two full boxes of wooden safety matches. On examining the rectum with the finger he found it full of matches lying in all directions as far as the finger could reach; the finger when withdrawn was covered with blood owing to the excoriations of the mucous membrane by the sharp ends of the matches. Stark removed the matches—of which there must have been at least two boxes—after consideration, without an anesthetic, as a moral lesson to the patient not to swallow highly indigestible substances in future.

News Items.

American Society for Experimental Pathology.—Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, was elected president of this society, at the annual meeting held recently in Boston, and other officers were elected as follows: Dr. H. Gideon Wells, of Chicago, vice-president; Dr. F. Peyton Rous, of New York. The society will hold its next meeting in New York next December, together with the other organizations which constitute the Federation of American Societies for Experimental Biology.

University of Pennsylvania Alumni Celebrate Anniversary.—The 150th anniversary of the founding of the medical department of the University of Pennsylvania, by Dr. John Morgan, which marked the inauguration of medical education in this country, was celebrated by the alumni association of the university by a dinner at the Bellevue-Stratford Hotel, Friday evening, February 4th. More than 250 physicians attended the dinner. Dr. John K. Mitchell was toastmaster, and among those who spoke were Dr. E. H. Bradford, dean of Harvard Medical School; Dr. Harry Lane, United States Senator from Oregon; Dr. Alonzo E. Taylor, Dr. Charles K. Mills, Dr. W. W. Keen, Dr. Richard H. Harte, Dr. Samuel G. Dixon, Dr. J. Chalmers Da Costa, Dr. James W. Anders, Dr. Wilmer Krusen, Dr. Frederick P. Henry, Dr. J. B. Roberts, and Dr. John D. McLean.

Philadelphia Neurological Society.—The following officers were elected at the annual meeting of the society, held Friday, January 28th: Dr. F. X. Dercum, president; Dr. H. M. Langdon, first vice-president; Dr. M. H. Bochrach, second vice-president; Dr. William B. Cadwalader, secretary; Dr. N. S. Yawger, treasurer; Dr. William G. Spiller, Dr. Samuel Leopold, and Dr. Charles K. Mills, councillors.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, February 21st, Philadelphia Clinical Association, Medical Society of the Woman's Hospital, Society of Normal and Pathological Physiology, Blockley Medical Society; Tuesday, February 22d, West Philadelphia Medical Association, St. Mary's Hospital Clinical Society; Wednesday, February 23d, County Medical Society; Thursday, February 24th, Pathological Society, Northwest Branch of the County Medical Society, Stomach Hospital Gastroenterological Society; Friday, February 25th, Northern Medical Association, Neurological Society, South Branch of the County Medical Society, Medical Club (directors).

Philadelphia Society to Discuss Better Training in Obstetrics.—At the next meeting of the Philadelphia Obstetrical Society, March 2d, a paper will be read on the State Requirements in Obstetrics demanded by the Board of Licensure, which will be discussed by the professors of obstetrics in the University of Pennsylvania, the University of Pittsburgh, Jefferson Medical College, the Medico-Chirurgical College, Temple University, Hahnemann Medical College, the Woman's Medical College, and by Dr. John M. Baldy, of the Board of Licensure.

The object of the meeting is to secure for Pennsylvania, already in advance of other States in this respect, the best system to safeguard women in childbirth from harm at the hands of incompetent physicians and, incidentally, to promote progress in medical education in this branch of practice.

Medical Association of the Greater City of New York.—A stated meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, February 21st, at 8:30 o'clock. Dr. William O'Neil Sherman, chief surgeon to the Carnegie Steel Company, Pittsburgh, will read, by invitation, a paper on the Use of Vanadium Steel Bone Plates and Tap Screws in Compound Fractures, which will be discussed by Dr. John F. Erdmann, Dr. Charles H. Peck, and others. Dr. Andrew J. Gilmour will deliver an address, by invitation, on Mountaineering in the Canadian Alps, with Description of First Ascents, in which he will point out a physician's vacation possibilities. Numerous lantern slides will illustrate both addresses.

The Mary Putnam Jacobi Fellowship.—As previously announced in our news columns, this fellowship of \$800 is offered by the Woman's Medical Association of New York City to women physicians for postgraduate work in any of the medical sciences. The fellowship will not be awarded by competitive examination, but upon proof of ability and promise of success in the chosen line of work. Applications for the year 1916-1917 must be in the hands of the Committee on Award by April 1, 1916. This committee is composed of the following members: Dr. Annie S. Daniel, 26 Gramercy Park, chairman; Dr. Martha Wollstein, Dr. Helen Baldwin, Dr. Angenette Parry, Dr. Eleanor Tomes, Dr. Rose Cohen, Dr. Josephine Hemenway Kenyon, and Dr. Emily Dunning Barringer.

Semicentennial of the Department of Health.—The Metropolitan Board of Health undertook the sanitary control of New York city and adjacent counties in March, 1866. For the past fifty years, organized effort for the prevention of disease has been prosecuted by this municipality. It is proposed to celebrate this important semicentennial by a gathering of physicians and other citizens interested in the progress of applied preventive medicine, as the greatest contribution of the present generation to civilization. The celebration will take the form of a Commemoration Dinner to be given on Thursday, March 9, 1916, at 7 p. m. Among the speakers expected will be his Honor the Mayor, the State Commissioner of Health, Surgeon General Gorgas, Dr. Walter B. James, Mr. Henry Bruere, and Dr. Stephen Smith. Fellows of the Academy of Medicine are cordially invited to participate. Subscription \$6. Acceptances and checks should be mailed to Mr. George A. Roberts, Dinner Committee, on receipt of which further details as to place, etc., will be forwarded.

Important New Procedure in Diphtheria.—Certain studies recently made by the health department have shown that in a number of instances, patients convalescent from diphtheria who have been released from quarantine under the present procedure of two consecutive negative cultures, have shown as a result of still later cultures, the persistence in their throats, of diphtheria bacilli. In order more perfectly to assure the absence of bacilli and to diminish the number of patients in whose throats they may persist, a definite period of quarantine has been established, as follows:

On and after February 28, 1916, no later culture will be examined for release from quarantine which is made earlier than twelve days from the date of report of the disease. Two consecutive negative cultures, made twenty-four hours apart, preferably from both nose and throat, will be required, as at present.

Last Week's Death Rate in New York.—According to figures compiled by the department of health, the deaths from influenza and pneumonia during the past week were slightly lower than the previous week. There were 346 deaths from influenza and pneumonia compared with 360 during the week ending February 5th, and 424 during the week ending January 29th. The deaths from heart disease and nephritis show a slight increase over the previous week, but a considerable decrease compared with the deaths from these causes during the week ending January 29th. The deaths from the infectious diseases during the week were 51, exactly the same number reported from these causes during the corresponding week of last year, and a very slight increase over the number reported from these causes during the two previous weeks of this year.

During the week ending February 12th, 1,626 deaths were reported with a rate of 15.18, compared with 1,546 and a rate of 14.79 during the corresponding week of last year. During the first seven weeks of 1916 the death rate was 16.28 compared with 14.78 for the corresponding week of last year.

Personal.—Dr. Parker Syms has been appointed visiting surgeon to the City Hospital, Blackwell's Island, New York.

Dr. William J. Means, one of the organizers of the Ohio State University and dean of the Starling-Ohio Medical School since the merger in 1907, has resigned on account of ill health. His resignation will take effect at the end of the present academic year.

Dr. Otto Schoebel has resigned as assistant director of the quarantine laboratory, Port of New York, to accept a position in the Bureau of Science, Manila, P. I.

Dr. Charles S. Pancoast, of Philadelphia, who went to Vienna in December, 1914, is now in charge of a war hospital at Munkacz, in the Carpathian Mountains. The hospital has 4,000 beds.

Dr. Karl H. Van Norman, formerly of the Johns Hopkins Hospital, has charge of a British hospital division at Ramsgate, England. Doctor Van Norman is a captain in the Royal Canadian Army Medical Corps.

The Trudeau School of Tuberculosis.—The first school in the world for the education of tuberculosis specialists, plans for which were made by Dr. Edward Livingston Trudeau shortly before his death, will be opened at the Trudeau Sanatorium, Saranac Lake, N. Y., in May next. The new course of study will be essentially postgraduate work for practising physicians, research workers, and advanced students interested in the cure and prevention of tuberculosis by the fresh air treatment. The institution will be equipped with facilities unequalled anywhere for the study of the disease. Special attention will be given to clinical and laboratory diagnosis, the use of the x ray, and management of institutions.

Among the lecturers will be Professor W. H. Welch, Johns Hopkins University; Dr. Theobald Smith, director Rockefeller Institute, Princeton; H. M. Biggs, State Commissioner of Health of New York; Dr. E. P. Joslin, assistant professor of medicine at Harvard University; Dr. V. Y. Bowditch, medical director, Sharon Sanatorium; Dr. H. R. M. Landis, director, Henry Phipps Institute; Dr. James Alexander Miller, chief of tuberculosis clinic, New York city; Dr. R. H. Bishop, secretary of the Anti-Tuberculosis League of Cleveland, and Dr. H. Gideon Wells, professor of pathology, University of Chicago. The first session will be held from May 17th to June 28th. Dates for future sessions will be announced either during or after the course.

State Hospitals Overcrowded.—Serious overcrowding of the New York State Hospitals for the Insane is pointed out in the annual report of the State Charities Aid Association to the State Hospital Commission for the fiscal year ending October 1, 1915. All the institutions are overcrowded and the situation in the institutions of the metropolitan district is characterized as "almost intolerable." The overcrowding, according to the census of October 1, 1915, was 6,779 against 5,895 a year ago; the fourteen institutions had a census of 34,308 patients on October 1st, although their certified capacity is only 27,529. The average proportion of overcrowding is 23 per cent. Last year on the same date it was 21.4 per cent, and in 1913 it was 20.6. The report declares that the crowding has "reached a point almost to menace the health and recovery of the patients."

The Health Department's Campaign against Alcohol.—In order to focus public attention on the evil effects wrought by the abuse of alcohol, the department of health is planning to conduct an intensive campaign of education and publicity during the week commencing Sunday, February 20th. All the churches will be asked to observe February 20th as "Temperance Sunday" and the clergymen have been requested to speak about the evil effects of intemperance. On Monday, a large force of sanitary police and sanitary inspectors will distribute health leaflets throughout the city. On Tuesday, motion picture theatres will show stereoscopic slides dealing with alcohol, the slides being supplied by the department. Wednesday, the 23d, will be Croton Water Day, and special emphasis will be laid on the importance of drinking plenty of pure water and leaving alcoholic beverages alone. Other special features are being planned for the rest of the week. The department hopes in this way to arouse the public to a realization of the recognition of alcohol as one of the greatest menaces to public health.

The National Committee for Mental Hygiene held its eighth annual meeting in New York on February 2d. Announcement was made by the treasurer that the Rockefeller Foundation had donated to the committee \$22,800 for carrying on surveys of the care of the insane in sixteen States during the present year, making it possible for the committee greatly to extend its work. The report of the secretary showed that the movement for conserving mental health and for improving the care of the insane and feeble-minded had grown in a remarkable way. Societies for mental hygiene are now at work in Connecticut, Illinois, New York, Massachusetts, Maryland, Pennsylvania, North Carolina, the District of Columbia, Alabama, Louisiana, and California, and during the present year societies will be organized in Michigan, Rhode Island, Minnesota, Indiana, South Carolina, Tennessee, and Texas. Dr. Walter E. Fernald, superintendent of the State School for the Feeble-minded, of Waverly, Mass., presented a plan which had been adopted by the Subcommittee on Mental Deficiency, of which he is chairman, for popular education, extensive surveys, and researches in this subject. Dr. William L. Russell, medical superintendent of Bloomingdale Hospital, described how the work of the national committee was conducted under the supervision of an executive committee. Dr. Thomas W. Salmon, the medical director of the committee, gave an account of the surveys of the care of the insane which had been carried on during the year in South Carolina and in Texas and announced that similar studies, each conducted by expert alienists, are under way or about to be undertaken in California, Tennessee, Missouri, Illinois, North Dakota, Indiana, and in the District of Columbia.

The following officers for the ensuing year were elected: President, Dr. Lewellys F. Barker; vice-presidents, Dr. Charles W. Eliot and Dr. William H. Welch; treasurer, Otto T. Bannard (reelected); medical director, Dr. Thomas W. Salmon (reelected); secretary, Clifford W. Beers; executive committee, Dr. August Hoch (chairman), Dr. George Blumer, Prof. Stephen P. Duggan, Dr. William Mabon, Dr. William L. Russell, and Dr. Lewellys Barker; finance committee, Professor Russell H. Chittenden (chairman), Otto T. Bannard, Dr. Henry B. Favill, and William J. Hoggson; committee on mental deficiency, Dr. Walter E. Fernald (chairman), Dr. L. Pierce Clark, Professor E. R. Johnstone, Dr. C. S. Little, and Dr. A. C. Rogers.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Seventh Communication.

CAFFEINE.

The pharmacologist is inclined to regard with special favor any drug whose manifestations are specific and fairly constant. He enjoys the assurance that atropine, for instance, will always depress the activity of involuntary muscle; and he derives a similar pleasure in contemplating physiological reactions to caffeine.

Caffeine may nearly always be depended on to increase and strengthen respiratory activity through centric action. Almost as constant, though affected considerably by habituation, is the excitant effect of caffeine on the sensory cortex of the cerebrum, heightening impressive association and cerebration, though apparently interfering somewhat with accuracy of motor expression. Less constant, because of an assumed counteraction on the vasoconstrictor centre, is the diuresis frequently produced. The action on the heart is not so definitely predictable, inasmuch as the preliminary acceleration from local irritation may be speedily and completely masked by the secondary slowing from centric action.

These four fairly definite reactions of the system to caffeine point to the indications for the drug. In antagonizing acute depressions of the brain of narcotoxic origin, caffeine is superior to any other drug. In this particular it is physiologically opposed to alcohol, opium, and similar cerebral depressants.

Where respiration is failing from shock, impending collapse, or acute narcotism, no drug is so effective in rousing the centre to continued activity as caffeine.

In cases of dropsy the diuretic action of caffeine is frequently very marked, the rapid exosmosis of liquid from the blood being balanced by a compensatory drainage out of the edematous tissue. Results are most satisfactory in cardiac dropsy, since here the eliminating tubules are more nearly normal; in hepatic dropsy, diuresis from caffeine is less marked, possibly because the efficiency of the tubules has been lowered by accumulated hemotoxins; in renal dropsies, caffeine has little influence, since the effective mechanism itself is seriously affected.

In cases of acutely weakened heart action, not due to valvular trouble, caffeine is frequently of great service. Its efficiency in these cases is well recognized by the surgeon who, after serious or prolonged operations, orders a very warm normal saline enema containing a liberal dose of caffeine. Under the influence of the drug, and with the aid of increased blood volume, the weak fluttering heart regains its normal force and rhythm.

Let us not flatter ourselves, however, that caffeine

activity has no equal. Action and reaction are probably as complete in physiology as in physics, even though in the former case wideness of dissemination obscures degree of completeness. In the non-habituated, as with the chronic victim, the sensory exhilaration produced by caffeine is frequently succeeded by a period of moroseness and irritability, lassitude, and an uncertain wavering between optimism and pessimism. Ordinarily this is not especially marked in therapeutic doses, however, and is usually so incommensurate with the good obtained as to be negligible.

Electrical Treatment of Trench Foot and Frost Bite.—W. J. Turrell, in the *Practitioner* for January, says that there is no remedy which affords more immediate or more lasting relief to the pain than diathermy. The soldiers suffering from trench feet usually arrive in hospital in England about a fortnight after the onset of the trouble, and the symptom that most demands attention is the pain in the feet, which is often intense and agonizing. Diathermy is a form of high frequency current of very large amperage and of moderately high voltage or potential. The voltage is about 800, the amperage two or three. The direction of the current is changed about a million times a second, and upon the frequency of oscillation the safety of the treatment depends. The only effect noticed is the heat produced in the tissues by friction of the electrons oscillating backward and forward in the area between the pads of application. An electrode is placed on either side of the part to be treated, the current passes in a straight line from one electrode to the other, and its direction is not influenced by the conductivity of the neighboring structures. The skin offers the greatest resistance, heats most, and thus acts as a safeguard against overheating the underlying structures. The sensation of the patient is the most important guide to the strength of the current to be used, so when sensation is lost, as it is sometimes in trench foot, diathermy must be administered with great care and only a small amount of current used. Apart from the production of heat, tissue drainage is increased by the oscillations of the current, as shown by the decrease of the swelling when diathermy is applied to a badly sprained ankle. A marked decrease in the swelling of frost bitten feet also is produced. Very rarely the first application increases the pain, but the second almost invariably gives relief. The relief from pain is due to the relaxation of spasm and the reduction of tension and pressure, which follows the production of heat in the tissues. When there is considerable swelling, with numbness, ecchymosis, induration, or ulceration, the static breeze current is the most effective remedy. The current in this case is unidirectional, and of enormous voltage, but as it never exceeds one or two milliamperes, it is absolutely safe. The pa-

tient is placed on an insulated platform and connected with the negative pole of the machine, the spark gaps being widely separated, so that no spark passes between them, and remains charged with negative electricity at a high voltage. If a badly conducting electrode, like a wooden stick, is brought near him, he discharges steadily in the form of a breeze, which appears as a bluish purple flame. This breeze is applied to the part to be treated. In trench foot it is found to remove stasis and congestion and relieve pain, tingling, and numbness. It also excites an active hyperemia which stimulates the recovery of tissues whose vitality has not been destroyed, and accelerates the separation of necrosed parts. Usually diathermy relieves the pain of trench foot more speedily and with greater certainty than the static breeze, but this is not always the case. To promote the absorption of blebs, and to treat the ecchymosed surfaces of trench feet, the high frequency vacuum tube is most useful, but its action does not penetrate far into the tissues, and the tubes cannot be applied conveniently when the skin is broken. Numbness will often persist in trench feet for many months, if not electrically treated. The best treatment for these old standing cases is the continuous galvanic current.

Prophylaxis and Treatment of Scarlet Fever.—Chantemesse, in *Bulletin de l'académie de médecine* for December 7, 1915, reports his experiences in a French military hospital with Milne's management in scarlatina. The procedure, which is applied as soon as the diagnosis is made or even if the condition is only suspected, consists in swabbing the tonsils and entire pharynx with a ten per cent. solution of phenol in oil, and in rubbing oil of eucalyptus quickly over the patient's entire body, including the scalp. The throat swabbing is repeated every three hours, day and night, for the first forty-eight hours, then twice daily for a week longer. The eucalyptus rubbing is carried out twice a day on the first two days, then daily for twenty days, and finally on alternate days up to the thirtieth day. Phenol intoxication, which might occur in small children through ingestion of the oil containing it, is guarded against by keeping a watch over the color of the urine in these little patients. Among thirty-one cases of scarlet fever treated under his supervision, Chantemesse observed no instance of transmission of the disease. The only person who acquired the disease in the hospital was a nurse who received the patients on admission and made the first prophylactic applications to their throats and skin surfaces, and was therefore exposed to the virus before its transmission could be prevented. Beside emphasizing the prophylactic value of Milne's method, Chantemesse praises the latter as a remedial agency. Twenty-seven of his thirty-one cases went through only mild, uncomplicated attacks as a result of the treatment applied, the temperature always dropping to normal within forty-eight hours and complications not appearing. In the remaining four cases fever persisted ten days. These had been admitted only when the eruption had already existed several days and fever was already high. In two the swollen tonsils prevented proper disinfection of the pharynx, in an-

other nephritis preexisted, and in the fourth intense albuminuria was noted on admission. The only complications observed in the entire series were one instance of otitis media and one of temporary albuminuria, each condition appearing during convalescence, about the thirtieth day of the disease. Rubbing the oil of eucalyptus over the skin at the time of appearance of the eruption was observed, in one case out of ten, to cause itching, which, however, always disappeared permanently within twenty-four hours upon discontinuing the procedure for one day and applying talcum powder. All patients were kept on a milk diet until the twenty-first day.

Drainage in Abdominal Operations.—L. W. Swope, in the *American Journal of Obstetrics* for November, 1915, states his belief that more stress should be laid on the deleterious effects of protracted abdominal drainage than hitherto has been the case in literature. His own practice is to remove drainage early in all patients who are slow to react from an abdominal operation. Gauze is never allowed to remain in the abdomen for a period exceeding twenty-four hours. In gallbladder surgery, when the pancreas is involved in the pathological process, he drains the common duct with a rubber tube which, however, is never left in longer than six or seven days. When possible, instead of draining through the common duct, he drains through the gallbladder or cystic duct and closes the opening in the common duct. When drainage offers any hope of cure, the period referred to is sufficient, and by thus limiting the drainage the operator minimizes the possibility of fistula formation, with the consequent exhausting and occasionally even fatal effects.

Use of Serums and Artificial Nutritive Fluids in the Treatment of Wounds.—Soubeyran, in *Paris médical* for November 27, 1915, discusses various measures recently recommended for the treatment of wounds, and states that, according to his experience, the use of artificial serums and nutritive fluids is an excellent procedure, which will in future unquestionably come into widespread employment. The only serum mentioned is that of Leclainche and Vallée, opsolysin, which is a polyvalent serum obtained from horses immunized against various pyogenic organisms—staphylococci, streptococci, colon bacillus, *Bacillus pyocyaneus*—and against the organisms of gas gangrene—*vibrio* of sepsis and *Bacillus perfringens*. Layers of sterile gauze moistened with this serum are applied to the wound, the results, according to experimental and clinical trial, being the formation of an insulating coating over the open surface, rapid tissue regeneration, acceleration of phagocytosis, and arrest of suppuration. Soubeyran has even greater confidence in artificial nutritive solutions, which he has used with excellent results in several hundred infected wounds. These were first well laid open and cleansed mechanically, next treated with noncaustic antiseptics such as hydrogen dioxide solution, a dilute solution of iodine in alcohol, or pure ether, and finally irrigated and dressed with the nutritive fluid, the object of which is to augment the vitality of the

tissue cells and thereby increase their power of resistance to pathogenic organisms. The two solutions used were those of Schiassi and of Hédon and Fleig. The first of these contains, in each litre of distilled water, sodium chloride, 6.5 grains; glucose, 1.5 gram; fused calcium chloride, one gram; sodium bicarbonate, 0.5 gram, and potassium chloride, 0.3 gram. The fluid recommended by Hédon and Fleig, an improved Locke's solution which, in experiments on living tissues removed from the body, proved distinctly superior to the latter and far superior to diluted sea water, contains, sodium chloride, six grams; sodium bicarbonate, 1.5 gram; glucose, one gram; disodium hydrogen phosphate, 0.5 gram; potassium chloride and magnesium sulphate, of each 0.3 gram, and calcium chloride, 0.1 gram, together with oxygen, *ad saturandum*. (The calcium chloride is added in dilute solution, to prevent precipitation.) These fluids are used lukewarm and in a sterile condition, the latter being secured preferably with the autoclave. If they are to be sterilized by boiling the calcium chloride must be heated in a separate solution and then added, to obviate precipitation of calcium carbonate. Wet dressings of these fluids are of value at any stage of infection, and after skin grafting exert a particularly favorable effect. In wound tracks and fistulas, wicks of gauze moistened with the solutions exert effects similar to those of balsam of Peru. They are also to be preferred to normal sodium chloride solution for subcutaneous or intravenous infusion or drop by drop proctoclysis.

Therapeutic Injection of Old Bacterial Cultures.—Delbet, Beauvy, and Girode, in *Bulletin de l'académie de médecine* for December 8, 1914, report their favorable experiences with old bacterial cultures in the treatment of such conditions as furunculosis, carbuncle, phlegmonous processes, suppurative adenitis, dental osteoperiostitis, erysipelas, phlebitis, pelvic peritonitis, etc. The bacterial preparation consisted of a mixture of two week old cultures of streptococci on peptonized meat bouillon and month old cultures of staphylococci and *Bacillus pyocyaneus* on peptonized Liebig bouillon. The three cultures were killed by heating to 60° C. for half an hour, then mixed in equal proportions and put up in tubes, the latter being heated finally to 62° C. for half an hour. As a rule, the dose injected was one dram (four c. c.) of this mixed bouillon, containing at least 1,730 million streptococci, 3,330 million staphylococci, and eight billion *pyocyaneus* organisms, all of attenuated toxicity owing to the age of the cultures. The injections were given intramuscularly, causing a merely temporary if rather sharp pain.

In localized infections distinct benefit was obtained. After a period of augmented fever following the injections, the temperature returned to normal in one to three days. The effect on pain was marked, the discomfort being almost or completely removed in twenty-nine out of forty cases in which sharp local pain had been complained of. In a number of cases apparently about to manifest local suppuration, application of the treatment, before suppuration could actually be detected, aborted the infectious condition. Thus, among eleven cases of

severe lymphangitis, but one had suppuration. In three cases of adenitis or periostitis of dental origin, recovery took place without incision or evacuation of pus, twice in three days and once in six days after the remedial injection. In three other severe cases of acute adenitis, the suppurative process assumed a sluggish, "cold" type twenty-four hours after the injection, and only puncture with a scalpel was required to effect a cure, where otherwise, extensive incisions would have been necessary. Distinct benefit was noted in several cases of large boils, carbuncles, erysipelas, and phlebitis. In bacillemic states, however, the treatment was without effect. The prompt action noted in the cases of localized infection is believed by the authors not to be due to a true vaccinating effect, but to a favorable turn imparted to the general defensive mechanism by the attenuated microbic protoplasm.

Observations on 600 Heart Cases.—Mark H. Wentworth, in the *Boston Medical and Surgical Journal* for February 3, calls attention to the fact that digitalis should not be used with a free hand or indiscriminately in heart cases. Its action should be watched carefully. The heart rhythm is distinctly slowed by its use, and the force of the apex beat is much strengthened and slowed, thus moderating the pulse and increasing its tension. When no appreciable effect is noted on the pulse, we should examine the heart and general circulation before increasing the dose, as it may already have had the effect of increasing the output of urine, relieving the dyspnea, and decreasing the edema, which may be all that should be attempted at one time in a given case. In cases showing degeneration of the cardiac muscle, such as fatty heart, digitalis may be absolutely contraindicated, for the increased pressure may cause serious damage. In cases of tachycardia Wentworth found that minute doses of aconite or strychnine were used to better advantage than digitalis in reducing the accelerated pulse.

Treatment of Arthritis deformans.—George F. Butler, in the *Lancet-Clinic* for January 22, 1916, warns against confounding rheumatoid arthritis with gout and prescribing a diet suitable for the latter for patients suffering from the former condition. The great need is to increase the patient's strength, and no dietary restriction should be imposed other than that the food should be such as the patient can best digest and assimilate. In general, meat should be taken freely, together with a suitable amount of vegetable food. Acid fermentation in the stomach should first be eliminated by forbidding all saccharine and farinaceous foods and giving an abundance of red meat and hot water for a few days; milk to which some sodium bicarbonate and chalk or lime water have been added, together with junket and cream, should then be ordered. Afterward, green vegetables and farinaceous foods may again be allowed, with the exception of oatmeal. At least one ounce of olive or codliver oil should be given at bedtime. All acids and acid fruits, rhubarb, tomatoes, and asparagus should be avoided. As a beverage, an infusion made by boiling tea for fifteen minutes in milk and diluted with an equal volume

of water may be substituted with advantage for ordinary tea; saccharin alone should be used for sweetening. Exercise is of value, but should not be sufficient to cause joint pains. The climate should preferably be a warm, dry, and equable one. In cases not too far advanced, one or more yearly courses of thermal treatment, especially in the form of peat or mud baths, should be advised. Of the drugs, Butler has found guaiacol carbonate, arsenic, the syrup of iodide of iron, and in some cases potassium iodide, to be of most value. The former is given in doses of five to ten grains three times a day at first, to be increased by one or two grains each week until the dose reaches fifteen to twenty grains; it is essential that this treatment be continued for at least a year. Arsenic, if used, should be given in small doses for three weeks out of every four; good results were obtained from sodium cacodylate hypodermically. To correct acid gastric fermentation and improve motility the following combination is recommended:

R Sodii bicarbonatis,gr. xxx;
Potassii bicarbonatis,gr. x;
Pulveris cretae aromatis (N. F.),...gr. xv to xxx.

M. Sig.: Take in a glass of milk half an hour before meals, with a double dose at bedtime.

Doses smaller than those given often suffice. An excellent stomachic, when such action is required, is a combination of calcium chloride with hydrochloric acid and minute doses of tincture of ferric chloride, to be taken after meals. To keep the bowels open, a mixture of sulphate, bicarbonate, and salicylate of sodium with licorice should be used. To get lime into the patient's tissues, calcium compounds should be freely administered by mouth, the blood being meanwhile kept alkaline. Where a focus of infection can be found, treatment with an autogenous vaccine should by all means be carried out. Local treatment is of little avail, though continued dry massage tends to restore bulk to wasted muscles.

Surgical Treatment of Obstinate Dysmenorrhea.—J. H. Carstens, in the *American Journal of Obstetrics* for November, 1915, discussing the management of cases of menstrual disorder refractory to all nonsurgical measures, states that in cases where oophorectomy is resorted to as a radical curative procedure, it is often not worth while to leave behind a portion of an ovary to perpetuate menstruation, the operation under these circumstances sometimes failing to cure the patient and leaving tissue in which an ovarian tumor or other condition not infrequently develops. The object should be, on the contrary, to establish the menopause for the purpose of giving the patient relief from the dysmenorrhea. In view of the suffering occasioned by an artificial menopause, especially in women about forty years of age, the author began to perform, instead, abdominal and vaginal hysterectomies, leaving in at least one ovary. Success was so pronounced, the women so treated never experiencing any symptoms, that Carstens now regularly follows this plan, informing the patient beforehand, however, that some ovarian tissue is to be allowed to remain and that, should they ever have trouble with it, a second operation will be required. A cure of the dysmenorrhea is thus obtained without bringing on

climacteric symptoms; the patients recover rapidly from the operation and soon enjoy perfect health. Preference is given to vaginal hysterectomy unless there are indications of extensive adhesions or other abdominal trouble. Carstens removes the uterus and ovaries completely only in the presence of insanity, epilepsy, hysteroepilepsy, or when it is evident that a cure can be made complete only by establishing the menopause.

Friedländer's Pneumobacterium Vaccine in Ozena.—Marked beneficial results were obtained by A. R. Friel (*Lancet*, Jan. 22, 1916) by the intravenous injection of a sensitized, living vaccine of Friedländer's bacillus. The vaccine was sensitized by exposure to the serum of an immunized rabbit, followed by the washing and reemulsification of the organisms in normal saline solution. The most suitable dose seemed to be about two million organisms, since this was small enough to avoid severe constitutional symptoms. The injection should be repeated every three or four days, the dose remaining the same. The same vaccine given subcutaneously has little beneficial effect, probably because the organisms do not reach the organs necessary for the production of immune bodies in sufficient concentration. Under this treatment, Friedländer infections respond promptly, although they are usually regarded as being peculiarly resistant. The usual measures for the relief of ozena should be undertaken.

Fonabisis, a New Gout Remedy.—Rubens (*Medizinische Klinik*, Dec. 26, 1915) says that this combination of formaldehyde with sodium bisulphite was introduced by Volkmar almost three years ago, but has not gained sufficient recognition. He has employed it for some time in the treatment of true gout with most satisfactory results in acute cases. The chronic ones were often benefited symptomatically, but marked arthritic changes were not influenced. In acute articular rheumatism, it made the patients worse. The drug should be given intravenously, from ten to thirty ampoules of five c. c. each, constituting a course of treatment. Since the results in chronic cases were not very favorable, the remedy is not advised for this class of patients. Massage should accompany treatment with fonabisis.

Reactions and Results in Treatment of Cerebrospinal Syphilis.—George Draper (*Journal A. M. A.*, Feb. 5, 1916) reports upon thirty-eight patients who were given a total of 1,126 intravenous injections and 355 intraspinal injections of autoserum, the reactions and benefits of treatment being carefully studied. The commonest type of reactions were those grouped as anaphylactoid, comprising slight skin flushing, acute shock, urticaria, nausea or vomiting, diarrhea, chills, and malaise. These reactive symptoms varied from mild to most severe, but seldom were they so severe as to prevent the patient's desiring a continuance of treatment. The anaphylactoid phenomena appeared at some time in about fifty-five per cent. of the cases and followed the intravenous injections, seldom before the fourth. Once they had become manifest, subsequent injections always produced them. Other

minor discomforts also followed the intravenous injections at times, but next most distressing were the pains which commonly ensued after intraspinal injections. Although these were not infrequently severe, they seldom caused the patient to desire the cessation of treatment. Despite the many disturbances and discomforts associated with the treatment of cerebrospinal syphilis, it has proved more than worth while if instituted early and continued actively for a long enough time; for of the thirty-eight patients treated there were twenty-six who were useless before treatment and twenty-two who were rendered capable of working full time after the treatment. It was found that in order to secure the best economic results, the patients should be encouraged to undertake some work as early in the treatment as possible and to continue and increase this as fast as they could.

Treatment of Adynamic Conditions.—L. Camus, at a meeting of the Société de biologie, Paris (*Presse médicale*, December 2, 1915), recommends, in the treatment of disorders attended with marked general weakness, the use of the alkaloid hordenine in preference to epinephrine, the action of which on the circulation it reproduces. Hordenine is asserted to possess a toxicity less than that of epinephrine. It is, moreover, very soluble in water and its solutions remain unchanged on keeping, whereas epinephrine solutions, if they are to be stable, require the addition of an acid. In adynamic states hordenine has been observed to exert a favorable influence.

Intravenous Use of Calcium in the Treatment of Tuberculosis.—Thomas J. Beasley published a preliminary report on this subject in the *Indianapolis Medical Journal* for January 15, 1915, and now makes a further report in the same journal for January 15, 1916. A final report cannot yet be made because much research work has not been completed, and the clinical data remain to be compiled. The purpose of the treatment is to saturate the blood with the normal amount of calcium, so it is imperative that the strictest individualization of the patients be made. Saturation is attained more quickly in a patient who weighs eighty pounds than in one who weighs 175, but by careful study of the coagulation time we are able to regulate the dose so that both failure to saturate and oversaturation of the blood may be avoided. The bacteriological findings recorded thus far seem to indicate that this treatment has a distinct bactericidal effect upon the tubercle bacilli.

Treatment of Diseases of the Larynx.—James Joseph King, in the *International Journal of Surgery* for January, 1916, states that in acute laryngitis, constitutional treatment is most important; rest of the voice and increased elimination. If severe, the patient should be in bed. In children, diphtheria must be kept in mind. Steam inhalations are used, one dram of the compound tincture of benzoin to a pint of boiling water. Intratracheal injections of soothing substances, such as menthol in liquid petrolatum are indicated. Tincture of aconite is given at the outset in drop doses every

fifteen minutes until free perspiration is produced; also calomel, one tenth grain every fifteen minutes for ten doses, followed by a saline in five or six hours. Codeine, grain one half, every three or four hours, is used if cough is present. As an expectorant, Coakley recommends:

R Olei ricini,
Syrupi acaciae,
Syrupi ipecacuanhae, }āā 3j.

M. et Sig.: One dram every three hours.

It should not be administered when bronchopneumonia is present.

In edema of the larynx, give cracked ice and apply cold to the neck. The edematous parts of the larynx may be scarified; twenty per cent. cocaine should be used as anesthetic for this purpose. If there is danger of suffocation, tracheotomy should be performed.

Action of Trichlorbutyl-Malonic Ester on Cough.—Pharmacological experiments have shown that this substance is harmless in large doses when given to rabbits, that it produces a general diminution in reflex excitability and that it does not depress the blood pressure. Ernst Meyer (*Berlin. klin. Woch.*, August 16, 1915) undertook the therapeutic use of the drug in marked and persistent cough. He gave an ammonium salt of the drug on account of its greater solubility and mild taste. From 0.5 to 0.6 gram of the drug was given daily, the single doses being 0.1 or 0.2 gram. In some instances twice the larger dose was given per diem. In most cases there was a prompt alleviation of the cough, although the larger doses were sometimes needed in obstinate cases. A special indication was found in pulmonary tuberculosis with hemoptysis in small amounts; the drug almost at once checked the loss of blood, even when all other measures had failed. The mechanism of this latter action is not understood.

Chemical Therapy of Pneumonia.—G. B. Cavazzutti, in *Semana Medica* for December 9, 1915, states that, apart from the symptomatic and supportive treatment of pneumonia, there are now three other methods, serum therapy, vaccine therapy, and chemical therapy. The serums are the anti-pneumococcal and that from convalescents from pneumonia. Of the vaccines, the haptinogen of Mendez is giving good results in Argentina. Two new drugs are of value, of which the first, optochin, in doses of 0.25 gram six times daily by mouth is efficient before hepatization is established. This action sustains Roemer in his contention that the fibrin in the lung protects the pneumococcus from the antiseptic action of medication. The other drug is sozoiodalic acid, usually administered in the form of the salt of sodium or potassium, in daily doses of 0.05 gram hypodermically. It seems greatly to shorten the disease, frequently bringing about the crisis in twelve to twenty-four hours. Sozoiodalic acid is a white crystalline solid, soluble in water, containing iodine fifty-four per cent., phenol twenty per cent., and sulphur seven per cent., and combines readily with almost all metals to produce crystalline salts.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

August 16, 1915.

Typhoid Fever and Appendicitis, by Georg Wolfsohn.—The differential diagnosis between typhoid fever and appendicitis has been found hard at times, but since the introduction of general prophylactic vaccination, the difficulties have been greatly increased. Wolfsohn has separated off a clinical group of cases in which the onset of symptoms was slow with complaint of headache, pains in the extremities, and a sense of exhaustion. More or less refractory diarrhea was usually present, with some degree of abdominal distress. Blood was frequently observed in the stools. The patients seemed to be in good general condition, had slightly flushed faces, coated tongues, and low fever with pulse rate in close correspondence with the height of the temperature. Physical examination showed the abdomen to be soft and free from rigidity or resistance and to be insensitive to pressure, except in the region of the appendix, where it was markedly tender. Bacteriological examinations of the stools, the urine, and the blood were negative for typhoid bacilli. Operation revealed slight involvement of the appendix only, consisting of small hemorrhages into the mucosa or superficial erosions. From the interior of several of these appendixes typhoid bacilli were cultivated, either in pure culture, or along with organisms of secondary infection. The condition described as yielding a characteristic clinical picture simulating both typhoid fever and appendicitis was observed only in immunized persons. It is suggested that the localization of the organisms occurred as a result of their invasion by way of the blood stream and that they produced a modified and low grade inflammatory reaction through opposition to infection on the part of the tissues of the host.

PRESSE MÉDICALE.

December 2, 1915.

Pyocephalus in Cerebrospinal Meningitis, by Chiray.—The condition referred to consists in a distention of the cerebral ventricles, not with clear fluid as in hydrocephalus, but with pus or seropus. It is due either to suppurative ependymitis, unusual pressure causing ventricular distention, or secondary loss of connection between the ventricles and the pericerebral arachnoid spaces where the infection originated. The condition was found at autopsy in three chronic protracted and ultimately fatal cases of cerebrospinal meningitis. Stress is laid on the fact that in such cases the meningitic process elsewhere may have completely subsided, persisting only in the ventricles and resisting the customary beneficial effects of antimeningitis serum when injected into the spinal canal. As much as eighty c. c. of purulent fluid may collect in each lateral ventricle, and the fluid spurts out when these cavities are opened post mortem. Clinically, pyocephalus is characterized by persistence of symptoms after the earlier stages of the disease have run their usual course, the coma, headache, delirium, sleeplessness, and fever having yielded to serum treatment.

Rigidity and Kernig's sign fail to disappear and an exacerbation of the symptoms takes place, against which large doses of serum prove unavailing. Rapid emaciation, a characteristic somnolence and mental dullness, sphincter trouble, stiffness in motor acts, visual and auditory disturbances, weak pulse, Cheyne-Stokes breathing, and occasional vomiting are also witnessed. Lumbar puncture shows an improved cerebrospinal fluid, in spite of the clinical aggravation, difficulty of securing more than a few drops of the fluid, and nonabsorption of injected serum. The treatment consists in ventricular puncture, preceded by trephining if necessary, evacuation of a portion of the purulent fluid, and injection of antimeningitis serum.

PARIS MÉDICAL.

November 6, 1915.

Penetrating Wounds of the Chest, by E. Rémond and R. Glénard.—In a series of 110 cases of perforating wounds of the chest which were under observation in a military hospital for a period averaging ten days, only twelve deaths took place. Six of these twelve, moreover, had other wounds which compromised the issue. But little difference in mortality was noted between the cases in which a point of exit of the bullet or other missile was manifest and those in which the foreign body remained in the chest. Wounds due to shell fragments hardly appeared any more dangerous than wounds due to bullets, probably because the former bodies, when large, caused prompt death through tearing of a large portion of lung tissue, the wounded men therefore never reaching the hospital. Complications included protracted hemoptysis in eight cases, hemopneumothorax in twenty-five, empyema in twelve, lung congestion and bronchopneumonia each in five, friction rubs in four, simple bronchitis in three, and lung abscess with hernia in one. Early immobilization and isolation of the wounded, abstention from probing, and expectant treatment unless hemothorax threatens to bring on complications owing to its large bulk or to infection, are the chief points in the management. Early operation for empyema should be resorted to where fever is persistent (even though slight) and frequent exploratory puncture reveals the purulent nature of the fluid.

BRITISH JOURNAL OF CHILDREN'S DISEASES.

January, 1916.

Squint, by N. Bishop Harman.—In a series of school children, 20 per cent. were found to have squint, which affected girls about twice as frequently as boys. The eye is controlled by the "fusion faculty" of the brain. It is the power of the brain to fuse into one satisfactory picture the two images seen by the eyes. Binocular vision is not present at birth. It begins to come into play at the third or fourth week of life. For the most part squint appears in those who have an error of refraction. After the squint is established, children rarely complain—the struggle has been given up. If squint is neglected, the squinting eye becomes blind for all the finer purposes of the eye. In some cases of squint there is a strong hereditary factor. The squint itself is not inherited, but the conditions that favor

its onset are. Some cases, however, are associated with definite failure of development of certain muscles of the eye running through several generations. In these cases it may be said that there is a true inheritance.

Cerebrospinal Fever, by Edward Cecil Williams.—Of eleven cases observed, seven ended in recovery and four fatally. Persistent head retraction proved to be an unfavorable sign, as was also the absence of the abdominal reflex. The loss of this reflex indicates, in all probability, a meningomyelitis of the lower dorsal segments of the cord. Optic neuritis was present in five of the cases and in one fatal case it went on to complete atrophy. One case showed retention of urine. The spinal fluid was more or less turbid in all cases. In the cases which showed a tendency toward recovery the fluid was generally under pressure. The predominant cell in the fluid was the polymorphonuclear. In the milder cases the cells were well preserved, and, as a consequence, the organisms were intracellular; in the more severe cases many of the cells had a tendency to burst and the organisms were extracellular. Iridocyclitis was well marked in two cases, one of which terminated favorably. The treatment of the eye condition was atropine locally and potassium iodide internally. A definite rash appeared in four cases, three of which proved fatal. As regards treatment, lumbar puncture alone is of greatest therapeutic value as it tends to decrease intraocular pressure and relieves headache, diminishes head retraction, and induces sleep. More than thirty c. c. should not be removed at a time. It is usually performed without an anesthetic. The quantity of serum injected should be less than that of the fluid withdrawn—in children not more than ten c. c. at a time. Puncture, in acute cases, can be performed daily or twice daily. Serum should not be injected more than once daily. Hexamethylenamine, grains five, in a pint of water was given daily as a routine measure. Cases that tend to do well show a loss of turbidity of the spinal fluid, a gradual fall in temperature, and an increase of appetite. In fatal cases, there are irregular temperature and marked emaciation. Cases should not be discharged until two swabs, taken at intervals, from the nasopharynx, are free from organisms.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

January 25, 1910.

Paralysis of the Recurrent Laryngeal Nerve in Mitral Stenosis, by Joseph Rosenthal.—Two cases of this rare condition are reported in detail and are made the subject of a review of the literature. The first case was observed in a boy four and a half years old, the second in an adult man. Both cases resulted fatally, but no necropsy was permitted in either. The physical examinations revealed evidence of dilatation of the left auricle, which was confirmed by Röntgen examination. It is held by the author that, in addition to mitral insufficiency which leads to ventricular hypertrophy, there must be a stenosis of the mitral valve to produce left auricular dilatation and direct or indirect compression of the recurrent nerve.—John Guttman and Selian Neuhoof also contribute a paper on the same subject, embodying the report of a case. They

studied the condition both clinically and graphically by x rays and electrocardiography. They came to the conclusion that the compression of the nerve was the result of dilatation of the pulmonary artery rather than of the left auricle. Pericarditis was also present in their case, and the compression produced by the pulmonary artery was such that the pulse and blood pressures in the left arm were decidedly less than in the right, thus completing the clinical picture of an aneurysm.

Diagnostic Methods and Pathological Constants in Idiopathic Epilepsy, by Charles A. L. Reed.—From Reed's personal experience and close analysis of a very large series—over 700—of cases of idiopathic epilepsy, deductions have been attempted regarding the etiology. In practically 100 per cent. of the cases intestinal stasis of a mechanical type was present. The presence of this stasis was proved by x rays or by surgical operation, or by both in a large number of patients. This stasis was believed to be related to the production of the epileptic condition through the action of toxic substances. The intoxication was found to be one associated with a marked degree of acidosis. This was manifest in the high acid indices of the various secretions, including the urine, sweat, and gastric juice, and the saliva, even, was found to be acid in reaction in every case in which it was tested. In accordance with the theories of Martin Fischer, this acid intoxication was held to produce areas of focal edema in the brain, probably in the course of the internal capsule. In addition to these facts, operative work in the abdomens of many epileptics revealed the constant enlargement and induration of the retroperitoneal, and especially the retrocecal lymph glands, and solitary follicles. From these lymphatic glands it was often possible to isolate a characteristic organism, which agreed in every detail with one previously described by Bra as being found in epileptics and capable of reproducing in rabbits a condition identical with human epilepsy. To this organism the name, *Epileptococcus*, has been given, and it is now regarded by the author as the specific etiological factor of the so called idiopathic form of epilepsy. Upon these observations it seems possible that by the combination of suitable measures to correct the intestinal stasis and the use of a vaccine a rational therapy of the disease may be elaborated.

Fatal Diabetic Coma without Diacetic or Beta oxybutyric Acids, by G. W. McCaskey.—A rapidly progressive, fatal case of diabetic coma in a middle aged woman is recorded on account of the unusual, if not unique occurrence of such coma in the absence of either diacetic or beta oxybutyric acids in the urine, although there was an abundance of acetone. It is possible that the coma was due to acetone, which is known to be a central depressant.

MEDICAL RECORD.

February 5, 1910.

The Value of Transfusion in Atrophic and Devalitized Infants and Children, by Louis Fischer.—Transfusion is of value in marasmus and acute infectious diseases, especially of the hemorrhagic type. The method of choice is the direct or syringe method, which avoids traumatism, pain and

shock. Furthermore, the exact amount transfused is known, and by adding sodium citrate to prevent clotting, the blood may be transported from the donor to a recipient at a little distance. The blood may be injected in infants into four places, the median cephalic vein, the median basilic, the jugular, and the longitudinal sinus. Temperature in cases with fever always drops markedly soon after the injection of the blood.

Influenza and Grippe in Infants and Children, by Carl G. Leo-Wolf.—In influenza in children there may be a punctate erythematous eruption on the chest, abdomen, and sides of the limbs, resembling scarlet fever. Otitis media may simulate meningitis, and the ear drums should be carefully examined before making a diagnosis. The prognosis is usually good and starvation must be avoided. Argylol and adrenaline applications are of benefit in rhinitis, while wet compresses and the bronchitis kettle help the tracheal and chest conditions. As a prophylactic measure fondling and kissing of children should be avoided, as well as promiscuous expectoration.

Enteroptosis, by F. Robbins.—The cause is lack of tone of the anterior abdominal wall, and the condition is best revealed by radiography. Gastropexy is indicated in cases of gastrocoloptosis where the patients are unfit for work from gastrointestinal disturbances, while an abdominal supporting bandage is of value in all cases. Exercise, cold baths, electricity, and massage give relief.

ARCHIVES OF DIAGNOSIS.

October, 1915.

New Symptom of Ulcer at or about the Duodenal Portion of the Pylorus, by H. Stern.—The patient thus afflicted tries to stretch out his epigastrium because of the relief from pain thereby afforded. He often prefers standing to sitting. When in discomfort while sitting, he assumes a slanting position such that chest, abdomen, and legs form a perfect incline. When in pain while in bed, he tries to lie as straight as possible, often on the left, but never on the right side. This postural sign is of value in differential diagnosis. It is not present in gastric ulcer. In gallstone colic, the patient usually lies on his left side with the legs drawn up. In appendicular colic, as well as in the common disorders of the cecum or colon, the patient, when sitting, bends over; when lying, he flexes his legs.

JOURNAL OF BIOLOGICAL CHEMISTRY

January, 1916.

Studies in Experimental Diabetes after Pancreatotomy.—Epstein and Baehr, by means of the newer methods of blood examinations, were able to follow the entire course of the hyperglycemia which develops after pancreatotomy. They conclude that the high figures obtained in human diabetes are probably due to the retention of sugar resulting from a renal insufficiency. It appears also that a progressively increasing percentage of sugar in the blood is an indication of impending death. They believe also that the accumulation of sugar in the blood is largely due to the gradual mobilization of carbohydrate from the liver and muscles.

Proceedings of Societies.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Regular Meeting, Held December 18, 1915.

Dr. THOMAS S. SOUTHWORTH, of New York, in the Chair.

Pedology and Its Possibilities.—This paper, by Dr. E. Bosworth McCready, of Pittsburgh, appears in this issue of the JOURNAL, page 342.

Dr. W. B. NOYES observed that the paper by Doctor McCready was wonderfully stimulating. The question arose how was the work to be done in a great city like New York, where there were only two physicians examining the mentally defective children for all the public schools. The problems were presented on a wholesale scale. The public schools had ungraded classes, increasing in number and in equipment every year. The greatest handicap lay in the necessity of taking care of many defectives too low grade in intellect to profit by teaching and an obvious danger or annoyance to the other more normal children. Surely the public school ought not to care for idiots or imbeciles, but there was no existing legal control that could force the parents to send these children to an institution. At the best, the facilities for caring for low grade as well as for high grade children were meagre. Doctor Haberman was doing a great work at the Vanderbilt Clinic and so was Doctor Schlapp at the Post-Graduate. Bellevue had recently another clinic. The private charities had neglected the work of weeding out these mentally defective children from the normal. There were hundreds of charitable institutions which would not take even a high grade mentally defective child. Therefore they were forced to take these children and place them in Randall's Island. The greatest need existed for institutions to care for the morons and criminal cases. The whole system here was overbalanced; overweighted in some instances and underweighted in others. In its essence it was associated with politics. They saw the hopelessness of meeting this ever increasing problem. The delinquent and defective were increasing and little was being done to meet the growing conditions in an efficient way.

Doctor Haberman commented on the vastness of the subject of pedology, and the difficulty of actual clinical procedure in sifting out the many important individual problems embodied in the general subject itself, problems entailed in diagnosis, therapy, and prophylaxis, as well as those of sociological consequence. He suggested how a certain amount of simplicity could be introduced, and outlined the method of psychoclinical examination as carried out at the Vanderbilt Clinic of Columbia University in the work of clinical psychology, of which he had charge.

He first showed (with lantern slides) schemata of three series of groups of conditions—the functional, organic, and those either functional or organic or both—and the problems involved by each group. So, for instance, under the functional series the retarded or backward group entailed four causes, i. e., *a*, pedagogical, *b*, environmental, *c*,

physiological, and, *d*, psychological, and each of these was a problem in itself. Under the organic series, the largest group, that of the idiots imbecile and debile, involved entirely different factors, namely, those of heredity, parturition, glandular dystrophy, syphilis, infections, etc. Finally, the largest group in the third series, and probably the largest of all the groups, that of the psychopathic constitutions involved, beside any of the factors already mentioned, those of delinquency, criminality, and sociology.

This last group was immensely important, not only because these cases were amenable to treatment, but because of their great social menace and their ever increasing numbers. The profession, the medical colleges, and the community were entirely asleep to the grave problems here involved. The lack of interest was astounding! If he had an incurable epileptic, he knew several places to which he could send him. If he had a hopeless idiot or imbecile, he likewise knew how to dispose of him. But if he had a really curable psychopath, if he had, for instance, a remarkably clever young pickpocket nine years old, he was at his wits' end what to do for him, there being no hospital or institution to accept him. In the latter case, after consultation with the social service department, he concluded there was nowhere to place the boy, and he had to let him slip back into the streets again. How much more the city and State were going to pay in the long run for that boy and the damage he was destined to do, just because the authorities were not far sighted and generous enough to build an institution where he could be treated and trained *now*!

Dr. H. R. HARROWER made a strong plea for the application of empirical organotherapy in every day private practice. He stated that they did not seem to realize that they could apply to their daily practice the fundamental principles of some of the conditions described and prescribe organotherapy. This kind of therapy was purely empirical at the present time, but every advance in therapeutics had been based upon empiricism. Since they did not know the exact doses in which to give the extracts of the various glands in conditions such as those so interestingly considered by Doctor McCready, they trusted to the physiological action of the organs of the body to take up what they needed for their own elaboration and to discard what was superfluous. Organotherapy was available for adults as well as children, and must be considered from the practical standpoint in their daily practice.

Dr. H. B. SHEFFIELD's views were entirely in accord with those of Doctor McCready. He was hardly in a position to add anything worthy of their consideration. He was keenly interested in the highly instructive paper. He was not much of a believer in heredity of mental deficiencies, particularly of the type of cases that yielded to special attention. The more he saw of amentia, the more impressed he was with the fact that the great majority of these cases were traceable to disease or injury of the mother during pregnancy; injury to the child during or after delivery; acute febrile diseases; intestinal intoxication; faulty environment and education; and sense deprivation. Even the pathological changes in the ductless glands which gave rise to

cretinism and some forms of infantilism were most frequently of postnatal origin. In other words, amentia to a great extent was preventable, and within natural limits every community could control its amentia ratio. The diagnosis of amentia in infants was far more difficult than in older children, especially because mental tests were not reliable. He frequently came across babies who had, in a hurry, been sentenced to be total idiots, but as a matter of fact were suffering from moramentia, i. e., delayed mental development resulting from faulty metabolism, for example, rickets, sense deprivation, or isolation. Conversely, they occasionally met a case of pure amaurotic idiocy that was diagnosed as rickets, because in both affections muscular atony formed a prominent symptom. They must ever bear in mind that not every child with a small head or a large head was an idiot, for they might be dealing with ordinary disfigurement like oxycephaly or marked rachitis. They must be careful also not to mistake a Mongolian idiot for a patient with bad adenoids and hurry to remove them on general principles. Were medical men as solicitous about the mental condition of their patients as of their general health, the number of mental defectives could be reduced to a minimum. Moreover, the management of these cases could be put on a very much more successful basis.

As matters stood today they were hardly justified in speaking of a cure in these cases. To be sure, organotherapy was working wonders in amentia associated with anatomical and functional disturbances of the ductless glands, but even at its best a cretin never attained normal mentality with thyroid feeding, and not even after thyroid transplantation. Some time ago he was encouraged in the belief that cranial decompression would prove curative in so called paralytic amentia, but after carefully observing several cases operated upon, he was beginning to doubt its therapeutic value, more particularly as regards mental improvement, unless the operation was undertaken immediately after the cranial injury, i. e., before degeneration of the brain had taken place. Finding, then, that their present methods of medical and surgical treatment alone had thus far failed to accomplish remarkable results, and that, on the other hand, in conjunction with physical and mental training and education they were enabled to help aments to take care of themselves and possibly be useful also to the community, it was imperative for them to become familiar with these therapeutic measures, regardless of whether or not they were initiated by laymen.

Achondroplasia, Rickets, Etc.—Dr. CHARLES HERRMAN discussed the following topics: 1. Achondroplasia as represented in antique statuettes. 2. Achondroplasia in the paintings of some of the old masters. 3. Fetal chondrodystrophy or achondroplasia. 4. Symptoms of the condition in childhood and adult life as shown in eleven cases personally observed. 5. Its pathology contrasted with that of rickets. 6. Skeletal changes in the bones of the extremities, base of the skull, vertebrae, sacrum, and pelvis. 7. Differentiation from rickets, cretinism, and osteogenesis imperfecta. 8. Röntgenological changes compared with those found in rickets

and cretinism. 9. Heredity illustrated by pedigree charts.

Dr. CHARLES B. DAVENPORT had thought he might have something to say, but the admirable way in which the speaker had presented the subject left very little to add. Knowing that it was expected of him to discuss the inheritance of achondroplasia, he had looked over the recent monograph of Rischbieth to see if there was any evident law of inheritance of this trait. Inheritance of a trait might be direct or indirect, skipping generations, or it might be that the trait was a complex of inheritable units. The most extensive pedigrees gathered indicated the probability that achondroplasia was inherited directly as a positive character. Many more of the pedigrees were wholly fragmentary. They did not show direct inheritance, but that might be because they had not been gathered in the right way. The Eugenics Record Office found that the only way to get accurate family histories was by going to the homes and making inquiries there. Much more complete and accurate histories were thus obtained than the private physician had time to collect or the institutional physician could obtain. The fact of apparent direct or dominant inheritance of achondroplasia became of especial interest in view of the fact that abnormalities of the extremities usually followed the dominant type; for example, polydactylism, syndactylism, crooked fingers, and others. He had lately been studying the law of inheritance of osteopetrosis and found that abnormality of the long bones was also inherited in direct fashion. For some time he had been trying to work out the laws of heredity of stature. It was known that in some families parents and children were all tall; in others, all short. There had been no satisfactory study of this subject since Galton's time. Galton estimated that there were over a hundred elements involved in a person's stature, and therefore it was an exceptionally good trait for the study of heredity. They studied heredity differently now. They sought the unit characteristics, and if there were so many units in stature, as Galton believed, it would be the worst possible trait to study. It was probably far less complex in its elements than Galton thought. To get at the laws of inheritance he had been making measurements on all of the individuals in a number of families near his home. It appeared that there were some families characterized by short bodies and long appendages, and others in which the bodies were long and the appendages short. The existence in normal people of hereditary tendencies for short appendages perhaps threw some light on the pathologically short appendages that were found in achondroplasia.

Dr. L. E. LA FETRA had found it a great pleasure to hear Doctor Herrman's paper and to see his interesting pictures. They represented hard work and careful study. A typical case of achondroplasia was easily differentiated from a case of rickets or cretinism. However, there were cases which were a mixture of cretinism and chondrodystrophy. The early writers thought that chondrodystrophy was a type of rickets. The points emphasized by Doctor Herrman would determine which were chondrodystrophy and which were cretinism. The x ray of the arms and other long

bones, and particularly of the skull in early cases, would show the characteristic changes which enabled them to make a diagnosis. The doctor evinced interest in the x ray of the vertebra which showed narrowing of the spinal canal. He cited a case which showed narrowing of the foramen magnum in the occipital bone to a small triangle shaped opening, which had led Doctor Norris, pathologist of Bellevue Hospital, to believe that compression hastened the early death of the patient.

Dr. G. D. SCOTT spoke of the theories of achondroplasia. In Egypt these persons were thought to be the reincarnations of animals. There were two theories of Jansen, of Leyden: 1. Increased tension or restriction of the amniotic fluid in intrauterine life between the third and the sixth months, but this theory did not explain why certain bones were affected. 2. A factor of loss in intrauterine life. It might be possible that something was lacking in the mother that affected the development of certain bones. This was the condition in the Dachshund or Skye terrier. In Scotland on the island of Skye there were many dogs so affected. These dogs invariably were poorly fed.

Dr. CHARLES HERRMAN said that the first description of this condition in the living was given by Parrot, who called it achondroplasia. He understood fully the pathology, for he distinctly stated that it was a dystrophy of the primary cartilage occurring in the early part of intrauterine life. The name was somewhat shorter than in chondrodystrophia fetalis, and was pretty generally used in France, England, Italy, and the United States. As a name was after all merely a label, it seemed likely that it would remain. The administration of thyroid extract had practically no effect. Sumita had shown that the changes in the thyroid which had been described, were not characteristic of cretinism, and similar changes might occasionally be observed in the thyroid of otherwise normal subjects. Jansen's theory of amniotic pressure had been disproved by Hart and others. The skeletal changes in the Dachshund and Skye terrier resembled in a general way those of achondroplasia, but the characteristic pathological changes had not been found. In the bull, dog, and calf Seligmann had found changes in the thyroid which indicated that these animals represented cases of cretinism.

AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY.

Sixth Annual Meeting, Held at Philadelphia, November 10, 11, and 12, 1915.

(Concluded from page 333.)

Joint Session with Philadelphia County Medical Society.

Mr. SHERMAN C. KINGSLEY, of Chicago, in the Chair.

Wages and Employment as Factors in Infant Mortality.—Mr. SHERMAN C. KINGSLEY, of Chicago, drew attention to the fact that districts with the largest measure of poverty presented a higher mortality from all causes than did localities better

circumstanced. While it was difficult to assess baby deaths definitely against low income, poverty involved housing, overcrowding, quality and amount of food, sunlight, air, and wholesome leisure for mothers. He pointed out that infant welfare work had many aspects in common with the early anti-tuberculosis crusade, and that the achievements of the former were the result largely of overcoming the difficulties of circumstance and environment. The correction had come through wisdom and advice, the gifts of the community, communicated to mother and child by the doctor and nurse. Deep seated and obstinate difficulties still remaining, however, were those due to inadequate wages. With the baby, as with communities, life and health were purchasable; figures showed that babies living in one room had less than half the chance of those living in four; the infant whose father made less than ten dollars a week had about half the chance of life of the one whose father earned twice the amount. Life saving advice to the mother must be accomplished by an industrial order which gave a living wage to the father.

Maternity Insurance.—This paper, by Dr. LEE K. FRANKEL, of New York, appeared in the NEW YORK MEDICAL JOURNAL for December 18, 1915.

The Value of Negative Genetics.—Professor E. G. CONKLIN, of Princeton University, in answer to the query, "How the number of births of children receiving a faulty heritage from their parents might be reduced?" said, theoretically, by segregation or sterilization of the parents; practically, this could be applied only to the most defective individuals who were usually under the care or duress of the State, but it would not greatly reduce the number of defective children. Many such children born of normal parents still carried the taint in their blood; if such persons could be prevented from leaving offspring, a much larger reduction in the number of defective children would result. In many defective children, born of apparently normal lines, the defects might be traced to adverse environment; but in many cases their cause was wholly unknown. If the methods of animal and plant breeders could be rigidly applied to man, there was no doubt that a great improvement would be effected in the human race, but for many reasons these methods could not be closely followed.

Mr. HOMER FOLKS said, that while in New York State there was a law looking toward the sterilization of the undeniably defective, it had not been urged by the social workers of the State, and had remained a dead letter. He thought it the consensus among social workers in New York that the segregation of the mentally deficient should be brought about.

Dr. CHARLOTTE ABBEY, of Philadelphia, believed that the fact of thirty per cent. of normal parents bearing defective children was due to lack of responsibility and ignorance of the laws of nature. When teaching emphasized the fact that the act which brought a child into the world should be kept sacred as Nature intended, children would be well born.

Professor CONKLIN said that undoubtedly the best method of the prevention of reproduction by

the seriously defective was in one of the two methods suggested. Segregation would probably be less offensive to the public mind and more readily enforced than sterilization and was in large measure being done. The segregation of none but the dependent class could be brought about, but this could and ought to be done.

Coming now to the positive side of eugenics, it was probable that much more could be done than on the negative side. The rate of breeding among the seriously defective was not very high. On the other hand, the great danger was that the good stock would disappear; the good heredity lines were running out. A campaign of education was needed, emphasizing to every man and woman that they lived not unto themselves; that their most important duty was to leave in the world wholesome, happy children who would perpetuate their ideals. The saddest thing he knew was to see splendid families from which their great men had come, disappearing. The maxim was sometimes heard, "As rare as a dead mule or a Quaker baby," and certainly the fine stocks were running out in many places. If the reproduction of the best was prevented, and the reproduction of the worst allowed, the race was doomed.

Preparation for Motherhood.—Dr. FLORENCE H. RICHARDS, of Philadelphia, said that if it was true that the women hold the destiny of the nation, it behooves them to prepare the girls to be good wives, mothers, and home makers. This knowledge came by careful training, which was given by but few parents to their growing girls, because of either ignorance or false modesty. Of necessity, therefore, it must be done in the higher schools by women physicians able to speak with authority. A broad course in eugenics for girls should include a study of the family and the home and their value to the State; home nursing, a consideration of adolescence, marriage, reproduction (from the biological standpoint), care of the baby, the racial poisons, prostitution, etc. Girls receiving such a course of study would realize more fully the sacredness and responsibility of marriage and their duty to the next generation.

Doctor GREGORY, of Philadelphia, said the well trained biologist was needed to give to girls and mothers the information outlined by Doctor Richards. Special stress should be laid upon the importance of the right attitude toward right. It was beautiful to watch the development of a flower, but the attitude toward human life had been abnormal and that that which was the highest and most beautiful of all was looked upon as something to be ashamed of. Mothers, as well as daughters, were capable of correct training in this respect, and with this training given to mothers much would be gained without waiting for the next generation.

President's Address: Are Babies Worth Saving?—Mr. HOMER FOLKS, of New York, thought the only contribution he might hope to make to the meeting was an attempt to interpret some phases of the work of the association to the general public. Being one of that general public, he might, perhaps, sense some of its difficulties more clearly than the professional members, considering the matter from the layman's point of view under, 1, the

underlying purposes of infant welfare work; 2, the largeness of opportunity; 3, agencies upon which the chief reliance must be placed. Under the first heading he found the outstanding fact to be that the work was preventive rather than remedial. In a very few years the infant welfare movement had changed from the dealing with the few for curative purposes to dealing with the multitude for preventive purposes. From every point of view infant welfare must be regarded as raising the level at which the struggle for existence occurred, and not simply as a concession to their humane instincts. From the point of view of the largeness of opportunity, great encouragement was found from the history of recent years that infantile illness and mortality were preventable with relatively little effort and expense. Compared with other large public health movements, the reduction of infant mortality was simplicity itself. The New York State Health Department stated that there were about 300,000 deaths per annum in the United States among infants under one year of age and that 150,000 of these were preventable. For this work elaborate institutions were not required. The need was chiefly for plenty of paper, printer's ink, and trained nurses. To one of his associates he was indebted for the suggestion that printer's ink, rightly and continuously applied, would save many babies. Baby saving was the bargain counter of philanthropy. Infant welfare work was the great opportunity of the moment to do something in which everybody must believe. Just how much could be done was uncertain because of many factors, chief among which was the lack of vital statistics. Concerning the agencies for this work, he found that the bulk of effort was being done by private initiative, in many cases some public aid having been received; with the tendency toward the transference of the work to public responsibility. It seemed to him that the work was clearly a public one. Public health generally was certainly a public function, and infant welfare an integral part of the public health problem.

The Possible Reduction of Mortality among Subnormal Institutional Babies.—Dr. S. JOSEPHINE BAKER, of New York, said that her paper was a combined experimental study of the Bureau of Child Hygiene of the Department of Health of New York, the Child Helping Department of the Russell Sage Foundation, and the New York Foundling Hospital. The high mortality of infants in so called foundling asylums was well known; but in properly supervised placing-out systems this mortality had been reduced. Available statistics of the relative value of institutional versus placing-out care had been generally founded upon a mass consideration of all infants in the institution and a broadly selected group of the better physical type of infants placed out. The present study was based upon the placing out of the physically poorest type of institutional infant. These included the premature infants, severe cases of marasmus, and other nutritional disorders. The selected group included only the type in which the institutional mortality had previously been approximately 100 per cent. The results of this procedure showed a mortality rate decreased to fifty-two per cent. The experiment covered a period of sixteen months.

Institutions as Foster Mothers for Infants.—Dr. ALFRED F. HESS, of New York, stated that sweeping denunciation of the institutional care of infants was not justified. If the administration was poor, the babies would suffer in homes or in asylums, and there was nothing inherent in either system which led to health or to disease. At present there was no established statistical basis of approach to the questions, as there was no approved method of calculating the death rate in an institution. The association would perform a valuable service if it devised a method having the approval of experts. It would then become possible to carry out comparative investigations of this important subject in various large cities of the United States.

Letters to the Editors.

COLD AND COLDS.

ELMIRA, N. Y., February 7, 1916.

To the Editors:

Much against my will—honestly!—I am compelled to take issue with the editorial article published in the JOURNAL, February 5th, entitled Cold and Colds. Especially this part of it:

"... What few colds affect us in summer are always traceable to careless exposure to a heat extracting draft, or to the effects of sitting or lying upon a cold stone or upon the ground. If colds are so produced in warm weather, why should they not be frequent in the season of cold and of great variation in temperature between indoors and out?"

Painstaking inquiry in every alleged "cold" encountered in the course of warm weather elicits no history of exposure to a draft or contact with cold ground in the great majority of instances, at least up here in the high timber. You folks in New York may be given to such habits.

The article also refers to the fact that animals compelled to stand in cold water for a time come down with certain diseases to which they are ordinarily immune. That is, very abnormal laboratory experiments—not in nature. If we are to be guided by laboratory experiments we must accept the bacterial, contagious idea without reserve.

If contributing or predisposing factors as commonly cited, are of any practical importance in prophylaxis, then the same factors are concerned in diphtheria. Yet who would dare to connect an attack of diphtheria with a draft or wet feet or sitting on a cold stone today?

People have less respiratory disease in warm weather because they are then easily coaxed out of their caves.

WILLIAM BRADY, M. D.

[Adami, who cannot be ignored as an authority in pathological matters, states in the latest edition of his *Textbook of Pathology*, written in collaboration with McCrae, that apparently cold and dirt are factors coequal with bacteria in the causation of rhinitis (?cold in the head). The most scientific bacteriologist must ponder this statement, even if it does agree with popular notions of etiology.—EDS.]

THE PROMPT TREATMENT OF GONORRHEA.

NEW YORK, February 5, 1916.

To the Editors:

I should like thus publicly to express my appreciation of the article entitled The Prompt Cure of Gonorrhea, by Dr. George A. Wyeth, in today's issue of the JOURNAL.

Doctor Wyeth publishes (presumably as his own) the method of treatment—with the principles underlying it—which was elaborated by myself, from the method devised and later abandoned, by Frank and Lewin, of Berlin, a method which was taught to Doctor Wyeth and my other assistants by myself, at the German Hospital Dispensary, and at the West Side German Dispensary, where it has been in use in my classes for many years—facts which Doctor Wyeth seems to have forgotten.

FREDERICK BIERHOFF, M. D.

A REPLY TO DOCTOR BIERHOFF.

NEW YORK, February 8, 1916.

To the Editors:

It is very pleasant to make public acknowledgment of my agreeable association with Doctor Bierhoff in 1907 and 1908, and I regret that the omission of the doctor's name from my article has so deeply annoyed him.

His letter contains the first intimation I have had that Doctor Bierhoff claims as his own the methods and underlying principles which my article sought to expound. As I see them, the fundamental points emphasized in my article are three in number: Pathology of acute gonorrhea; part played by phagocytosis; and the use of protargol. If Doctor Bierhoff has done any original work on either of these divisions, I fail to find it in the literature. It is, of course, impossible to know just what the doctor includes in his word "elaborated."

The pathology of acute gonorrhea was worked out, in 1894, by Finger, of Vienna, in whose clinic I first learned it in 1906. The general theory of phagocytosis was presented by Metchnikoff and credit usually goes to him without contest. Protargol is Heisser's own remedy and was the sheet anchor during my stay at Finger's clinic. The theory and practice of the abortive treatment of gonorrhea were taught in the Berlin clinics (clinics in which Doctor Bierhoff had been a student), particularly in the clinic of Doctor Frank with whom I worked in 1905—before my acquaintance with Doctor Bierhoff began—in fact I met Doctor Bierhoff through a letter from Doctor Frank.

I have gone somewhat into detail in this enumeration to indicate that the modern scientific treatment of gonorrhea is not of any one man's originating. It is a composite of the experience of many physicians, and nowhere have I claimed it as my own. GEORGE A. WYETH, M.D.

A CORRECTION AS TO SOURCE.

WASHINGTON, D. C., February 9, 1916.

To the Editors:

In the NEW YORK MEDICAL JOURNAL for January 29, 1916, there is a note on page 221 entitled, *The Dog as a Carrier of Disease*. The note is credited to *Pediatrics* for December, 1915. I have not seen the paper in *Pediatrics*, but it is evident that the subject matter is taken from *Bulletin 260* of the United States Department of Agriculture, a copy of which is being sent you under separate cover, or from some abstract of that bulletin. It would probably be advisable to note the original source of the article in order that persons interested may have the correct reference.

B. H. RANSOM, Chief, Zoological Division.

UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF ANIMAL INDUSTRY.

[The excerpt was from an editorial article in *Pediatrics* (December) as stated, no source of information being indicated therein.—Eds.]

HEAT AND COLD APPLIED TO THE EYE.

NEW YORK, February 9, 1916.

To the Editors:

In the course of the excellent article by Dr. Louis Weiss, printed in the *JOURNAL* for February 5th, and awarded first prize in the discussion on the treatment of ophthalmia neonatorum, occurs the statement that warm boric acid compresses should be bandaged over the eyes. This, I consider not only bad, but dangerous advice, and lest some of your readers take it literally, I must sound a warning note.

In the first place, no solutions warmer than 100° F. should be used, as heat increases the edema; and the proper application used by experienced ophthalmologists, is the iced pad mentioned by another of the contestants, Dr. Louis Neuwelt. But most important of all, under no circumstances must eyes discharging purulent secretions be bandaged. By so doing the secretions are locked up, a most unsurgical procedure, and the use of bandages in a case of ophthalmia neonatorum would almost certainly result in the loss of the eyes. Even in the case of the iced pad, the greatest care should be exercised that it is light, and rests on the lid by its own weight only, without any other pressure. Students of Dr. Herman Knapp will recall what stress he laid on the foregoing.

Another point that has interested me in reading this discussion, was the stress laid on protecting the second eye in

cases where only one eye was affected. Now I have seen many cases of gonorrheal ophthalmia in the adult restricted to one eye, but in all my experience (and as ophthalmologist for the New York health department, I have seen a large number of cases of ophthalmia neonatorum), I have never seen a case where both eyes were not affected. Inasmuch as the infection takes place during birth, with the head in the vagina and both eyes equally exposed to the infecting organism, it is hard to understand how one eye should escape. As a matter of fact, it doesn't.

ARTHUR S. TURNER, M.D.

120 WEST EIGHTY-SIXTH STREET.

[It is a sound rule that hot applications should never be made to the eye; but the authorities seem to agree that for cleansing purposes the boric acid in ophthalmia neonatorum should be warm—at about 100° F., as our correspondent suggests, but that continued applications should be cool, or less than 60° F.—Eds.]

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Physiological Chemistry. A Textbook and Manual for Students. By ALBERT P. MATHEWS, Ph.D., Professor of Physiological Chemistry, the University of Chicago. Illustrated. New York: William Wood & Co., 1915. Pp. vi-1040. (Price, \$4.25.)

This is one of the most satisfactory books on physiological chemistry that has appeared. Unlike most other works of the kind, it is equally good whether viewed from the standpoint of physiology or of chemistry; and the volume will be a useful addition to the standard works on both of these subjects. It is well balanced; it is complete, without being redundant; it gives a fair statement of the labors of the different workers in the various fields; it contains the result of the most recent researches on the subject; and, at the same time, it is an unusually readable book. The author has wisely avoided making his chapters mere catalogues of facts and records of experiments; he has, instead, adopted the more interesting but more difficult task of stimulating the reader's thought, while presenting what is known of the various topics under discussion. The last part of the volume contains an outline of practical work and methods, and is a statement of the course in physiological chemistry at the University of Chicago. To each chapter is appended a well selected bibliography, which cannot fail to be of use to every reader. A word of praise is due to the printers for their excellent work. The book abounds in tables, graphic formulae, equations, and other complicated and technical matter; and we shudder to think of what the author and readers might have had to endure if the work had been intrusted to less competent hands.

Medical and Veterinary Entomology. A Textbook for Use in Schools and Colleges as Well as a Handbook for the Use of Physicians, Veterinarians, and Public Health Officials. By WILLIAM B. HERMS, Associate Professor of Parasitology in the University of California, Consulting Parasitologist for the California State Board of Health, and Formerly Professor of Zoology and Parasitology in the San Francisco Veterinary College. Author of *Malaria, Cause and Control*, A Laboratory Guide to the Study of Parasitology, The Housefly in Its Relation to the Public Health, etc. New York: The Macmillan Company, 1915. Pp. xii-393. (Price, \$4.)

On account of the very important relationship that exists between man and certain of the lower animals in regard to the causative factors of disease, this book is timely. Every day the study of parasites fills a more and more prominent place in the control of human disease, and everything that helps increase our knowledge should be used.

In this volume the first few chapters are devoted to more or less general topics, then the insects are taken up in detail. The chapters on the mosquito are particularly good and contain a fund of valuable information. Those about the house fly are equally good. The illustrations are nu-

merous, well chosen, and well executed, and in every way this can be recommended as a textbook on this subject.

Chimie pathologique tropicale de la région atlantique. Par le Dr. G. DELGADO PALACIOS, Professeur à l'Université de Caracas, Venezuela; Membre de l'Académie de Médecine. Avec 3 planches en couleurs. Caracas: Lit. y Tip. del Comercio, 1914. Pp. viii-318.

The first part of this book treats of intestinal or fecal intoxications, and in particular of a substance which the author calls fecal carcoma. This is a kind of intestinal sand, and is said to be found quite commonly in human feces; moreover, it contains cholerythrogen which plays an important part in the pathology of tropical disease. Other subjects discussed are certain degenerative processes, diabetes, and intestinal disinfection. The author shows the relation of some of the chemical and bacterial phenomena which occur in the intestines; and he draws attention to various pathological conditions which result from these phenomena. The book is an important contribution toward the understanding of certain tropical diseases.

Interclinical Notes.

It is never too late to learn. The *Medical Press and Circular* for January 26th tells of Dr. R. de la Poer Beresford, medical officer for Oswestry, who has been M. D. for fifty-one years, yet has just taken the degree of Master of Hygiene at Liverpool University.

A new art seems to have come surreptitiously to the surface. A department store advertises a sale of pictures, "etched on parchment by well known artists."

A writer in the *Evening Post* for February 12th insists that we must always write "in the circumstances," because circumstances surround us. In the same issue of the paper is a letter dating from 1812, the writer of which shamelessly uses the forbidden expression, "under the circumstances." The trick of analyzing and trying to do away with idiomatic English seems to be peculiarly one of American schoolmasters. It is not to dictionaries and small grammars that we go for authority, but to the good writers of the past, who split their infinitives, used "above" as an adjective, permitted themselves to get under circumstances, etc., quite unconscious of the pain they would cause *a priori* spellers and grammarians early in the twentieth century.

Not long ago in these notes we alluded to a town which was undergoing abnormally rapid growth owing to the establishment of a powder factory. The *Survey* for February 5th gives a short and entertaining history of this town, Penns Grove, N. J., stating that the population is expected to be 20,000 in 1920, instead of being already at that figure as we alleged. We learn that a large number of citizens have yellow skins, owing to their work in picric acid, and are hence known as canaries. The local post office is in despair at the increase in its work, but Federal salaries are raised with difficulty. A nice jail has been constructed.

The February *Century* is the midwinter fiction number, and contains stories by Anne Douglas Sedgwick, Alice Duer Miller, Mary Heaton Vorse, William J. Neidig, and Stephen Whitman. There is also verse of considerable merit. The illustrations leave nothing to be desired and include a charming cover by Will Bradley.

There is, in the February *Century*, a study of the works of Edouard Detaille, an artist whose pictures give the impression that his vision is extraordinarily acute, as if he wore glasses that correct his astigmatism absolutely. As a slight astigmatism exists in the so called normal eye, no emmetrope has ever seen objects as clearly as they appear in Detaille's paintings. On the other hand, certain distinguished artists have very high astigmatism, of which they are probably unaware. Their blurred conception of objects they naturally place on canvas, and we have the well known "impressionism," that few people recognize to be pathological, or at least abnormal in its essence. In Detaille's pictures realism is pushed to such an extent that

they appear unreal, but this effect does not obtain in the halftone reproductions.

Apropos of some editorial remarks in the *Outlook* for January 10th on Professor Lowell's studies of the planet Mars, and the conclusion that the "canals" are the work of intelligent beings, we recall the information given us by an astronomer that Mars seems to the observer through any but the most powerful telescopes to be about the size of the end of an ordinary lead pencil.

Meetings of Local Medical Societies.

MONDAY, February 21st.—Medical Society of the County of New York.

TUESDAY, February 22d.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union (annual); New York City Riverside Practitioners' Society; Valentine Mort Medical Society, New York; Washington Heights Medical Society, New York; Woman's Hospital Society, New York; Therapeutic Club.

WEDNESDAY, February 23d.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, February 24th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Excelsior Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, February 25th.—Society of New York German Physicians; New York Clinical Society (annual); Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

SATURDAY, February 26th.—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 9, 1916:

Bryan, W. M., Passed Assistant Surgeon. Relieved at the Mobile Quarantine Station, and directed to proceed to the Marine Hospital at Chelsea, Mass. **Carter, H. R.**, Assistant Surgeon General. Granted four days' leave of absence from February 3, 1916; on termination of leave at Colleton, S. C., February 6th, directed to proceed to Whitney, N. C., to make an investigation of proposed dam in connection with studies of the relation of impounded waters to public health. **Cumming, H. S.**, Surgeon. Ordered to proceed to Richmond, Va., February 4, 1916, for conference with State Board of Health in regard to proposed legislation relating to water supplies and tidal waters. **Lancaster, J. F.**, Acting Assistant Surgeon. Granted seven days' leave of absence, from February 2, 1916. **Le Prince, J. A. A.**, Sanitary Engineer. Ordered to proceed to Whitney, N. C., to make an investigation of proposed dam in connection with studies of the relation of impounded waters to public health. **Phelps, E. B.**, Professor. Ordered to proceed to New York City for conference with City Bureau of Public Improvements, in regard to new method of sewage treatment. **Warren, B. S.**, Surgeon. Granted three days' leave of absence on account of sickness, from January 25, 1916.

United States Army Intelligence:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the week ending February 12, 1916:

Bierbower, Henry C., First Lieutenant, Medical Reserve Corps. After arrival in the United States, and

upon the expiration of such leave of absence as has been or may be granted him, will proceed to Fort Mackenzie, Wyoming, and report in person to the commanding officer of that post for duty and by letter to the commanding officer, Central Department. **Castlen**, Charles R., First Lieutenant, Medical Corps. Relieved from duty at Fort Bayard, New Mexico, to take effect at such time as will enable him to comply with this order, and proceed to Fort Bliss, Texas, and report to the commanding officer of the Second Battalion, Fourth Field Artillery, for duty with that organization en route to the Canal Zone, and then to report for assignment to permanent station. **Darby**, Taylor E., Captain, Medical Corps. Granted two months' leave of absence effective April 1, 1916. **Darnall**, Carl R., Major, Medical Corps. After arrival in the United States, and upon the expiration of such leave as has been or may be granted him, will report in person to the medical supply officer, Fort Mason, California, for duty. **Dixon**, Frank H., First Lieutenant, Medical Corps. Relieved from duty at Fort Sam Houston, Texas, to take effect at such time as will enable him to comply with this order, and proceed at the proper time to Mercedes, Texas, and report to the commanding officer, First Squadron, Twelfth Cavalry, for duty with that organization, en route to the Canal Zone, and upon arrival will report to the commanding general, United States Troops, for assignment to permanent duty. **Edie**, G. L., Colonel, Medical Corps. Leave of absence for fourteen days has been granted. **Houghton**, Harris A., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Totten, New York, to take effect upon the arrival thereof of Captain Robert C. McDonald, Medical Corps, and will then proceed to his home and upon arrival there stand relieved from active duty in the Medical Reserve Corps. **McDonald**, Robert C., Captain, Medical Corps. After arrival in the United States, and upon the expiration of such leave as has been granted him, will proceed to Fort Totten, New York, and report in person to the commanding officer thereof for duty, and by letter to the commanding general, Eastern Department. **Rutherford**, Henry H., Major, Medical Corps. Granted twenty days' leave of absence, effective about February 10, 1916. **Schlanser**, Adam E., Captain, Medical Corps. Relieved from duty at Fort Thomas, Kentucky, and will proceed to Columbus Barracks, Ohio, and report in person to the commanding officer of that post for duty. **Stuckey**, Harrison W., First Lieutenant, Medical Reserve Corps. Now on temporary duty at Fort Winfield Scott, California, will proceed to Alcatraz, Cal., and report in person to the commandant, Pacific Branch, United States Disciplinary Barracks, for temporary duty. **Thearle**, William H., Captain, Medical Corps. Upon the expiration of his present leave of absence, will report in person to the commanding officer, the Presidio of San Francisco, Cal., for duty, and by letter to the commanding general, Western Department, and so much of paragraph 22, Special Orders No. 170, July 23, 1915, War Department, as relates to Captain Thearle, is amended accordingly.

Each of the following named officers of the Medical Corps is relieved from duty in the Philippine Department, to take effect on the date specified after his name, and will then proceed to the United States and upon arrival report for further orders in accordance with General Orders No. 80, War Department, 1914: Colonel Walter D. McCaw, June 3, 1916; Captain Lloyd A. Keffauver, May 4, 1916; Captain Henry C. Maddux, May 27, 1916.

Each of the following named medical officers is relieved from duty at the station specified after his name, to take effect at such time as will enable him to comply with this order, and will proceed at the proper time to San Francisco, Cal., and take the transport to sail from that place on or about the date indicated for the Philippine Islands, and upon arrival at Manila will report in person to the commanding general, Philippine Department, for assignment to duty: Colonel William D. Crosby, Medical Corps, Headquarters Southern Department, Fort Sam Houston, Texas, May 5, 1916; First Lieutenant Raymond H. Scott, Medical Corps, Fort Sam Houston, Texas, April 5, 1916; First Lieutenant James A. Simpson, Medical Reserve Corps, temporary

duty in Southern Department and duty at Fort Moultrie, South Carolina, June 5, 1916.

Births, Marriages, and Deaths.

Born.

Murphy.—In Kansas City, Mo., on Saturday, January 29th, to Dr. and Mrs. Franklin E. Murphy, a son.

Married.

Coover—Louden.—In Escondido, Cal., on Saturday, January 29th, Dr. David H. Coover and Mrs. Mary Lenore Louden.

Died.

Bancroft.—In Los Angeles, Cal., on Thursday, February 3d, Dr. Carroll R. Bancroft, of Anaconda, Mont., aged thirty-seven years. **Beard**.—In New Albany, Ind., on Tuesday, February 1st, Dr. Wilbur A. Beard, aged forty years. **Behymer**.—In Cincinnati, Ohio, on Monday, January 31st, Dr. Edwin Behymer, aged sixty-eight years. **Bell**.—In Mount Sidney, Va., on Sunday, January 30th, Dr. William Bell, aged eighty years. **Biehl**.—In Berkeley, Cal., on Sunday, January 30th, Dr. Philip F. C. Biehl, aged sixty-five years. **Blackmer**.—In Salisbury, N. C., on Tuesday, February 1st, Dr. Jocelyn Blackmer, aged twenty-eight years. **Book**.—In Detroit, Mich., on Monday, January 31st, Dr. James Burgess Book, aged seventy-one years. **Connolly**.—In St. Louis, Mo., on Sunday, January 30th, Dr. Patrick D. Connolly, aged fifty-four years. **Coonley**.—In Port Richmond, N. Y., on Wednesday, February 9th, Dr. Edgar D. Coonley, aged seventy-one years. **Darrah**.—In Newport, R. I., on Tuesday, February 8th, Dr. Rufus E. Darrah, aged fifty-five years. **Deal**.—In Rivermont, Ill., on Thursday, February 3d, Dr. John Deal, aged sixty-nine years. **Douglass**.—In Amesbury, Mass., on Friday, February 4th, Dr. John A. Douglass, aged eighty-six years. **Dukeshire**.—In Brooklyn, N. Y., on Tuesday, February 8th, Dr. Phares J. Dukeshire, aged twenty-nine years. **Duncan**.—In Bedford, Ind., on Monday, January 31st, Dr. James B. Duncan, aged sixty years. **Evans**.—In Washington, Ind., on Wednesday, February 2d, Dr. W. L. Evans, aged eighty-six years. **Farquhar**.—In Olney, Md., on Tuesday, February 1st, Dr. Charles Farquhar, aged seventy-four years. **Fawcett**.—In Portland, Ore., on Wednesday, February 9th, Dr. John Fawcett, aged sixty years. **Fisher**.—In Toledo, Ohio, on Friday, February 4th, Dr. Albert Fisher, aged eighty-one years. **Follmer**.—In Berwick, Pa., on Monday, January 31st, Dr. Joseph B. Follmer, aged fifty-six years. **Jones**.—In Crawfordsville, Ind., on Sunday, January 30th, Dr. Oliver H. Jones, aged seventy-two years. **Kennedy**.—In Jacksonville, Fla., on Friday, January 28th, Dr. Martin Kennedy, of Bartow, aged seventy-nine years. **Knece**.—In Baxter, S. C., on Friday, February 4th, Dr. William L. Knece, aged sixty-four years. **Koplit**.—In Middletown, Conn., on Thursday, February 10th, Dr. John Koplit, aged ninety-five years. **Lambert**.—In New Haven, Conn., on Wednesday, February 2d, Dr. Benjamin L. Lambert, aged sixty-two years. **Lumpkin**.—In Athens, Ga., on Thursday, February 3d, Dr. James M. Lumpkin, aged eighty-one years. **Marbury**.—In Laurel, Md., on Thursday, February 3d, Dr. William A. Marbury, of Woodville, Md., aged seventy-four years. **Moody**.—In Chicago, Ill., on Thursday, February 3d, Dr. Adrian L. Moody, aged sixty-one years. **Ryerson**.—In Bonton, N. J., on Thursday, February 10th, Dr. John G. Ryerson, aged eighty-three years. **Schwinn**.—In Washington, D. C., on Sunday, February 6th, Dr. George H. Schwinn, aged forty-two years. **Swartz**.—In Chicago, Ill., on Tuesday, February 1st, Dr. Thomas B. Swartz, aged fifty-eight years. **Wachter**.—In Sabillasville, Md., on Thursday, February 3d, Dr. Charles L. Wachter, aged sixty years. **Wells**.—In Exeter, N. H., on Friday, February 4th, Dr. Daniel F. Wells, aged seventy-six years. **Williams**.—In Remsen, N. Y., on Tuesday, February 1st, Dr. Evan G. Williams, aged seventy-six years. **Witherspoon**.—In Pittsburgh, Pa., on Tuesday, February 1st, Dr. James Witherspoon, aged forty-five years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 9.

NEW YORK, FEBRUARY 26, 1916.

WHOLE No. 1943

Original Communications.

SYPHILIS AND INTERNAL MEDICINE.*

BY LEWELLYS F. BARKER, M. D.,
Baltimore,

Professor of Clinical Medicine, Johns Hopkins University.

A striking fact in the history of infectious diseases has been the speedy improvement of diagnostic methods and the increase in the efficiency of therapeutic measures devised following upon the discovery of the etiological factors. In this respect syphilis has been no exception to the general rule. Despite the remarkable skill in diagnosis and therapy arrived at by astute clinicians before the discovery of the cause of syphilis, it must be admitted that, since Schaudinn's discovery, on March 3, 1905, of the microorganism that causes this disease in the juice of a papular syphilide, our knowledge of syphilis, our means of certainly recognizing it when it exists in the human organism, our methods of overcoming the infection, and our conceptions of its pathogenesis, have made progress by leaps and bounds. Indeed, I think it may justly be said that in the knowledge of no other disease have so many important advances been made during the last decade as in syphilis. The outstanding triumphs of the last decade can be summarized in a few words:

1. The fundamental discovery of *Treponema pallidum* as the cause of syphilis.

2. The study of the disease experimentally produced in animals, based upon the first successful transmission of the disease by Metchnikoff and Roux, in 1903, which led to the discovery of the susceptibility of apes, monkeys, rabbits, dogs, guinea-pigs, rats, and other animals.

3. The discovery of easy methods of demonstrating *Treponema pallidum* in fresh juices derived from syphilitic lesions, in smears of such juices, and in sections of infected tissue (Giemsa method as applied by Schereschewsky; dark-field illumination of the living parasites by Landsteiner and Mucha; the simple Chinese ink smear by Burri; the colloidal silver method by Nitsche; and the silver staining of tissues by Volpigne and Levaditi).

4. The demonstration of *Treponema pallidum* by the application of these methods in all kinds of syphilitic lesions, including not only the chancre of primary syphilis, the eruptions of secondary syphilis, and the gummata of tertiary syphilis, but also in the walls of aortic aneurysms (Schmorl, J. Homer Wright), in the brain substance in general

paresis (Noguchi and Moore), in the lesions of tabes dorsalis (Marinesco), and in the organs of children dead of congenital syphilis (including the germs of developing teeth), and in placentas of the mothers of syphilitic children by various observers.

5. The discovery of a diagnostic seroreaction applicable to the blood serum, cerebrospinal fluid, and other fluids of the body, namely that devised by Wassermann (1906), based upon a principle of complement fixation discovered by Bordet and Gengou (1901) and actually worked out and applied as a diagnostic method by Wassermann, Neisser, and Bruck, in 1906.

6. The discovery of an especially efficacious form of arsenical treatment (salvarsan, neosalvarsan) by Ehrlich and Hata, in 1910.

7. The discovery of methods of growing *Treponema pallidum* in pure culture (Schereschewsky, Mühlens, Noguchi) and the demonstration that syphilis can be reproduced in animals by inoculating them with the pure culture.

8. The discovery, through the clinical application of the serodiagnostic method, *a*, of the extent of unsuspected syphilis in the community; *b*, of the fact that the majority of cases treated, even those believed to be thoroughly treated (before control by the seroreaction) are not cured; *c*, that many of the wives and children of supposedly cured luetics are infected, even though they show no symptoms; *d*, that the reason why the syphilitic child of a syphilitic father can be nursed by its mother without giving the disease to the mother (Colles law) is that the mother is already infected, the child having been infected by placental transmission from the mother rather than by direct inheritance from the father; and, *e*, that the reason why the apparently healthy child of luetic parents seems to be immune from infection, say from an infected wet nurse (Profeta's law), lies in the fact that the child is already infected.

9. The bringing of the proof that in many cases syphilis can in reality be entirely cured so that the Wassermann reaction remains permanently negative and so that reinfection may occur, such complete cure being much easier to obtain in the early cases by intensive treatment than in the late cases by any form of treatment.

10. The discovery that syphilis is a disease that does not set up an immunizing process which will subsequently protect the luetic if he is cured of his first attack.

11. The bringing of the proof that in experimental lues the *treponema* becomes widely distributed throughout the body before the initial lesion develops; in other words, that by the time a Hunterian

*Read at the meeting of the New York Academy of Medicine, January 6, 1916.

chancere appears, the syphilis has as a rule become generalized and that excision of the chancre cannot therefore prevent such generalization.

12. The discovery that, after inoculation of an animal or a man with the virus of syphilis, the development of the disease can be prevented, if, within a few hours, a solution of mercury bichloride in salt solution, or better, a paste of the following composition:

Hydrarg. bichlor.	0.3
Sod. chloride	1.0
Tragacanth	2.0
Amylum	4.0
Gelatin	0.7
Alcohol	25.0
Glycerin	17.0
Water, ad.	100.0

as recommended by Neisser, is thoroughly applied. Metchnikoff first brought the proof of the possibility of prevention, but his calomel salve seems to be less efficacious than the prophylactic given above.

While preparing my paper on syphilis and internal medicine, I have read the interesting discussion of visceral syphilis by Osler and Gibson in D'Arcy Power and Murphy's *System of Syphilis*; it should be read by all who are interested in the subject. One feels on reading the accounts of cases that were studied before the newer diagnostic methods were available, how sadly at a loss the older clinicians were in arriving at a certain diagnosis. They had to be content largely with "conviction" and "belief" rather than with the objective data which should be decisive in the differential diagnosis. Even with our wealth of new and precise methods, we must sometimes be content with a probability diagnosis, especially when there is a question of the simultaneous existence of a constitutional lues and of some disease of an organ that may or may not be due to lues; but to a very large extent the mere "belief" of former days can now be replaced by certainty.

In illustration of some of the results of applying the newer diagnostic methods for syphilis in obscure cases in different branches of medicine and surgery, perhaps I cannot do better than briefly to epitomize the histories of a few patients who have recently come under my observation. It would be easily possible from my clinical experience in the last ten years to multiply the examples given, but a few examples will, I believe, suffice, especially as they are such as could, I am sure, be duplicated from the experience of almost any consulting physician doing similar diagnostic work.

CASE I. *Bronchiectasis following "pneumonia"; no history of lues; strongly positive Wassermann.* Man, aged twenty-seven years, consulted me, June 3, 1915, regarding treatment for bronchiectasis following an attack of "pneumonia" in 1906, and made worse by a second attack in 1910. Typical three layered bronchiectatic sputum, negative for elastic tissue and tubercle bacilli, but containing many pneumococci. Physical examination of chest negative, except for slight flattening of left upper thorax and a little roughening of breathing and prolongation of expiration below the left clavicle. Seven ophthalmotuberculin tests (one and five per cent.) negative. Röntgenogram of chest revealed a small spherical area in the upper left chest that might be a bronchiectatic cavity; there was evidence of some infiltration of the neighboring lung substance. Blood count normal, except for slight leucocytosis. Urine, gastric juice, and feces negative.

The patient denied luetic and gonorrheal infection, though he admitted exposure. Wassermann test of the blood serum positive; 100 per cent. fixation.

CASE II. *Swelling of head, neck, and chest; dyspnea on exertion; beginning "collar of Stokes," indicating a developing collateral circulation due to obstruction to the vena cava superior; aneurysm of thoracic aorta; aortic insufficiency; general atherosclerosis; extrasystolic cardiac arrhythmia; denial of lues; complete complement fixation with three different antigens.* Man, aged sixty years, consulted me, November 17, 1915, complaining that eight weeks before, he had noticed on awakening in the morning that his face and neck were swollen. Aside from shortness of breath on exertion, he had had no symptoms. No history of lues. He denied ever having had any venereal disease. Physical examination: Pulse 100, gooseneck radials, pulse equal at the two wrists; blood pressure 130. Subcutaneous veins of head, neck, and upper half of trunk overfull (beginning "collar of Stokes"), but as yet no actual edema, except in the early morning. Lips a little cyanotic; double arcus senilis; enlarged glands in axilla; on percussion, a broad median area of dullness behind the sternum and extending for a distance of several cm., both to the left and to the right. Visible heaving in sternal region with each heart beat; heart's apex two finger breadths to left of the nipple line; both systolic and diastolic murmurs audible over aortic area; frequent ventricular extrasystoles. Slight tracheal tug. Breath sounds equal on the two sides. Abdomen negative. All reflexes normal.

Röntgenological examination (Dr. F. H. Baetjer): A large round shadow behind the sternum, below the clavicles, projecting more to the left than to the right, and showing distinctly expansile pulsation, not simple heaving. It was evidently due to a sacculated aneurysm arising at the junction of the arch and the descending aorta. The ascending aorta was pushed to the right of the sternum by the mass.

Wassermann reaction (Dr. W. A. Baetjer), markedly positive; 100 per cent. complement fixation with three different antigens.

CASE III. *Old lues (thirty-five years earlier); headaches; emaciation; thickened arteries; beginning arterial hypertension; albumin and casts in the urine; slightly impaired renal function; calcified left testicle; positive Wassermann in the blood.* Man, aged fifty-five years, consulted me, June 3, 1915, complaining of a "cramped feeling" and a "feeling of pressure" in the head, nervousness, dizziness, weakness, loss of weight. He had had a luetic infection at twenty years, was treated for one year, but had some cutaneous secondaries later. He married, and his wife bore him two living children, but had three miscarriages. At forty years he had an attack of "nephritis" with edema. Six months ago, he began to lose weight and to have the other symptoms complained of at time of consultation. Physical examination revealed thickened tortuous radials, systolic blood pressure 158, double arcus senilis, defective teeth; slight hypertrophy of heart with accentuation of aortic second sound; a calcified left testicle; normal reflexes; negative eye grounds; a positive von Graefe's sign, but no struma, tachycardia, or tremor. He was sent into Johns Hopkins Hospital for observation and for special laboratory studies. Blood count normal. Hb. ninety per cent. Differential white count negative, except for an eosinophilia (six per cent.). No parasites or ova in the feces. While in the hospital, his systolic blood pressure varied between 135 and 140. Urine: Specific gravity 1.118 to 1.122, slight albuminuria; a few hyaline and glandular casts; no blood. Phenolsulphonphthalein test—first hour thirty-five per cent. excreted, second hour eleven per cent., total forty-six per cent. Chemical study of blood: Urea nitrogen twenty-four mgm. per 100 c. c. Ambard's constant 0.35.

After a renal test diet (Doctor Mosenthal), the specific gravity was not fixed, though there was inability to concentrate at night, without, however, definite nocturnal polyuria. There was no evidence of nitrogen retention or of salt retention. Doctor Lewis, who kindly made the tests, concluded that renal function was only slightly impaired. Wassermann reaction of the blood, strongly positive. Cerebrospinal fluid—cell count six; globulin test positive; Wassermann negative. Diagnosis: General atherosclerosis; arteriosclerotic nephropathy, and cerebropathy; lues.

Our impression was that most of the symptoms depended upon the arterial changes, but that pos-

sibly the lues might be responsible for a part or all of the headaches. Antiluetic treatment was advised in addition to general measures directed toward the developing arterial and renal disease.

CASE IV. *Indolent swelling of one tonsil; large, firm liver; obesity; deterioration of general health; denial of lues; positive Wassermann; rapid recovery under antiluetic therapy.* Man, aged sixty years, a physician, always healthy, began to feel out of sorts and noticed a peculiar swelling of one tonsil. He consulted first a nose and throat specialist who, suspecting some unusual general state, referred the patient to me for diagnostic study. On examination, the right tonsil presented an indolent swelling that made one fear either a neoplasm, a leukemia, or a pseudo-leukemic growth. The patient was moderately obese, the liver enlarged, easily palpable, four cm. below the costal margin, and of firm consistence. Urine normal. Blood count normal. Blood pressure not increased. Denial of lues, though as a physician often exposed to extragenital infection. A Wassermann test of the blood resulted in 100 per cent. complement fixation. Under vigorous antiluetic therapy the symptoms rapidly disappeared, the patient's general health improved, and the swelling of the tonsil "melted away." The liver remained firm and palpable (cirrhosis?).

CASE V. *Emaciation; neurasthenic and hypomaniacal symptoms; facial tic; single epileptiform convulsion; denial of lues; Wassermann test of blood, positive; cerebrospinal fluid normal; father had locomotor ataxia.* Man, aged thirty-four years, consulted me, December 12, 1914, complaining of being generally run down, much under weight, nervous, irritable, and sleepless. Denied lues though he admitted exposure. Father had locomotor ataxia. The patient had used both alcohol and tobacco to excess. Physical examination: Emaciation (fifty pounds below calculated ideal weight), thickened radials, some pyorrhea alveolaris; sign of old tuberculous lesion at right apex; deep reflexes overactive; dermatographia; positive von Graefe and Rosenbach's signs; eyegrounds normal. Physical examination otherwise negative. Under observation in the hospital the patient was found to be euphoric, mentally restless, and overalert, with a tendency to hurried speech, talkativeness, and general pressure of activity. There was a facial tic involving especially the orbicularis palpebrarum. Urine negative. Blood pressure, 125 systolic, 73 diastolic. Blood: Red count normal, Hb. ninety per cent. White cells 8,000. Differential count normal. Röntgenogram of chest: Slight clouding of both apices. Calcified glands at the hilus on both sides. Picture suggestive of chronic pulmonary tuberculosis of low grade. Calmette tuberculin test, one and five per cent. negative. Wassermann test of blood serum: Positive on December 15, 1914. Lumbar puncture, done December 16, 1914: Pressure of fluid not increased. Cell count one. Globulin tests, both Ross-Jones's and Pandey's negative. Colloidal gold test, negative.

On the day after that on which the lumbar puncture was done, the patient had a generalized epileptiform convulsion, ushered in by a loud cry. The lips and tongue were bitten and the face was cyanotic. There was no incontinence of urine or feces. The convulsive seizure lasted two minutes and was followed by coma for some five minutes, after which the patient awoke and was temporarily disoriented as to time and place and had no memory of the seizure.

On December 19th, salvarsan therapy was begun, and five doses were given during the next month. The patient was also placed on a systematic rest cure. He gained rapidly in weight, felt well, and had no more convulsions. On January 22, 1915, the Wassermann test was negative. He returned to his home, feeling very well, with the understanding that his family physician was to give intermittent treatment with injections of mercury salicylate and to supervise his life closely.

CASE VI. *Sudden loss of vision in right eye; choked disc; suspicious spot on left arm; denial of lues; admission of exposure twenty-five years earlier; positive Wassermann; rapid return of vision under antiluetic therapy.*

Man, aged forty-nine years, from North Carolina, consulted me, October 1, 1910, having been referred to me for general study by one of our ophthalmologists, Dr. R. L. Randolph, who had found choked disc in the right eye. The symptoms had developed suddenly a few days before, the vision rapidly becoming dim. On examination, Doctor Randolph reported complete loss of sight in right eye due to the choked disc; vision in left eye good. Aside from headache the patient complained of nothing. On physical examination, no abnormalities were found, except hyperactive deep reflexes and a scaling bluish brown spot on the right forearm that was suggestive of a syphilide. He denied having had syphilis, but on close questioning admitted that twenty-five years earlier, at the age of twenty-four years, he had been "fast," had drunk a good deal, and had had what he believed to be gonorrhea. Pressed for details, he stated that two little sores had been present behind the glans penis. Wassermann reaction of the blood, positive.

This happened to be the first luetic patient coming under my care after receipt of an advance supply of the new remedy, salvarsan, kindly sent to me by Professor Ehrlich. The patient was given a dose of the drug. Within a few days he could distinguish light from darkness with the right eye; in about ten days he could count fingers. He returned to North Carolina and his family physician, Dr. J. R. Campbell, reported that "his sight has steadily improved until he can detect no difference at all between the sight of the two eyes; his health and spirits are very good. The result in his case has been marvellous."

CASE VII. *Diabetes mellitus; cerebral insults followed by aphasia, with "coming and going" of the symptoms; general atherosclerosis; denial of lues; node on frontal bone; Wassermann test gave fifty per cent. fixation.* Man, aged fifty-eight years, recently consulted me on account of diabetes and disturbance of speech, dating back about four years. On examination, there was slight obesity, thickened radials, double arcus senilis, a moderate degree of emphysema, and normal blood pressure. The strength of the right arm and leg was a little less than those of the left. Reflexes all normal. Pupils normal. Slight changes in eyegrounds suggestive of diabetic retinitis and of cerebral atherosclerosis. The urine contained from 2.5 to four per cent. of sugar.

With the use of Allen's starvation method, the urine soon became sugar free and the signs of acidosis were soon reduced. The degree of the aphasia has varied much from time to time; on occasions the patient has seemed disoriented. The cerebral symptoms were at first believed to be due to thrombosis of atherosclerotic cerebral arteries, but Dr. James Mitchell, of Washington, has had a Wassermann test made, the serum causing fifty per cent. fixation of the complement. This positive Wassermann, together with the marked variability of the cerebral symptoms, make luetic arteritis a possibility, and a trial of antiluetic therapy desirable, especially as a node has appeared on the frontal bone. The patient will take potassium iodide in good doses for a short time; afterward he will receive salvarsan, beginning with a very small dose, and later injections of mercury salicylate. It may be that the diabetes is in itself due to lues of the pancreas, or of the pancreatic arteries. It must be remembered, however, that it has been asserted that the Wassermann reaction may be positive in the blood of diabetics in the absence of lues.

I shall not give further examples of positive cases, but shall now give a brief list of conditions in which it seems to me especially important not to overlook the possibility of an existing lues. The list is as follows:

1. Long continued fever otherwise unexplained.
2. Obscure nervous cases both functional and organic, the latter especially when the symptoms "come and go."
3. Chronic laryngitis, tracheal and bronchial stenosis, bronchiectasis, and unexplained infiltration of, or masses in the lungs and pleuræ.
4. Aneurysms.
5. Aortic insufficiencies, especially when unaccompanied by other valvular lesions.
6. Heart block and other cardiac arrhythmias.
7. Arterial and venous thromboses.
8. Certain grave anemias, resembling the Addison Biermer type.
9. Paroxysmal hemoglobinurias.
10. Indolent nodules in the tongue and tonsils.
11. Enlargements of the liver and of the spleen.
12. Strictures of the rectum.
13. Atypical joint diseases, and especially obscure diseases of the spine.
14. Thickenings of, or nodules in the bones, especially when accompanied by nocturnal pain.
15. Unusual forms of renal disease.
16. Chronic orchitis, or nodules in the testes.
17. Repeated miscarriages without apparent cause.
18. Stillborn children.
19. In disorders of metabolism and of internal secretion, especially in bizarre cases.

I shall now refer to some cases in which it was possible to rule out syphilis, though the patient himself feared that he had it, or the condition present was such as to make his physician suspicious of its existence.

CASE VIII. *Large mass in upper right thorax compressing the right lung and the superior vena cava; physical signs suggesting mediastinal tumor, röntgenological reports favoring aneurysm; no history of lues; Wassermann negative; marked improvement under radium treatment.* Man, aged forty-nine years, consulted me, June 7, 1915, complaining of loss of twenty-seven pounds in weight, a tight feeling in the neck, pain in the right shoulder and arm, and pain on defecation. The symptoms began about two years before consultation. Physical examination: Slight tachycardia; normal blood pressure; slight overdistention of veins of head, neck, and chest, more marked on the left than on the right. On percussion and auscultation, there were signs of a large mass in the right upper thorax and anterior mediastinum, displacing the trachea to the left and pressing upon the right bronchus, the upper lobe of the right lung, and the superior vena cava. No visible or palpable pulsation over the mass. No tracheal tug. The pain on defecation proved to be due to a tuberculous ulcer. Physical examinations of the patient were made also by Dr. H. C. Buswell, of Buffalo, and Dr. L. V. Hamman, of Baltimore. None of us regarded the mass in the thorax as aneurysm; all took it to be tumor, arising probably in the mediastinum.

I sent the patient to one of our best x ray men, who reported that the condition was undoubtedly a large sacculated aneurysm, arising at about the junction of the ascending and transverse arch, and distinctly pulsating on röntgenoscopic examination.

The röntgenological report surprised me greatly, for the physical signs were strongly against aneurysm. The anamnesis was negative for lues. I argued that if a man of forty-nine years old had aneurysm and had not had antiluetic treatment, he should give a positive Wassermann. At my request, Dr. Sydney R. Miller tested the blood carefully with three different antigens and reported that

the seroreaction was entirely negative, there being no fixation of the complement.

With this further evidence against aneurysm, I took the matter up again with the röntgenologist. He made another examination and reported that, while in some cases he is in doubt, in this case there could be no doubt whatever that the condition was aneurysm. Despite the physical findings, despite the negative anamnesis as regards lues, and despite the negative Wassermann, I then gave in, as this röntgenologist is a particularly expert observer and, moreover, an excellent röntgenologist in Buffalo corroborated his opinion. I decided that we must after all be dealing with aneurysm, but with one partially healed by lamellated clots so that, though pulsation is visible on röntgenoscopy, none can be seen or felt on physical examination of the thorax.

Doctor Buswell, however, declined to be convinced of the existence of aneurysm and arranged for treatment of the mass by radium. It would seem that he was right. At last reports, there had been a marked reduction in the size of the mass, with improvement in all the symptoms!

CASE IX. *Syphilophobia; severe headaches; emaciation; Graves's syndrome; Wassermann negative.* Man, aged twenty-one years, had sore on penis at eighteen years, believed by patient and family physician to be ulcer molle. One year later, as a precaution, though there were no symptoms, he consulted a physician in another city, who made a Wassermann test, reported to be positive. He received salvarsan treatment. One year later, another Wassermann test was made; result negative. On June 5, 1915, he consulted me, complaining of headaches, indigestion, nervousness, mental depression, loss of weight, shortness of breath, palpitation, throbbing in the head, fear of impotence, and fear of insanity. Physical examination: Undernourished, being over twenty pounds below calculated ideal weight; moderate tachycardia, fine tremor of the fingers; slight struma, rather prominent eyes; positive von Graefe's sign. Blood count, approximately normal. Urine and feces, negative. Blood pressure, normal. Reflexes, a little hyperactive. Pupils and eyegrounds, normal. Cerebrospinal fluid, normal. Blood Wassermann, negative.

Diagnosis: Graves's syndrome. Treatment: Reassurance; thorough rest cure with sodium cacodylate injections. Result: Rapid gain in weight and marked amelioration of symptoms.

Such instances as this show how helpful it is to be able definitely to say to a patient, or his family physician, that no luetic infection is present. Among the conditions often believed to be luetic in origin and in which sometimes, it must be admitted, a luetic factor is present, but which often occur in the entire absence of lues, are the following:

1. Cerebral apoplexy
2. High blood pressure cases.
3. Contracted kidneys.
4. Multiple sclerosis.
5. Certain suspicious lesions, especially those due to sporotrichosis, or blastomycosis of the bones, lungs, or subcutaneous tissue.
6. Psychoneurotic states accompanied by syphilophobia.
7. Graves's disease.

I hope that I have been able fairly to present the important relations of the study of syphilis to obscure internal diseases. The more my experience grows, the more am I inclined to take as a diagnostic aphorism: "When in doubt have a Wassermann test made; when not in doubt, still have a Wassermann test made."

UNSUSPECTED SYPHILIS IN NEUROLOGY.*

The Importance of Syphilis, Often Unsuspected, in the Causation of a Number of Apparently Unrelated Disorders,

By JOSEPH COLLINS, M. D.,
New York,

Physician, Neurological Institute.

THE ASSURED AND THE SUSPECTED SYPHILITIC NERVOUS DISEASES.

1. *The assured.* It is believed universally that certain diseases of the nervous system, with definite, unvarying lesions, have their sole origin in syphilis; they are tabes, general paresis, and most instances of cerebral and spinal endarteritis. These diseases cause subjective and objective symptoms, so constant and unvarying as to be considered characteristic or pathognomonic. When all the diagnostic means at our disposal are employed, they offer little or no difficulty of early recognition. All hope of successfully treating them is built upon detecting them early, i. e., in their incipency. We may expect to accomplish this in a large measure, at least, when physicians universally realize these facts.

The way in which the symptoms develop, group, and comport themselves, permits us to say what portion of the nervous system or its constituents is diseased. These symptoms are: Alteration in size, contour, and reaction to light of the pupils; alteration of the tendon jerks (elbow, knee, ankle), and of the cutaneous reflexes (the Babinski sign, the Oppenheim phenomenon, etc.); impaired motility of the eyeballs; and disorder of the muscle tonus (tremor, etc.).

When such symptoms confront us, we suspect the nature of the disease—perhaps, indeed, are certain of it—and then proceed to confirm or deny our suspicion or our certainty, by applying the Wassermann test to the serum of the blood and to the cerebrospinal fluid, by investigating the globulin content and the Fehling reduction capacity of the latter, as well as counting the number of cells per c. mm., and its behavior with colloidal gold.

If a so called + or positive reaction is found in the serum and cerebrospinal fluid; if the globulin of the fluid is increased, if it reduces Fehling's solution, and if the number of cells is increased (beyond four per c. mm., which is normal), then the diagnosis of syphilitic disease of the central nervous system or its constituents is assured. In this way diagnosis of tabes, certain forms of myelitis, meningitis (cortical, basilar, and spinal), meningo-myelitis, general paresis, and endarteritis, can be made with absolute certainty. In other words, we detect such diseases by the elicitation of subjective and objective symptoms, and corroborate our detection by laboratory tests.

2. *The suspected.* There are many other diseases of the nervous system whose origin is in syphilis, which are not delineated in a characteristic way, and which are not attended by pathognomonic subjective or objective symptoms. They are more numerous than the rank and file of the profession suspect, and they parallel in their clinical display nearly

every organic disease of the cerebral nervous system and many of the functional ones. It is of these diseases that I shall speak in this symposium. I have taken the cases that were diagnosed as syphilis of the nervous system, excluding cases of tabes, general paresis, and cerebral endarteritis, in the First Division of the Neurological Institute, during the past six years and distributed them under the various diseases to which they conform clinically.

HOW DISEASES DUE TO UNSUSPECTED SYPHILIS DISPLAY THEMSELVES CLINICALLY.

Headache	18
Cerebral meningitis (convexities; base; dura, pia)	31
Encephalitis (diplegia, pseudoparesis)	11
Brain tumor	8
Disseminated sclerosis	2
Epilepsy	5
Neuasthenia	10
Hysteria	3
Migraine	3
Chorea and shivering attacks	4
Insomnia	4
Amentia (retardation)	7
Manic depressive	3
Cerebellar syndrome	2
Bulbar paralysis	2
Menigo-myelitis	12
Myelitis (transverse; systemic)	33
Syringomyelia (glossis)	2
Progressive muscular atrophy	5
Poliomyelitis	2
Spinal cord tumor	4
Bot neuritis	10
Neuritis	3
Acroparesthesia	10
Landry's paralysis	1
Facial paralysis	3
Tic douloureux	3
Myospasm	2
Typhoid spine	1
Aching pectoris (aortitis)	2
Rheumatism	9
Cerebrospinal (simultaneous involvement, brain and cord)	13

245

This list would seem to justify the statement that syphilis is of great importance in the production of a number of apparently unrelated disorders, and that syphilis of the nervous system may display itself in the guise of nearly every functional or organic disease of the nervous system that pursues a subacute or chronic course.

This is at first sight an appalling statement, but it has its compensations. The syphilitic diseases of the nervous system that cause these clinical syndromes are all susceptible of amelioration, and if treatment is applied early, vigorously, and appropriately, to cure, in many instances. They are in this respect in a different category from tabes and general paresis, and some instances of endarteritis, inasmuch as they represent the primary or original effects of *Treponema pallidum*, that is the tissues manifesting the lesion have not been previously (often remotely) sensitized or otherwise pathogenically prepared by the syphilitic virus. Moreover, when these diseases are due to causes other than syphilis, many of them are in no wise amenable to treatment. This is the chief incentive for the detection of their true origin. The question then is, How are they to be diagnosed? What is there in the account of the patient's complaint as narrated that should make us suspicious that the disease is syphilitic, and our suspicions having been aroused how may they be substantiated or removed?

WHY ATTACH A LABEL TO THESE CASES?

I realize that it does not advantage the patient with syphilis to have his complaint labelled headache, neurasthenia, or rheumatism. It is to his interest, however, to have it recognized that in many in-

*Contributed to a symposium on this subject at the New York Academy of Medicine, January 6, 1916.

stances such symptoms are dependent upon syphilis of the central nervous system. The patient makes the diagnosis of headache, acroparesthesia, rheumatism, neurasthenia himself. We have to discover what they are dependent upon.

We need not assert that because an individual has syphilis, he may not have any disease that will not be attributed to the infection. As a matter of fact, a person may experience difficulties in life the surmounting of which provokes neurasthenia; or the infection which is causing his alveolar pyorrhea may become systemic and as a result, a complex of symptoms, which the doctor calls rheumatism, or neuritis, develop. Syphilis has nothing to do with either of these instances, but that it is the *de facto* cause in the production of many, if not all the diseases of which it is alleged to be the cause, is evidenced by the fact that when syphilis is properly and adequately treated, the patient's condition improves, or the disease disappears. This would not be the case were the disease not dependent upon syphilis.

THE KEYSTONE OF THE DIAGNOSTIC ARCH.

The recognition of the true dependence of these diverse diseases becomes then the important matter. What facilitates such recognition and makes it certain? We should suspect syphilis as the cause of disease of the nervous system in every instance in which a cause is not obvious. We should be more than suspicious of its existence in persons who are sterile or barren, or who abort without attribution. When such diseases occur in patients who admit that they have had syphilis, or in whom there is collateral evidence that they have had it, the chances are they have their real origin in syphilis, even though the time of infection is very remote. Finally, we must make the diagnosis conclusively of syphilis of the nervous system in every instance in which a positive reaction is found *more than once and by different observers*, in the blood serum and cerebrospinal fluid.

It must be frankly admitted that the findings of the serological examination constitute the most important evidence that is available in diagnosing these atypical cases of syphilis of the nervous system. We (the staff of the First Division of the Neurological Institute) do not make diagnosis of syphilis of the nervous system from the laboratory reports, but in every case of nervous diseases in which the cause is not obvious, we make the complement fixation test upon the serum and cerebrospinal fluid, and the latter is examined for globulin and pleocytosis. When the laboratory report is inconclusive or paradoxical (+ in serum, — in cerebrospinal fluid, or vice versa, ++ one day, — a few days later, or vice versa) we submit the fluids to two other laboratories, compare the results, and decide according to the preponderant evidence. Whereas the diagnosis of syphilis is made conclusively in many cases of tabes, paresis, gumma, endarteritis, and other diseases of the nervous system, in the face of a negative laboratory report on the serum and cerebrospinal fluid, it is never made in the cases under consideration unless at least one of the pathognomonic symptoms exists. Of these pathognomonic symptoms, the most important by

far is the pupil of irregular outline, which does not respond to light. Some say the Argyll Robertson pupil occurs in other than syphilitic diseases. I see no reason why it should not, especially in traumatic conditions, such as that reported by Guillian, but in a large experience I have never seen it save in syphilitic diseases. It and the other so called pathognomonic symptoms develop eventually, it is probable, in every syphilitic disease of the central nervous system, but I am convinced that the pathognomonic symptoms are never early symptoms. For instance in this series of cases, the

Argyll Robertson phenomenon existed.....	60 times
Tendon jerk alteration = 10% (normal 91%).....	11 times
Tremor of the extremities and face.....	51 times

In other words, had we awaited the development of the pathognomonic symptoms before making the diagnosis, most of the patients would have reached a stage when their diseases were no longer amenable to cure.

SYMPTOMS ARE OFTEN NOT EVEN SUGGESTIVE.

There is something about the symptoms, their character, intensity, association, conduct, in these cases of syphilis of the nervous system which we are now considering (cases in which pathognomonic symptoms do not exist), that suggests to the experienced physician their true origin, but it is difficult to give specificity to such symptoms or features, for there is nothing that is characteristic. In a general way it may be said that the occurrence of headache, fugitive or persistent pain in the neck, the extremities, the trunk, stiffness, paresthesia, disorder of urination; transient ocular palsy; mental depression, without obvious attribution or discoverable cause; should suggest syphilis. Yet it would be absurd to say that any or all these symptoms are so suggestive of syphilitic involvement of the nervous system, that the diagnosis should be made. The diagnosis may be suspected, then substantiated or negated by laboratory tests. Occasionally, even, it must be corroborated by the time honored therapeutic test, though fortunately that is not often necessary.

It interested me to review our statistics to determine what proportion of cases submitted to the Wassermann test (of the serum alone) were found to give a positive reaction. This test is not done as a routine measure in the out patient department of the Neurological Institute. In the nine months that elapsed from April 1 to December 31, 1915, syphilis must have been suspected in 465 patients, and the reaction was found to be positive in 150 of them. In other words, our suspicions were substantiated in about a third of the cases. In several of those in which our suspicions were not substantiated, further investigation of the serum and of the cerebrospinal fluid revealed syphilitic disease. If we guessed right one third of the time in all our cases Cabot's statistics would not be such depressing reading!

ANALYSIS OF THE TABLE OF DIAGNOSES WITH COMMENTS.

It is astonishing to find on looking over our "ailment" table, how often the only diagnosis that could be made was that of a leading symptom, such as headache, or symptom complex, such as neurasthenia.

themia, and how often the category under which the cases were placed was meningitis. As a matter of fact, if we include the cases "root neuritis" under meningitis, where undoubtedly a great many of them belong, a third of our cases are to be found in this category. It may safely be asserted that upward of one third of all cases of syphilis of the nervous system are founded anatomically in meningitis.

Meningeal symptoms. We may distinguish meningitis of the convexities and of the base of the brain; likewise, pachymeningitis and pia meningitis of the brain and of the spinal cord. As a matter of fact, we do distinguish them clinically, but the lesion is practically the same in every instance; it differs only in intensity and rapidity of progress.

The fact that meningeal lesion is so common in syphilis of the nervous system, makes it easy to understand why headache is such a constant symptom. The nocturnal headache of old has lost its commanding position as a diagnostic symptom, but headache in one form or another is an element of the clinical picture in the majority of cases.

Headache displaying itself as migraine is uncommon, but it occurs and it is important that it should be recognized. A married woman, forty-four years old, had had for many years periodical headache, averaging about two a month, associated with nausea, vomiting, and prostration. There was no history of syphilitic infection, but before she bore a child she had had four miscarriages, then two miscarriages, and then a second child. The migraine had been attributed to glaucoma, for which an operation had been done. The Wassermann reaction was strongly positive and it was not until after two years' constant medication with salvarsan and mercury that it was brought to a negative condition. The migrainous attacks became less frequent and less severe, and during the past year she has been practically free from them.

Cases that are classified under cerebral meningitis, like those of meningomyelitis, bulk large in this series, and the reason is obvious. It is possible in the majority of instances to distinguish between meningitis and the convexity of the base, and between leptomeningitis and pachymeningitis. I have taken up this matter in another paper (*Syphilitic Diseases of the Brain, Journal A. M. A., July 10, 1915*). It is not my purpose at the present time to revert to this, but to call attention to the enormous importance of the serological studies in all cases in which there is suspicion of involvement of the meninges. In March, 1914, I saw a young married woman, thirty-five years old, who complained of a pain in the top of her head, a weakness of the right side, arm, and leg, and whose speech had become thick and drawing. Mentally she had become forgetful and uninterested, and for about a week she had been excitable and acted as if she were insane. Physical examination was practically negative; serological examination was:

Serum Wassermann	+
Cerebrospinal fluid	+
Globulin	+
Cells	930†

She received eleven injections of salvarsan within three months. At the end of that time the serum of the blood was negative,

Cerebrospinal fluid, Wassermann	+
Globulin	+
Cells	15
Fehling's	+

and she was apparently quite normal in her conduct. On tracing this patient it was found that, eight months later, she was admitted to the Manhattan State Hospital and died there.

The symptoms of meningeal irritation are often indefinite, yet there is something about them that suggests their syphilitic origin. For instance, in the following case the very absence of any attributable or adequate cause suggested the possibility of syphilis: A married woman thirty years old, who had borne two children, and had had no miscarriages, had been complaining for about a year of a sense of dizziness, especially when she talked a great deal, a choking sensation in the throat, a sensation of stiffness in the left arm and leg, a pain in the left side of the abdomen, and general irritability, "she does not want to be bothered when she is nervous, and she does not feel like answering right." Aside from a profound alveolar pyorrhea there is nothing to account for her condition, save a positive serum Wassermann and a positive cerebrospinal fluid Wassermann. The fact that her symptoms disappeared under vigorous antisiphilic treatment is convincing evidence that they had their origin in syphilis. The lesion was probably meningeal.

Another case was that of a grocer's clerk, twenty-nine years old, who denied syphilis, and who had complained for four months of headache, indigestion, lack of energy, and of change of disposition. His brother relates that where he was formerly bright and active, he had become gloomy, despondent, and unsocial. Later he displayed delusions and probably hallucinations: he maintained that there were rats in the house, and sent for poison and a gun. Physical and mental examination was practically negative. There was no evidence of mental confusion or of dementia. His serological examination was:

Serum Wassermann	+
Cerebrospinal fluid	+
Globulin	+
Cells, per c. mm.	298
Fehling's	+

In this case the lesion was unquestionably meningeal. The pleocytosis and excess of globulin are both indications of it. One expects to find complaint of stiffness or evidences of rigidity in these cases, but it is exceptional.

Syphilitic encephalitis of rare occurrence. Encephalitis, aside from acute hemorrhagic focal encephalitis occurring in the wake of infectious disease, is an indefinite pathological state. In this series we have put our cases of spastic diplegia, pseudoparesis, and confusional states without conspicuous headache or rigidity.

The subject of pseudoparesis, and its differentiation from genuine paresis, has been recently taken up by me in a separate article. The differentiation is often extremely difficult. It is illustrated by a case of a saloonkeeper, married, forty-two years old, whose syphilitic infection took place six weeks before admission to the hospital. His complaint was of pain all over; neck, hips, shins, and chest. His family spoke of his stupor, of his loss of interest in things, and his disinclination to do anything. He sat around the house in an inert, inani-

†Of which 360 were polynuclear.

mate way. Examination revealed a typical macular eruption on the chest and arms, but no other objective sign.

Serum Wassermann	+
Cerebrospinal fluid	++
Globulin	++
Cells	4
Fehling's	+
Colloidal gold .....	.....

Six months later, having received five intravenous injections of salvarsan and twenty-eight injections of mercury salicylate, his cerebrospinal fluid was negative, but the serum Wassermann was positive. He went to business, but his wife maintained that he was mentally changed, dull, disinclined to exert himself, and generally stupid.

Disseminated cerebrospinal syphilis and insular sclerosis. The differential diagnosis between cerebrospinal syphilis and disseminated sclerosis cannot always be made. Many patients at first sight offer this difficulty, but some of them can be satisfactorily distinguished by the laboratory tests; others cannot. A barber, twenty-six years old, who was infected with syphilis when twenty-one and received only local treatment, was seized when twenty-four years old by an attack characterized by weakness, trembling, and shaking in both legs, which lasted four weeks and kept him from his work, although he was apparently able to get about. He then recovered and returned to work, and remained well up to four weeks before coming under observation. He then noted, while shaving a man, that his vision became so blurred that he had to quit work; in twelve hours his vision was restored. Three days later, his left hand felt heavy, he was unable to move the fingers readily, and two or three days later his legs felt weak and tired, and he could scarcely drag himself about. Physical examination revealed liveliness of all the tendon jerks and pupils that were irregular in outline, otherwise the physical examination was quite negative. The laboratory examination was:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann ..	+
Globulin	+
Cells	11
Fehling's	+

Occasionally the distinction between disseminated sclerosis and disseminated syphilis cannot be made until after prolonged observation. For instance, such was the case in a wheelwright, twenty-five years old, who complained of failing eyesight, occasional diplopia, weakness and stiffness of the legs, numbness of the right hand, sore sensation in the back, especially on arising, difficulty in passing urine, and impotency, which began with the dysuria about fifteen months before he came under observation.

Physical examination showed spasticity and the ordinary accompaniments of the lower extremities; the abdominal and epigastric reflexes could not be elicited; examination of the eyes showed a pallor of the optic nerves, more marked in the temporal halves; vision, right 6/200, left 4/200; slight lateral nystagmus, no disturbance of speech, no tremor. He denied syphilis, but later recalled that eight years before there was a slight ulceration on the glans, to which he paid no attention.

The serological examination at the time of his admission was

Serum Wassermann	+
Cerebrospinal fluid ..	—
Globulin	—
Cells	6
Fehling's	+

The serological tests were, therefore, inconclusive, nevertheless, he was given salvarsan. His condition grew steadily worse in the year 1913, and, in 1914, he went to Berlin, and there received sixteen intravenous injections of salvarsan while an inmate of one of the hospitals. He was then sent to Oeynhaus, to the baths, but without improvement in his condition.

I examined him again early in April, 1915, and the progress that his disease had made was very evident. The results of the serological examination were practically the same as when he was first seen, but on August 8th of the same year, serological examination was entirely negative. Were it not that the disease had progressed slowly and gradually for five years, the case might be looked upon as one of disseminated sclerosis. It must in reality, however, be considered as myelitis of the Erb type, with a retrobulbar neuritis.

That the symptoms of spinal cord tumor are sometimes produced by gumma is self evident. They are not the kind of cases that are often submitted to operation, because the serological examination corroborates a suspicion aroused as to their real nature and suggests appropriate treatment which happily is often adequate to bring about a cure.

Syphilitic myelitis. There are thirteen cases in our series under this caption. Were it not that scarcely anything has been added to our knowledge of this variety of syphilis since my article, *Acute Syphilitic Disease of the Spinal Cord* (*Am. Journal Med. Sci.*, February, 1909), I should take the pains to analyze these cases.

Syphilitic muscular atrophy. Involvement of the anterior horn cells and the spinal cord of their principal projection, the anterior roots, is not an uncommon occurrence in syphilis. The prominent symptoms of such an involvement is atrophy. I have published a number of such cases (*International Clinics*, 1915). Spinal syphilis rarely displays itself as acute poliomyelitis, still it does so occasionally, as is indicated in the following case. A school girl, thirteen and a half years old, was brought to the hospital complaining of inability to walk and loss of power in upper extremities, of one week's duration. A week previous to the onset of these symptoms, she complained of headache, of pain in her chest and small of her back, which kept her out of school for two or three days, although she returned after a few days. She then complained of pain and drawing sensation in her feet. This grew so much worse that she had to be assisted home from school, and two days later she was unable to move.

When examined, she was unable to stand or to walk, save with assistance. Knee jerks and ankle jerks were absent. There was no distinct atrophy, no sensory disturbances.

The serological examination was:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	+
Cells	2-2
Fehling's	+

She made complete recovery, but it was nearly a year, of practically continuous treatment, before her Wassermann reaction was permanently negative.

Cerebrospinal syphilis in the guise of syringomyelia. Cerebrospinal syphilis displays itself in a few instances in such a way that it is difficult to distinguish it from syringomyelia. Such was the case of a married tailor, thirty-two years old, who denied syphilis. Five months before coming under observation, he began to have a beltlike pain in the abdomen around the umbilicus, also constipation. A month later, the left lower extremity began to feel numb; soon after this he remarked that he did not feel the heat or cold in this extremity when he took a bath. About a month later, his left leg became stiff, and the left buttock was nearly always the seat of a drawing sensation. Latterly he complains that there is no sensation when he urinates or defecates. There is loss of pain in the thermal sensibility over the left lower extremity. Tactile sensibility was preserved. There was no motor disturbance. The serological examination was:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	+
Cells per c. mm.	33
Fehling's	+

Syphilitic root neuritis, a dependency of meningitis. In our table will be found a considerable number of cases under the designation, "root neuritis." This may be not only an inappropriate, but an improper designation. We see a large number of patients whose complaint is of pain in the domain of one or more of the spinal nerves. Sometimes it is associated with stiffness, more often with a sense of soreness, numbness, unwillfulness, and lameness. In many of them careful physical examination reveals distinct hyperesthesia and hyperalgesia in the area of distribution to which the pain is referred. In addition the patient usually complains of some headache, malaise, digestive disorder; very rarely is he more specific in his complaints. Naturally these cases cannot be diagnosed from consideration of the symptoms alone; rarely, if ever, are they accompanied by so called pathognomonic objective symptoms of syphilitic disorder of the nervous system. They are the most amenable to treatment of all the forms of syphilis of the nervous system. I interpret these cases as examples of comparatively slight meningeal involvement, distributed principally to the exit or entrance of the spinal nerves. The symptoms are secondary to irritation or constriction of the exudate upon the nerves at this point.

It is often difficult to say whether the symptoms of those cases of root involvement are in reality the result of meningeal exudation, which irritate or strangle the posterior roots, or whether the lesion is a more profound and serious one, endarteritis or myelitis. Such was the case of a married negress, thirty-eight years old, by occupation a laundress, who denied syphilis, but who had been pregnant only once, the result being a stillbirth. She had

complained for eight months of pain in both shoulders so that it hurt her to raise the arms and was difficult to do so; of choking sensation at night and paroxysmal cough; of a sensation when she awakens in the morning as if she is swollen. Six months before these symptoms came on, she had indigestion, pain in the chest, back, headaches, dizziness, occasional vomiting, difficulty in breathing, dyspnea, or palpitation, and she was treated for anemia. Six months later, she began to complain of burning pain in the toes and the feet, of darting pain through the chest and back, and then of a severe pain in the shoulders and arms, above mentioned. Her physical examination was negative, but her serological examination was:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	+
Cells	87
Fehling's	+

Many of these patients with vague indefinite pains have symptoms that are very difficult to explain. Such was the case of a married woman, forty years old, who said that she had been treated for "blood poisoning" in Mt. Sinai Hospital fifteen years ago. Her symptoms were those ordinarily classed under the heading of "rheumatism," that is, she complained of pain and swelling of the feet, pain in the small of the back, general weakness, palpitation of the heart, clammy perspiration. Her symptoms began by swelling of the mouth and lips, which resembled an attack of giant urticaria, or angioneurotic edema. These symptoms lasted about three days, and did not recur. Her Wassermann reaction was strongly positive in both blood and cerebrospinal fluid.

A similar case was that of a young married salesman, thirty-eight years old, who said that he had suffered for upward of five years with pain all over the body, particularly in both legs from the hips to the calves and often in the ankles and the elbow joints: sensation of pressure in the temples and in the back of the neck; cramping pain in the back of the head and both shoulders; and pain off and on in the right side of the abdomen. He was the type of patient that we see so frequently amongst the Polish and Russian Jews. His only complaint seems to be "breaking pain all over." Physical examination was entirely negative, save for the existence of a scar on the left side of the glans. His serological examination was:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	weakly
Cells	12
Fehling's	+

No better illustration of the class of case that we put under the caption of root neuritis can be cited than the following: A printer, male, married, forty years old, who was infected with syphilis when he was twenty-five years old, complained for five years of impotency, and numbness of the left hand which came on at intervals, especially when he was tired or disturbed. Occasionally this numbness extended into the neck and lips. He had a wabby sensation in his feet, especially when excited. Following the infection he took mercury by mouth for two years and after that by inunctions. He also had twelve doses of salvarsan. When we saw him all his

laboratory reactions were strongly positive, the number of lymphocytes being 78.

Acroparesthesia, a "root" symptom in the majority of instances. It is astonishing how many cases of cerebrospinal syphilis have acroparesthesia as the chief symptom, and particularly is this the symptom from which the patient seeks relief. Many of the cases that are included under the captions of neuritis, meningomyelitis, meningoencephalitis, and root neuritis have paresthesia, but the paresthesia in these cases is of secondary importance to pain and paralysis of one kind or another. Of our 245 patients there were ten whose sole complaint practically was paresthesia. Most noteworthy of these was that of a lawyer, forty-seven years old, who was seen first in 1911. He had had syphilis nine years before, and was treated for four years by a specialist of the city in which he lived. His complaint was of a sensation of stiffness and tingling in the face, feet, and legs, as if they had been burnt, or as if he had recently been exposed to piercing cold; and a sensation of numbness in the sides and the hands, especially the ball of the thumb and the first finger, and to a lesser extent in the ball of the foot. After this had been in existence about a year, he became nervous and depressed, and had to give up his work. The only objective symptom was pinpoint pupils, which did not react to light. The serological examination was negative, but his disorder was interpreted as syphilitic, and he was given 0.6 salvarsan intravenously, and his physician counselled him to continue antisymphilitic medication. A year later, the paresthesia was much better and he returned to his work.

The serum Wassermann was —, the cerebrospinal fluid —, globulin —, cells 61. He was now given a course of neosalvarsan. On April 23, 1915, that is four years after I first saw him, he relates that he goes months at a time without indication of paresthesia. The case must be interpreted as endarteritis, the brunt of the lesion being borne by the sensory neurons.

Acroparesthesia is often associated with pain of indefinite description and distribution. A married woman, twenty-three years old, who admitted a labial chancre two years before she came to the hospital, complained that her tongue felt painful and unnatural, and that the lips were the seat of a tingling sensation. Occasionally a sensation of numbness was felt also in the hands, the fingers, and the tip of the nose. In addition she complained of headache and loss of hair. The serum Wassermann was positive, the cerebrospinal fluid negative throughout. She was under observation and treatment for two years, and her symptoms disappeared.

It must be mentioned at this juncture that many years ago Kahler (*Zeitschr. f. Heilk.*, 8, 1887) gave the name of multiple specific root neuritis to a clinical condition made up of an insidious progressive implication of the different cranial nerves and slowly developing neuritis of many of the spinal nerves. Apparently Kahler and others who reported cases believe that they were delineating a separate disease, as it were, but scarcely any one would endeavor to hold that position today. Such a picture as that which he describes does undoubtedly occur, but the symptoms that may result from root

neuritis, dependent upon syphilitic pachymeningitic and leptomeningitic indurations vary from "crick" in the back up to the most violent, agonizing pains, and from slight feeling of weakness up to profound atrophic paralysis.

Neurasthenia rediviva. Scarcely any one contends today that there is a disease *sui generis* called neurasthenia. There is a well defined symptom complex which is the expression of some disease that disorders the nervous system in whole or in part. A syphilitic neurasthenia has been described by some of the older writers. The devitalized individual, however, with so called tertiary syphilis is not referred to in this series. The cases that I have put in this category are usually those of young men and women, many of whom do not know they have had syphilis. Not a few of the nineteen of our series had been under treatment for a long time for digestive disorder and weak nerves. This series of cases contains no general paresis, but it must be mentioned that many patients who have general paresis are treated often for months for neurasthenia.

It would be difficult to find a more typical instance of syphilitic neurasthenia than the following: An unmarried woman, twenty-eight years old, had been ill for five years and finally had reached a state in which she was confined to the house, almost bedridden. Her complaint was of nervousness, weakness, depression, hopelessness, headache, insomnia. She had gradually passed into a state of invalidism, of whose origin no one save herself had any suspicion. On being pressed, she admitted syphilitic infection when she was seventeen years old. The serum Wassermann was strongly positive, the cerebrospinal fluid negative. Within two months she took a position as a domestic and within six months her symptoms had practically disappeared.

Often the label, neurasthenia, is attached in lieu of one more appropriate. In many cases the symptoms do not entitle the possessor to be called even neurasthenic; this conveys some idea of their indefiniteness. Such was the case of an Italian tailor, sixty years old, who denied syphilis, and whose wife had borne seven children. He had complained for four months of pain in the region of the stomach, which radiated through the left chest, through the left shoulder, and down the arm. This pain was so severe that he scarcely slept for a few months preceding his entrance to the hospital. He lost a great deal of weight, and vomited on several occasions, but the vomiting was not followed by relief of pain. His condition had been diagnosed as cancer of the stomach. His serum Wassermann was positive, his spinal fluid negative. On further questioning he admitted that fifteen years ago he had an ulceration of the foot, which a physician pronounced to be syphilitic, and which was treated with mercury and potassium iodide.

In many instances we hesitate to label the disorder from which a patient suffers neurasthenia or hysteria. One of the lessons that six years' experience in a hospital devoted exclusively to nervous diseases teaches, is that the diagnosis of hysteria is rarely made. Either the disease is very infrequent in this country compared with European countries, or we fail to recognize it. When the obsessed, the

perverted, the wilful, and the indolent are eliminated from the psychoneurotics of this country, the list is very small.

The patient whose history is herewith related seemed to be a classical example of that hysterical disorder known as *astasia abasia*. Many diagnoses had been made of her ailment, the most incongruous being *pellagra*: A married woman, twenty-seven years old, complained of burning pain in the feet; pain all over the head; she was nervous and emotional; had "roaring" through the body as if she were exhausted; trembled all over; and was unable to walk. This had continued over a period of three years and seven months. She married at twenty years, but had never been pregnant, which was attributed to *coitus reservatus*. Menstruation began at fourteen years, was regular, without pain, scanty, lasting from seven to ten days. At fifteen years she gradually became nervous, easily fatigued from work, especially from dancing, etc. She became quite irritable and unable to concentrate her attention on definite work. She had frequent crying spells, because she felt out of harmony with her friends, in consequence of which she became seclusive. She dreamed continually, but did not remember the character of her dreams. In September, 1911, the patient collapsed suddenly. She became so weak and exhausted that she could sit up only for a short time. Gradually she became entirely bedridden. Three years ago, she began to have burning pain in feet and throbbing headache when she cried.

Examination showed that patient was unable to stand or walk; there was no paralysis, no mechanical restriction, no deformity. The tendon jerks were equal. There was no diplopia, no nystagmus. Both pupils were large, regular, and of prompt reaction. The special senses were normal.

The Wassermann in the blood was positive on three different occasions by two observers. The spinal fluid was negative; no cells. She began to recover rapidly after the first administration of salvarsan. In two weeks the roaring in the body entirely disappeared; she had no headache or vomiting and she gained eighteen pounds. She was then sent to Mountainbrook, Brewster, N. Y., where Doctor Miller kept up the salvarsan therapy. At the end of a month she returned to her home, apparently in perfect health.

Syphilis and insomnia. There is nothing characteristic of the insomnia of cerebrospinal syphilis, unless it is associated with headache, which it is in many instances, but not in all. Persistent insomnia invariably demands investigation, and it is surprising to find how frequently it is found to be dependent upon some syphilitic disease. The cases included under the caption of insomnia in this study were those in which insomnia was practically the only symptom, although in many instances it led to, or was associated with neurasthenic or hypochondriacal symptoms, such as in the case of a married chauffeur, twenty-eight years old, who denied syphilis, but had been complaining for about a year of sleeplessness, nervousness, and irritable solicitude concerning his health. The illness began with disorder of the digestion, which was followed by intractable insomnia, then depression and self con-

cern. He maintains that the diseases that he has vary from "a spot on the lung" to intestinal obstruction, and he can see only the grave or asylum awaiting him. There were no somatic signs of disease. The serological examination was:

Serum Wassermann	+
Cerebrospinal fluid	-
Globulin	-
Cells	-
Fehling's	-

He received two intravenous injections of salvarsan, followed by thirty-eight injections of mercury bichloride, and, five months after his entrance to the hospital, he returned to his work.

Syphilis and epilepsy. Epilepsy of syphilitic origin has long been recognized. Knowledge of it is the foundation of the rule of thumb, "suspect every case of epilepsy manifesting itself for the first time after thirty years of age to be syphilitic or neoplastic." In some cases it is difficult to say whether the attacks are evidence of an organic process (Jacksonian epilepsy) or the expression of a generalized syphilosis. It has been assumed (Fournier *et al.*) that epilepsy may be the result of the spirchetes acting directly upon the ganglion cells of the cortex, but this has not yet been proved. The occurrence of epileptic attacks in a patient who has had syphilis, always suggests general paresis, but the differential diagnosis can always be made by careful study and the use of the colloidal gold test.

Syphilis of the nervous system and trauma. Trauma has never been given an important role in the causation of nervous diseases by American neurologists. The Germans have contended that it was often an important factor in the causation of the traumatic neurosis (Saenger, Oppenheim, Ehrn-zooth, *et al.*), but what is true of one country is, fortunately, often not true of another. In this series was only one case in which syphilis was the important contributing cause of a major traumatic neurosis. A bachelor, thirty-two years old, occupation electrician, came to the hospital, December 18, 1912, complaining of convulsions of the right leg, which started in the great toe and gradually went up the right side of the axilla. The upper extremity is not involved. The attacks occurred with varying frequency and sometimes he had had as many as four or five a day. In addition to this, he complained of pain through the left side of the head, more or less constant, which pain seemed to be relieved by the occurrence of twitching movements in the right leg. These symptoms had existed for about a month and he attributes their occurrence to an accident which he had in September, 1915; he was up a telegraph pole, holding a wire; his right leg came in contact with another primary wire, and 2,300 volts passed through his body. His right leg contracted involuntarily and thus broke the circuit. His gloves and the heel of his right boot were burnt. He was very much upset by the accident, but continued at his work and had no definite symptoms until November 25th. He rose from a chair and started to walk; his right leg drew up and he became unconscious and fell, striking his head upon the desk. He was found upon the floor, the following morning, by an inspector of the plant where he was working. This was the only attack of unconsciousness that he has experienced. Physical ex-

amination was entirely negative. He denied syphilis. The serological examination was as follows:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	+
Cells	9
Fehling's .....	...

He began to improve rapidly after the second dose of salvarsan.

Syphilitic neuritis and polyneuritis. Until the publication of Cestan's work (*Nouvelle iconographie de la Salpêtrière*, xiii, 1900, page 153), the occurrence of syphilitic polyneuritis was widely denied, but at the present time it is generally admitted. It has no distinctive clinical features, although it is generally of the motor type, unlike other forms of neuritis of protozoal origin.

In 1899, I had under my care for a number of weeks a married woman, thirty years old, whose symptoms were those of multiple neuritis. She was unable to stand, to walk, or to use her upper extremities because of the disorder which was not discovered, and she recovered in about four months. I saw her again in 1913; she complained of pain all over the body from the toes to the fingers; joints felt stiff and sore, and she became quite excited when she attempted to walk or to do her housework. These symptoms have been in existence upward of a year, during which time she is gradually growing fat. Other symptoms were insomnia, depression, discouragement. Aside from the presystolic murmur heard with greatest intensity at the apex, and flat feet, there were no objective signs of disease. The serum Wassermann of her blood was strongly positive.

The peripheral nerves themselves may be affected by a syphilitic virus, that is, a perineuritis, or possibly a true parenchymatous neuritis, but such occurrence must be extremely rare. Facial paralysis due to syphilitic infection is wholly mechanical, and secondary to a periostitis of the canal through which the facial nerve travels to its exit.

There is nothing about the manifestations of trifacial neuralgia due to syphilis that is at all characteristic, so far as my experience goes; for instance, its origin would not have been recognized in the case of a widow, fifty-eight years old, who complained for eighteen months of severe pain in the right side of the face and head, occurring paroxysmally and at times with such severity that she had to have morphine administered hypodermically. She became infected with syphilis at forty years of age, and received inadequate treatment. The Wassermann reaction on serum was strongly positive, and the spinal fluid was negative throughout. Her pain yielded to prolonged salvarsan and mercurial administration.

In many instances it is impossible to say positively whether the symptoms which a patient has are dependent upon what would seem to be the most likely cause, or whether syphilis is the real cause. Such was the case of a carpenter, thirty-seven years old, of whose case the previous diagnosis was typhoid spine. He complained of pain in the small of the back which extended around the sides, numbness on the outside of both thighs, and pain on the outer side of the right thigh, a general feeling of weakness in the legs, especially the knees. When he was twenty-two years old, he contracted syphilis, and was treat-

ed for upward of a year. He had been married six years, and his wife had never been pregnant. The symptoms of which he complained developed after he recovered from an attack of typhoid fever, which confined him to the hospital for three months. The only objective symptom was tenderness of the spine of the first, second, and third lumbar vertebrae. The serological examination was:

Serum Wassermann	+
Cerebrospinal fluid	+
Globulin	0
Cells	0
Fehling's	+

He received six doses of salvarsan and thirty injections of mercury. When he was lost sight of, his Wassermann reaction was still positive.

Shivering attacks and choreiform movements an expression of cerebrospinal syphilis. Shivering attacks, that is the ordinary manifestation of a chill without sensation of cold, and irregular movements somewhat resembling chorea, occur as the expression of cerebrospinal syphilis in a few instances. In this series there were four such cases. The symptoms are to be interpreted as manifestations of meningeal irritation, affecting the anterior roots, very rarely the pia of the cerebrum. The symptoms may be very severe as in the case of a butcher, thirty-seven years old, who had syphilis when he was thirty, and who received inadequate and inappropriate treatment. The initial symptom of the illness for which he consulted me was a sensation of general weakness, especially on arising in the morning, and a burning sensation in the feet of eight months' duration. Soon after this, he became nervous, was always jerking the hands, twitching the eyes, grimacing, and showing general restlessness. Sometimes the twitchings of the face were merely in the nature of a spasm, and during these attacks he would be unable to talk for several minutes; he would often display impatience and anger, which occasionally alternated with crying. There were no somatic evidences of disorder of the nervous system. The serological examination was:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	+
Fehling's	+
Cells per c. mm.	120

When the patient first entered the hospital the clonic myospasm was very striking; as he lay on his back his hands and feet were strongly flexed or extended, and the groups of muscles in the legs or thighs, peronei, gastrocnemii, quadriceps, glutei, supinators of the hands, biceps, triceps, deltoid, etc., displayed striking clonic contractions which lasted two or three minutes, then subsided, and then after a varying interval recurred. Every now and then the face showed almost complete spasms which centred about the eyes, so that the lids were drawn up and the brows corrugated. Occasionally a strong depression of the thyroid cartilage was visible, and then a movement as if the patient was making abortive efforts to swallow. None of these movements occurred while he was asleep, and they were much ameliorated by keeping him in bed.

His serology became negative and his symptoms disappeared after he had received five intravenous injections of neosalvarsan and several injections of mercury.

Rheumatism often a euphemism for syphilis. I am not ambitious to restore the diagnosis "rheumatism" to its former popularity. The designation means something to the layman. It means pain, stiffness, and swelling of variable intensity. Those are the symptoms that many parents with cerebrospinal syphilis have. It is not strange, therefore, that they speak of their ailment as rheumatism. If we detect the cause of the symptoms and overcome it, there is no valid reason why the patient should not call his disorder rheumatism.

A married woman, thirty-eight years old, complained of pain in the hands and feet and of swelling of different joints, when she came to the hospital; swelling of the middle finger of the right hand; a sensation of pressure and of pain after eating; of pain and stiffness in the chest, in the back, especially after working. The pain was always worse in humid weather. In addition to these symptoms, she complained of headache, which had been in existence only eight days. She had been married eighteen years, and had borne no children, but she had had one miscarriage and one ectopic gestation. Physical examination was entirely negative. Serological examination:

Serum Wassermann	+
Cerebrospinal fluid, Wassermann	+
Globulin	—
Cells	51
Fehling's	+
Colloidal gold	+

Multiplicity and variability of symptoms in syphilitic nervous diseases. Multiplicity of symptoms has long been regarded as a striking feature of syphilitic disorders, but the theory is not founded in fact. Many of the patients, a study of whose symptoms is the foundation of the present contribution, had one or two symptoms only, or at least that was all they related. A striking instance to illustrate this statement is that of a retired soldier, sixty-two years old, who denied any knowledge of syphilitic infection, and who came to the hospital because of manual tremor, which at times was so pronounced that he was unable to write, or to use the hand for anything that required steadiness. This symptom had been in existence about four years. In addition, he was subject occasionally to slight dizzy feelings, as if he were going to fall, and at times when lying down, he had a sensation as though there was a quivering all over the body.

Physical examination was negative, save for the tremor, which was of an intentional character, a very slight unsteadiness of gait, and absent knee and ankle jerks. The pupils were small, the outlines slightly irregular, but they reacted promptly to light. The blood pressure was 140. There were no mental symptoms whatsoever. The patient made steady improvement under antisyphilitic medication. Serological examination was:

Serum Wassermann	+
Cerebrospinal fluid	—
Globulin	—
Cells	39
Fehling's	+

Everyone who encounters many syphilitic diseases knows that the character of the symptoms often varies in such a way as to indicate that different tissues are involved at different times. For instance, it is no uncommon thing for a patient at one time to present meningeal symptoms, and at another to

display symptoms that are evidently vascular in their origin. The case in point is that of a young married woman, thirty-five years old, who came to the hospital in September, 1914, complaining of pain all over the body, through the feet, in the soles, in the legs, back, chest, arms, and of a general feeling of soreness; the toes felt sore and hot, her voice was often husky, and she felt generally out of sorts. She had become infected with syphilis fourteen months before, and had received four injections of salvarsan and internal medication. Physical examination was negative, save for an evidence of a former iritis and a Wassermann, positive in the serum, negative in the cerebrospinal fluid. She received five injections of 0.6 salvarsan intravenously, and one 0.9 of neosalvarsan. The Wassermann reaction of the serum became negative. Six months later, during which time she drank very excessively, she was seized with a left side hemiplegia, which has persisted in a modified way until the present day.

Syphilis often involves simultaneously several components of the nervous system and different levels. The symptoms may indicate that the entire cerebrospinal axis is involved. The best designation that can be given these cases is cerebrospinal syphilis, predominantly meningeal, vascular, or parenchymatous.

RECAPITULATION AND SUMMARY.

Occurrence. Syphilis of the nervous system displays itself not infrequently in the guise of practically every disease of that most vital part of the body.

Symptoms. The symptoms of syphilis of the nervous system are in many instances neither pathognomonic nor suggestive. They are often indefinite and inconclusive. Objective symptoms particularly are lacking. Multiplicity of symptoms is not the rule, it is the exception.

Diagnosis. The diagnosis cannot be made in the majority of instances from consideration of the symptoms alone. Information obtained from study of the blood serum and cerebrospinal fluid, substantiated by repeated examination and corroborated by others working with different technic is absolutely trustworthy and of more diagnostic value than the clinical evidence.

Prognosis. These disorders, apparently unrelated to syphilis, and usually unsuspected, are of good prognosis, unlike the syphilitic nervous diseases that have progressed to the production of pathognomonic objective symptoms.

Treatment must be of the disease and the patient—for the former salvarsan and mercury; for the latter consideration and encouragement.

37 WEST FIFTY-FOURTH STREET.

Pituitrin in Obstetrics.—J. L. Bubis, in *Surgery, Gynecology, and Obstetrics* for November, 1915, states that pituitrin is an ideal oxytocic and may be given in any stage of labor. Small doses influence the pains, but with large doses the uterine contractions are beyond control. In normal labor small doses of pituitrin will shorten the time of labor from two to twelve hours or more. Pituitrin does not take the place of forceps, but if properly used makes a forceps case easier.

THE MEDICAL SERVICE IN THE ORGANIZED MILITIA.*

BY WILLIAM S. TERRIBERRY, M. D.,
New York,

Lieutenant Colonel, Medical Corps, Chief Surgeon Division,
N. G. N. Y.

We must assume a basis of agreement in a discussion such as this and we will, therefore, assume for the sake of argument that there is a demand throughout the United States for an adequate military and naval preparedness and that this demand has been made by a majority of the people of the country. Following this assumption, the question now arises as to what method of organization and armament is to be carried out. To understand our part in preparedness, we must consider the different methods that are being advocated. There have been innumerable schemes of organization, some bad, some good. Three of these are now prominently before the public: First, the scheme proposed by the staff of the army; second, the so called Continental army organization, the plan of the Administration; and third, the Federalization of the organized militia. To all of these plans there is one common practical difficulty, namely, that in all probability the personnel cannot be secured without some form of conscription.

The general staff proposes a greatly increased regular army, a short term of enlistment, and a reserve. It provides for a continuation of the soldier's training in the reserve during a period of years, and finally enrollment in a reserve without further training.

The total number of trained men that would be available under this scheme would approximate, in the course of a decade or so, something in the neighborhood of two millions, distributed throughout the various lines of defense, from the fighting front to oldest reservists guarding communications, depots, arsenals, and other less strenuous military duties. This plan perpetuates a system of highly trained, mercenary professional armies; a military organization hopelessly out of date.

The armies of all of the great military nations of modern times are national armies, based not upon volunteering, but upon universal military service. They are in time of peace, as well as in time of war, a people in arms. With us, our army is a select few who volunteer to make the career of arms their chosen profession. The maintenance of this system of professional troops is enormously expensive, depriving meanwhile the majority of the male citizenry of the duty and opportunity of military training.

The great cost of the regular army establishment keeps the forces during peace at a small proportion of their war strength, with the direct result that a mobilization of the regular army for war would necessitate an infusion of sixty per cent. of green men and probably forty per cent. of untrained officers. This means that our present regular army would not be able to take the field for at least three months after mobilization.

It is also a fact that our army is practically de-

void of any great measure of field training in large sized units of the various arms of the service in combination. This state of affairs is due to many circumstances. The principal cause is the wide distribution of the army at separate posts with small garrisons from Maine to the Philippines, and from the Canal Zone to Alaska. These garrisons are rarely larger than a regiment. The system of small separate posts began immediately after the American Revolution, and was kept up by the exigencies of the War of 1812, and the Indian wars of the early and middle nineteenth century. Today this intolerable military folly has been perpetuated by politicians for the good it will do them and their constituents in the neighborhood of these posts, a well recognized political perquisite. The general staff plan is likely simply to enlarge the evils apparently inseparable from our present regular establishment. As to the reserve under this plan, it will also be based upon the willingness of the reservist to serve. The regular army has a reserve now, I believe, of sixteen men.

The Administration's plan for a peace time volunteer army provides for the enrollment of a force of 400,000 men in annual quotas of 133,000; short periods of "intensive military training," whatever that may mean, and a reserve. The force is raised by authority of Congress and is to be under the direct orders of the President, both in peace and war. It can thus be used anywhere and for any purpose. It is to be trained by the regular army, armed, equipped, and paid by the Federal Government. This army is not to be assembled, except for a short period, about one month or so, each year. Such a plan assumes that there are 400,000 men of military age and fitness, willing to give up their usual occupations entirely for a month for the compensation of similar grades in the regular army. If there are this number of volunteers, and I doubt it, how can we expect them to become soldiers by this kind and duration of training? A soldier is made by the habit of discipline, the implicit obedience to orders, and by the morale which comes from constant contact with disciplined men. The Continental army leaves these all important objects unattainable. This force, if raised, will be trained at existing army posts and thus the system of small posts will be even more strongly fastened upon us.

The militia consists of every male citizen physically fit between the ages of eighteen and forty-five years. It is a vicious inheritance from our English ancestry. As a military force it has never served any useful purpose in the entire history of our country. "Utterly worthless, entirely unreliable" was Washington's opinion. In the second war with England its record is shameful; constantly running from inferior numbers, beaten upon every occasion but one, its conduct is a blot upon our history. The very rottenness of the militia produced the organized militia, the National Guard, as a protest that there was military virtue in volunteers, and manhood and patriotism in our population.

The principal trouble with the National Guard, is that it is based upon volunteering, and that it is controlled by a very defective system of military laws. It is difficult to discuss its value. It varies from an excellently organized, thoroughly equipped,

and fairly well disciplined and instructed little army such as is maintained by New York, to the farcical outfits which disgrace many of the States.

The National Guard system is worth perpetuating and developing only upon condition that it can be standardized to a common high level, and that it can be made available to the Federal Government for use at any time, for any purpose, and as long as it is needed. This can be done only by radical changes in the law and probably in the Constitution of the United States. Such changes can be easily made, and of all the plans of military preparedness, the regulation of the organized militia offers the best prospect of development into a National army of the twentieth century model. The fear that a National Guard of 400,000 and its reserve, will constitute a vast political machine has been often expressed, and is, I believe, one of the underlying causes of the unwillingness of the government to build up this military asset into a thing of value.

Whatever the form of organization, a great part will be played by the medical profession. It is not too much to say that the success or failure of future wars may depend upon the care that is given to the organization of this department. The smallest proportion of medical officers that will be needed for service with troops actually in the field is one per cent. and probably more will be demanded. These men will have to be medical officers, not civilian doctors improvised into officers. To train these men takes years of instruction and practice. Their duties are largely military, based of course on a thorough knowledge of our own particular profession. How are we going to get these men enrolled and trained? Will they volunteer in time of peace and make the necessary sacrifices of time and money? I think not. Unless some easy way can be found to train them without undue loss to them, they probably will not be forthcoming in sufficient numbers. Short periods of annual maneuvers will not go far toward producing competent medical officers. Their specialty must be taught by continuous contact, with troops, supplemented by field work with large bodies of troops under service conditions.

In addition to these medical officers, a vast number of practitioners will be needed for service at the rear. Even this class will need to be organized in time of peace, in order to be immediately available upon the onset of war. As yet no steps have been taken to authorize any such organization; our views upon the subject are hazy, inchoate, and unformed. The experiences of the present war furnish certain data which may lead us to correct ideas, but there is still a crying need for definite regulations.

The best organization seems to be a civilian base hospital unit, complete, with consultants, operating surgeons, assistant surgeons, specialists, laboratory men, and a nursing force; this unit to be organized and its personnel kept up during peace to a full war strength. For the members of this unit little military instruction is necessary. The duty of the unit is to take over and operate a base hospital, this institution differing in no way from a modern civil hospital. The military knowledge necessary to the conduct of this hospital will be supplied by the commanding officer of the hospital, who must be a med-

ical officer of rank and of much military experience.

The country will look to us as a profession to render a high class of medical and surgical work. Poor work will not do. We must recognize that the public of this country know well what constitutes good medical service, and will demand that kind of treatment for the army's sick and wounded. Every little community in these days has a well organized and well equipped hospital. The people of the country are becoming used to good surgical and medical treatment and to good nursing.

If the government wishes the support of the people of this nation, it must see to it, that the sick and wounded get the best possible care. In time of war the activities of the medical service fill the home country to the exclusion of everything else. Everybody has some one in whom he is interested, wounded or sick in some military hospital. If there is cause of complaint by reason of the neglect of these sick and wounded, no political support to the maintenance of a state of war may be expected. A political party in war will continue to remain in power, or will fall, conditioned upon its attainment of military victory and the good treatment of the sick and wounded. Victory is obtained by having the greatest numbers available for service where they are needed, at the time they are needed. This means that every wounded man must be returned to the ranks at the earliest possible moment, fit for duty. Again, this implies the best surgical treatment all the way from the spot where the wounded man is hurt, to the place where he completes his convalescence. It also implies that the recovered soldier never is out of the hands of the military authorities, and is granted no sick furloughs and no political favors to cover malingering.

In conclusion, I submit in all modesty my opinion that no adequate method of national defense will arise from our present agitation. The past history of our country does not warrant any such a desired consummation. We have never actually been tested in war, and it will take a real war with an overwhelming defeat to convince us that in a national army based upon universal training in time of peace, is the only safety.

HEADQUARTERS DIVISION, NATIONAL GUARD,
MUNICIPAL BUILDING.

QUININE AND UREA BICHLORIDE IN THE TOXEMIA OF PULMONARY TUBER- CULOSIS.*

By MYER SOLIS COHEN, A. B., M. D.,
Philadelphia.

Visiting Physician to the Home for Consumptives, Chestnut Hill;
Eagleville Sanatorium for Consumptives, Etc.

The far advanced stage of pulmonary tuberculosis presents the greatest difficulties and disappointments in the treatment of this disease. Indeed, so pessimistic are most physicians, including even tuberculosis workers, as to the chances for recovery of patients in this stage, that hardly any sanatorium will admit them, and hospitals for advanced cases are regarded as places for their isolation rather than for their cure.

*Read before the West Philadelphia Medical Association, November 16, 1915.

Medical literature contains little that is helpful in the treatment of such patients. Apparently most physicians—especially tuberculosis specialists—are so perfectly satisfied with their knowledge and ability, that when the measures they employ fail to benefit, they jump to the conclusion that nothing at all can be done for the patient, never doubting the measures they have used or their skill in employing them and hence not investigating to see wherein they have failed or endeavoring to find some other means of giving relief.

Probably the most distressing and uncontrollable feature in the far advanced stage is the toxemia. We know that this is due to the disease and disappears when the disease is cured; and that naturally all measures directed to curing the disease will aid in curing the toxemia. Consequently fresh air, rest, and good food are always indicated in the treatment of tuberculous toxemia; and by many this is the only treatment employed. Some authorities go even so far as to state that, if persisted in long enough, rest in the open air will bring down the fever unless the patient is beyond cure. But those of us who have seen patients in their beds in the open air of the country while getting good nourishing food, lying for months and months and sometimes for years, with septic temperatures the whole time, know full well that in many cases rest, fresh air, and good food, even at a sanatorium, are not in themselves sufficient. They are essential, of course, the *sine qua non*, but they do not constitute the whole treatment.

Many other measures have been employed in addition to these cardinal ones, some of which have proved of great value in certain cases. Among the drugs that have been employed, creosote and its carbonate probably hold the highest place in the esteem of most practitioners.

Another drug that is of inestimable value in combating toxemia, including the toxemia of pulmonary tuberculosis, is the hydrochloride of quinine and urea. This drug has been used empirically in the treatment of pneumonia with pronounced success by a number of observers, including the writer. One of the remarkable results from its use in the latter disease, aside from its bringing about an early crisis, has been the controlling of the toxemia, which seems to diminish as the temperature declines. Some recent German investigations have indicated the scientific basis for the action of quinine in the neutralization of toxins. I have employed this double salt in the toxemia of infections other than pneumonia and tuberculosis with seemingly good results.

But it is concerning its action in reducing the septic temperature in advanced pulmonary tuberculosis, for which purpose I believe it was first administered by Solomon Solis-Cohen, that I wish to speak at present. For this high fever is one of the most difficult things to control; and every means for reducing it should be welcomed by the resourceful physician. In very many cases the administration of quinine and urea hydrochloride will cause a reduction of the fever and an amelioration of the other toxic symptoms. Every patient will not respond to this treatment, however, and the same patient may respond at one time and not at another. It is not a specific. One who expects invariably favorable re-

sults will be doomed to disappointment. But at the same time the use of this drug will agreeably surprise those who have regarded as hopeless the reduction of a high septic temperature and who have been discouraged by the failure of their previous efforts. It makes the treatment of advanced tuberculosis easier, but by no means easy. It adds another and effective weapon to the physician's armamentarium and greatly increases his resources.

I am not in a position to say why in some instances it gives brilliant results, while in others it fails. Whether it is effective only in certain types of toxemia or in toxemia due to certain microorganisms I am not able at present to state. The various factors concerned have not been sufficiently studied to render possible a definite pronouncement on these points. The therapeutic test alone will determine the result. I have never known it to do harm in patients who have no idiosyncrasy against quinine. Therefore, in toxic cases a trial of the drug seems justified.

I give the drug by mouth in capsules. I am afraid to give it intermuscularly owing to the likelihood of abscess formation, should the technic not be perfect. Some have given it intravenously. It should never be administered subcutaneously.

The dose may be five grains, seven grains and a half, or ten grains. Occasionally fifteen grains might be justified, and in susceptible individuals two or three grains may be sufficient. The drug may be given every three or four hours, or three times, or twice, or once a day. Doses and interval depend upon the effect produced. After the fever has been reduced it is often possible to diminish the dose or lengthen the interval. This must always be done upon the advent of cinchonism. When the dose given has no effect at all, either on the symptoms or in producing cinchonism, we are usually justified in increasing it. Like any other therapeutic measure it must be given "mixed with brains."

2113 CHESTNUT STREET.

THE CORONER AND THE PHYSICIAN.*

By W. S. WADSWORTH, M. D.,
Philadelphia.

It is surprising how far from satisfactory are the notions about the coroner which are prevalent, not only among doctors, but among all classes of the community. Coroners have been performing their duties for centuries in all English speaking countries, yet the articles on the coroner which appear in the medical press are often startlingly crude, often entirely in error as to the facts, and not seldom simply display the animus of the writer. While the office is spoken of as a very old one historically, it is a very new one, and the duties of the coroner have changed rather rapidly. More especially is this true in recent years. In early days the separate office of coroner did not exist, and the only part of his functions that was attended to fell to some other judicial officer. At first the coroner was a local agent of the king, and had many duties which were

*Read before the Northern Medical Association at Philadelphia, December 15, 1905.

long since transferred to other officials so that his activities have been greatly restricted. This fact has often been considered apart from the equally important one that the duties of the office have grown to be more difficult and complex. Sudden death, in former times, implied in the language of those days either a stroke of Providence or violence at the hands of another, but how complicated have become the problems of sudden death with the progress of civilization, few stop to consider. Death by natural forces, such as lightning or flood or tempest, hardly enters into the modern records of a busy coroner in a great city.

Transportation accidents serve well as a type to illustrate the growth of the difficulties encountered. With each new mode of travel we find new subjects to master. Railroads, trolleys, bicycles, automobiles—each has brought a whole new field of trauma with its special problems of cause and effect.

Formerly the subject of poisoning was comparatively simple. Today it is overwhelmingly difficult. Formerly almost no records were kept regarding deaths. Now bureaus of vital statistics are busy devising all sorts of difficulties for both the coroner and the doctor. It is apparent, to all who know, that the work of the coroner is daily growing more difficult by the addition of the changes wrought by the intricacies of modern life.

We can easily be misled by the simple consideration of the unamplified statement, that it is the duty of the coroner to investigate cases of sudden or suspicious deaths. One of the natural conclusions of those who think hurriedly and on insufficient information, is that this study of death is a purely medical topic. Not a few statements have been made and printed which start out with this logical deduction from wrong premises. Curiously enough, an equally wrong conclusion is arrived at by those who consider only the legal duties and relationships of the coroner, and, had the industrial problems become more thoroughly worked out, we might find a similar point of view taken by engineers.

As a matter of fact, there are problems in the field of law, in medicine, in sociology, in engineering, in pharmacy, in education, in theology even, which demand no small intelligence and balance to reach the right common sense solution, and there is always a danger in having too specialized a preparation for any such broadly inclusive work. If the coroner has no legal knowledge, he must have a good lawyer to advise him professionally. If he is not an expert physician, he needs the active assistance of medical men trained in this medical specialty, and he will be acting wisely if he advise with specialists when he deals with other problems requiring special knowledge and training.

The class of cases which the coroner handles in a year's work constantly calls for medical information and brings the coroner and physician into peculiarly close relations; it is eminently desirable that both parties have a clear idea of what such relations should be, and why.

In these days we are having it impressed on our minds that America is not notable for an attitude of preparedness. Possibly this extends even to coroners and the medical profession. Sure it is,

that there is little literature calculated to help either party to a better state of preparedness for the duties and relationships that actually and always should exist. Our medical schools engrossed with other matters of more or less importance are too busy to teach the young men their civic duties, and we wonder how things are to be bettered unless radical measures are adopted.

If the coroners' physicians, of whom there are a host in this country, find they had no real training at school for their work, that no postgraduate courses are given in our schools, and that their position in the community is often a hard one for many reasons, it certainly is the duty of the profession as a whole to consider and plan what should be done to improve conditions. It is certainly not likely that any right action can be taken before a true conception prevails of what a coroner is and should be—and by this I most surely do not imply following the sophomoric diatribes that have so often appeared in the medical press in the past. Information has been hard to obtain, and what purported to be such was often so filled with error and misunderstanding that it not rarely did more harm than good. There are ways of studying the whole matter and of gaining that insight without which no opinions are of the least value as guides to conduct or the making of laws. I am always glad to find a body of medical men who desire to consider the subject, and I have not infrequently laid aside important work and deprived myself of needed rest to prepare to take part in discussions thereof.

The coroner is by law directed to investigate a certain class of cases. It is clearly necessary for some one to determine whether a given case belongs to that class, and whether it is to be reported to the coroner. This duty of deciding on the probability of the doubtful cases and reporting such cases, as well as those clearly belonging to the class, often falls on the physician. The physician must, therefore, have gained some grasp of these laws and their interpretation in the community in which he lives.

I have long maintained that all coroners should have prepared circulars giving a simple presentation of these things, to be furnished to physicians and all others interested. The physician should try to put himself in the position of the investigator in order to realize what sort of a report to make. The physician has, or should have, a clear understanding of his duty in the matter of making out death certificates; the government has supplied a more or less satisfactory circular on the subject, and if he realizes that the coroner is bound by the same rules regarding certificates, he should realize at least a part of what is to be included in the report.

It should not need much discussion to impress the desirability of promptly reporting the cases. The attitude of the physician is unfortunately not always a wise or proper one. The law may be subject to criticism, may even be open to rational objections, but as long as it is the law, it is to be obeyed and it is not only unwise but inconsiderate to make the officer whose duty it is to enforce it, unhappy or to hamper him; it not rarely drives that officer to use the authority which the law gives him in enforcing what he would gladly have accom-

plished without friction. The physician has no excuse whatever for being inconsiderate of officials who are performing their duty. Fortunately, I personally seldom meet with this sort of exhibition, but I have observed instances where the physician has not only been obnoxious, but has actually done wrong through pure folly. I have known cases where, in order to avoid the result of their mistakes and wrong doing, they have sought to divert the attention of the public or their medical associates by criticism of the coroner. I find enough instances of limitations in the reports from the medical profession quite to convince me that doctors at times need the leniency of the coroner and his expert advisers, and I cannot help but feel that this is likely to continue. Too much has been said in public already on this score to require me to give examples, though that would be no difficult task. As the honest medical man knows, at times he needs the considerateness of others, so he should be quite as ready to show it to public officials.

I fancy medical men seldom realize how many sources of information are open to the coroner, how quickly such information comes, and often how damaging it is to the man who tries to "put something over" on the office. Strange as it may seem, there is a class of physicians who, in the assurance that all the coroner's people are fools, send in strangely devised reports with clearly apparent intent to deceive, and when the fraud fails to work, they are found loudly proclaiming their belief that the coroner's office should be abolished.

While I have said enough to show that the coroner's dealings with medical men are not always pleasant, the subject has hardly been opened up, for there are times when the trouble arises, not only from ignorance or carelessness, but from positive wrong doing on the part of the physician.

I am glad that my experience makes it possible to say that aside from the clergy, no other group of men shows up so well on the whole as the doctors, and this is appreciated by all wise coroners. It should be remembered, however, that the general good quality of the profession establishes a standard which makes all departures therefrom the more noticeable.

It is well recognized by most coroners that they have no jurisdiction in the matter of regulating the practice of medicine or of prosecuting doctors for ordinary mistakes. There is a point, however, beyond which this immunity ceases, though the exact locus of that point is hard to settle. There are some flagrant acts committed that constitute criminal malpractice, for which the coroner is bound to hold the culprit responsible. In such cases it is clearly the duty of the whole medical profession to help the coroner see that justice is done.

Where crime has been committed, or on sufficient grounds there is suspicion of a crime, the coroner is expected to gather evidence and is empowered to use legal force, if necessary, to procure such evidence. Some physicians find it hard to reconcile this with the principle of privileged communication or professional confidence. It should be remembered that any one who hides a criminal or helps him to escape, is ethically a party to the crime after the fact, and may become so legally. The problems of

professional ethics and civic responsibility are far from simple, but the tendency of the law is to consider public duties above private codes of action.

With the growth of health and sanitation laws, we find a gradual change of former conceptions regarding the yielding of private rights to the cause of the public welfare. What compensation the doctor is to receive is a matter of adjustment between the state and the medical profession, and for that the coroner is not responsible. If the medical profession rests content with the antique regulations in this country, while European countries have long recognized a higher value for medical services, that in no way constitutes grounds for criticizing the coroner for making legalized calls for service without suitable compensation. The profession alone is to blame for submitting to what other countries, some time ago, recognized as injustice. The whole matter may be summed up by a plea for a larger realization of what coroners must and should be, and an equitable adjustment of the medical profession to the situation.

OFFICE OF THE CORONER, CITY HALL.

SYPHILIS OF THE STOMACH.

Two Cases Which Resembled Cancer,

By E. D. HOLLAND, M. D.,
Hot Springs, Ark.

I wish to report two cases of syphilis of the stomach which are unusual since they simulated gastric cancer and not ulcer. The first case happened in one of the best hospitals in St. Louis, where I was serving an internship, and was as follows.

CASE I. Mr. X., railroad conductor, aged thirty-five years, arrived at hospital very much emaciated and cachectic, had no appetite, and vomited after nourishment. The physical examination revealed a dilated stomach, tenderness over the pylorus with a palpable tumor at this point, and in fact every classical symptom of cancer of the stomach.

Patient was given the next morning an Ewald test meal which was removed in an hour and tested with the following result: Free hydrochloric acid, none; lactic acid, strong; blood present, both red and coffee colored, and microscopical particles of mucous membrane. The stomach analysis was made several mornings with the same results. The stool showed blood constantly.

This patient was examined by several of the house physicians, and it was finally decided to call some of the specialists in the city to examine him. Accordingly we held an informal clinic one evening with Mr. X. as exhibit A. B. C., and the unanimous opinion was that it was a case of cancer of the stomach.

There was to be a meeting of surgeons at the hospital the next evening, so we demonstrated Mr. X., giving all the findings. The surgeons examined him thoroughly and declared it a case of gastric carcinoma, very likely inoperable.

It was decided to do an exploratory operation with the object of removing the growth if there was any hope. Accordingly the patient was operated on a few days later, and on opening the abdomen the gastric involvement was found to be so extensive that it was thought useless to try to remove it, so after taking a piece of tissue for microscopic examination the abdomen was closed.

This removed tissue, containing some enlarged glands, was divided between two laboratories for examination, one part being sent to a university and the other part being kept for examination by our pathologist. The report came back from one laboratory that it was a tuberculous condition, while the other laboratory reported it to be cancerous. In either event the condition was hopeless in the patient's run down condition and the treatment became symptomatic entirely.

About this time there was a shift in the medical staff and the new head of the department, hating not to try anything, put the patient on small doses of potassium iodide and mercury, with the result that in a month this patient had improved so much that it was possible to give him full treatment, and in ten weeks he went back to work in good shape and has remained in good health ever since.

I think that this is the most striking example of how accurately syphilis of the stomach can simulate cancer that I have ever seen, because this man was examined by numbers of the best internists in St. Louis, and the tissue removed from his stomach was examined by two competent pathologists.

This all happened before the days of the Wassermann test, but how many of us now fail to have a Wassermann test made in what we consider a classical case of gastric carcinoma?

CASE II. About a year ago I received a patient, Mr. Y., from a small town in Kentucky, who gave a history of having had stomach trouble for several years. Mr. Y. told me that he had spent all that he had been able to make (he was a laborer) traveling from one clinic to another in the cities trying to find a cure for his condition. He had finally been told that he had a cancer and that there was nothing to be done for him.

Patient could only drink milk and broth that had been strained through cheesecloth; the least little solid particle in the milk or broth seemed to stop his throat up and was regurgitated. However, if the milk or broth was strained, the patient could drink it in almost unlimited quantities. He said that it didn't seem to "fill him up" and that he just drank a certain amount and stopped when that was gone.

Physical examination showed the lower end of the stomach at the level of the umbilicus, its walls infiltrated and easily palpable, with some tenderness on pressure. I tried to pass a small stomach tube, but found a constriction just above the cardiac end of the stomach that I could not pass. Patient's stool showed blood; he was emaciated and sallow and every symptom seemed to point to gastric carcinoma. He denied ever having had syphilis, but, realizing that the only possibility of doing him any good lay in his condition being syphilitic, I had a Wassermann test made which was reported as two plus.

I gave this patient an injection of salvarsan five days from the time of his arrival in Hot Springs, and another dose ten days later. At the end of three weeks he was able to eat vegetable soup, butter-milk, unskimmed milk, and finely ground beef steak. The blood had disappeared from his stool, he was in no distress and had started to gain weight from the liberal diet he was able to retain.

We were unable to take an x ray when he first arrived, as it was impossible to get enough bismuth into the stomach at one time to give a shadow, but x rays taken two weeks from the time of his arrival showed a stomach almost vertical in position, hour-glass in shape, with an almost total stricture of the cardiac end. The constriction in the middle of the

stomach seemed to have a lumen of not over an inch.

The whole stomach seemed to be narrowed and elongated, and I do not think that it had a capacity of three ounces. There was no dilatation above the central stricture, and I think the reason he could drink milk in unlimited quantities was that it passed right through the stomach, owing to the lack of dilatation, firm gastric walls, small opening for entrance, and the vertical position, which caused the fluid to enter the intestine without ever filling the stomach.

We were never able to get a satisfactory x ray, as we could never get enough bismuth into the stomach at one time to give a good shadow, but by the comparison of several x rays we were able to pick out the foregoing facts.

Mr. Y. was in a destitute condition and could remain only four weeks, as he would not go to a charity hospital and was anxious to get home since he felt so much better.

I heard from him, six weeks after he left, to the effect that he was holding his own, was almost back to his normal weight, and able to work on a farm. He seemed to be very well satisfied with his condition. Had he been able and willing to remain under treatment, I think he could have been put into very good condition.

I have had several other cases of syphilis of the stomach, most of them simulating gastric ulcer, but the two described are the only ones in which specific treatment was used exclusively and are therefore the only ones in which there is absolutely no doubt as to the curative agent.

The foregoing goes to prove that an internist, although a specialist, must be alert to every possible factor that might affect his diagnosis.

DUGAN-STUART BUILDING.

GYNECOLOGY.*

Its Benefactors, Its Scope, and Its Progress.

By KARL H. GOLDSTONE, M. D.,
New York.

I feel safe in saying that no other branch of the science of medicine has made more rapid strides than gynecology. From its former modest position as subsidiary to the midwifery of old, it became a branch of general surgery. Owing to its great advancement and improvement, it is now a dignified specialty. Like all the specialties, it is linked to the great master art and science that we call medicine, but it is as distinct from general surgery as pediatrics is from internal medicine. The pediatricist must be an internist and something more. He has to deal with a myriad of diseases foreign to the grown individual. He has a tremendous new and separate field in the science of infant feeding; and so, too, the gynecologist must be first a surgeon, and then a master of the intricacies of the female pelvis, its anatomy, its physiology, its pathology, its bacteriology, the diagnosis and treatment of its dis-

*With special reference to the author's experience in Germany during 1912-13 while serving as resident surgeon in the Royal Saxon Hospital for Women at Dresden, the Königliche Frauenklinik at Kiel, and in minor capacity at Halle and Breslau.

tinct diseases. He must know thoroughly the pathology of labor; he need not be an obstetrician, but he must often begin where the obstetrician finishes. As a result of the state of our modern civilization, he follows at the heels of the obstetrician to an alarming extent. He may never see the normal progress of a child through the birth canal; when he is concerned with obstetrics, pathological labor is his field. He must possess more than common judgment in selecting the proper operation; and he must, above all, be thoroughly acquainted with vaginal technic. He must be expert in the technic of Cæsarean section, hebotomy, hysterotomy. He should be equipped with a cystoscope and be able to inspect and diagnose bladder diseases and catheterize ureters. He should be educated in pathological anatomy and in research methods; and lastly, he must be expert with the microscope and the test tube.

BENEFACTORS.

We, in America, have reason to be proud of our Sims, our Emmett, and our Thomas. The world recognizes these men as the fathers of gynecology; but what they have started, the Germans have finished, and where they left off, the Germans have begun, and have been and are the worthy sons of their fathers. We owe our present gynecology to Freund, Sänger, Schroeder, Martin, Hegar, Fritsch, Gusserow, Köberle, Olshausen, Leopold, and Noggerrath of the past, and Zweifel, Veit, Hofmeier, Krönig, Frantz, Bumm, Döderlein, Werth, Stöckel, Wertheim, Schauta, Winter, and Dührssen of the present. Each one of these men has contributed, not only to the literature, but to gynecic technic, to the pathology of women; they have opened entirely new fields on which we have never previously trodden. Their coworkers and assistants in Germany and Austria today are a large and strong body of men, tireless and courageous, who are taking up the threads where their chiefs have left off. They are like miners—they dig ceaselessly for scientific gold; opening up here, chopping away there, and discovering all the time.

Sänger is the father of our modern fistula operation; Martin it was who first classified ovarian tumors; Hegar opened up the field of our present knowledge of cervical diseases; Gusserow is the master of surgical technic; Leopold the developer of Cæsarean section; Noggerrath, of our present gynecological bacteriological knowledge; Fritsch gave us our modern idea of the metropathies; Köberle was the developer of myoma operations; and now Zweifel, in his last days, is resting content with his labors in gynecological pathology and in aseptis. Freund is the father of the carcinoma uteri operation. Winter classified ovarian tumors and their treatment. Veit gave us our modern understanding of eclampsia. Wertheim is the developer of the great carcinoma operation which bears his name, and which is performed the world over. Stöckel, my worthy chief, is a gynecological cystoscopist and bladder operator. Schauta is the developer of modern vaginal technic. Hofmeier and Winter are the gynecological statisticians. Dührssen made vaginal ovariectomy possible. Bumm is

showing the medical world the great curative value of radium in pelvic tumors. Krönig and Döderlein are the authors of a wonderful work on operative gynecology; Olshausen developed the operation of ventrifixation; Werth gave us our first clear understanding of extrauterine gestation.

Every *Frauenklinik* or woman's hospital has developed something. Each *Frauenklinik* has its abdominal and vaginal operating room; its pathological laboratory; its bacteriological laboratory, its cystoscopy room; its experimental laboratory, its museum, its x ray and photography room, and all departments have their respective workers.

PROGRESS IN ASEPTIS.

We have learned after long experience that we must protect our patients, not only from exogenous bacteria, but also and more carefully from the endogenous, the saprophytes of the vagina, the epiphytes of the vulva, or the common skin bacilli. The universal use today of rubber gloves has reduced infection by exogenous bacteria to a minimum; but our vaginal and abdominal wall aseptis and antiseptic methods have not materially reduced infection by endogenous bacteria. Zweifel tells us that every gynecological or puerperal wound is infected with endogenous bacteria, but in the general run of cases infection does not occur. It may take place, nevertheless, when certain factors are brought to bear, such as stasis, strong pressure on wound surfaces, the leaving behind of dead material, such as blood, ligatures, gauze, etc. He also asserts that endogenous germs may cause a fatal wound infection. Polano's investigations have proved that disinfection of skin and mucous membrane does not protect against endogenous bacteria. After all, a good technic is our main weapon against infection.

The peritoneal toilet. A weighty advance in the fight against peritoneal sepsis was due to the labors of Höhne, the associate at Kiel. Höhne first experimented with animals, with the idea in mind of finding a method to increase the physiological resorptive power of the peritoneum. He found that he could accomplish this by the injection of olive oil intraperitoneally; later, he added to the oil ten per cent. of camphor. Rabbits were injected with this camphor oil, and two days later were inoculated with virulent colon bacilli; the animals remained healthy, and the peritoneum, opened some time later, showed a condition of reactive aseptic peritonitis. I injected after Höhne's method fifty c. c. of five per cent. sterilized camphor oil, four days before a proposed operation. The skin in the median line was nicked first with a sharp pointed knife, a trocar needle was then inserted until no resistance was felt; we were then in the peritoneal cavity. First, ten c. c. of a warmed one to 500 novocaine-adrenaline solution was allowed to pass in; five minutes later, the oil was injected. Four days thereafter, on opening the abdomen, a fibrous and pus covered peritoneum was found. Cultures of the pus in this case of advanced puerperal septic peritonitis showed no live bacteria; the patient made an uneventful recovery.

Spinal anesthesia. At the thirty-ninth surgical congress, Hohmeier and König sounded the key-

note of their investigations on spinal anesthesia; they cited 2,400 cases, but their results were not very favorable, twelve deaths being recorded. Undaunted, the gynecologists set to work, and soon the Freiburg clinic published a series of 2,542 cases without fatality. They believed that faulty technic was the cause of the poor results of the earlier reports. Today, in Germany and in Austria, spinal anesthesia is carried on to an enormous extent. During my service at the women's hospital at Kiel, spinal anesthesia was used exclusively; we resorted to ether only when the patient manifested pain or nervous unrest. Krönig says that success in spinal anesthesia depends upon five factors: 1. The specific gravity of the solution used; 2, the character of the drug; 3, its temperature at the moment of injection; 4, the site of puncture; and, 5, the position of the patient during and after the puncture. In short, the medium injected must be heavier than the spinal fluid, it must be less than ten c. c. in quantity, and the patient must retain her position in extreme cyphosis for at least three minutes after the injection. For operation on the lower pelvis and vagina, we can accomplish much with extradural or sacral anesthesia. Even skeptics admit its freedom from harm, and it is the anesthetic of choice abroad, in operations on tissues supplied by the sacral plexus of nerves. To my chief, Stöckel, of Kiel, is due the credit for this advancement in anesthesia.

ABDOMINAL INCISION.

Pfannenstiel's incision. This is a transverse incision of about two fingers' breadth, above the spine of the pubis, extending right and left to about the combined width of the recti. The fascia of the latter is cut transversely, and the muscles are split at their natural uniting point. This incision has to recommend it the fact that the nerve supply of the recti is not disturbed, so that we avoid atrophy and postoperative hernia. Also, the fascial scar has a good muscular support, not possible with the linea alba incision. Pfannenstiel's incision is a distinct improvement over the linea alba incision.

Vaginal celiotomy. Atlers, in 1857, was the first operator to open the peritoneal cavity through the vagina. In 1870, Thomas, of New York, came to light as its supporter, but it remained for Dührssen, of Berlin, in 1894, to perfect our present vaginal technic. He termed it colpoceliotomy. We must admit that operations by the vaginal route favor convalescence to a large degree. The convalescence is shortened, postoperative shock is avoided, afterpains are lessened, and hernia is avoided; also the time of operation is shortened; and so, in most German clinics recourse is had to this method of procedure whenever feasible, and except for malignant tumors, dermoid and solid ovarian growths, and possibly bilateral sacatosalpingitis, vaginal colpoceliotomy is the routine procedure. Dührssen has his followers in such excellent operators as Strassman, of Berlin, Abel, and Blumreich. In Schauta's clinic in Vienna, it is the method of choice, and Hofmeier prefers the vaginal route in cases of carcinoma uteri.

Appendicitis. Since the publication of the researches of Aschoff, the Freiburg pathologist, our understanding of the pathology of appendicitis has

materially changed. What we formerly termed chronic appendicitis, we should now call appendicopathia chronica. This change in terminology is as welcome to us as is the change from chronic metritis to metropathia chronica. Chronic appendicitis indicates a continuation of a process of inflammation of the walls of the appendix following an acute inflammation. Aschoff has shown that such a process does not take place, but instead, a definite localized phlegmon follows on the site of the primary seat of acute infection. This is nature's healing process, similar to what occurs in other parts of the body. Following the phlegmon is a stenosis or obliteration of the lumen of the appendix. Distal to this a process of granulation takes place, or in cases where there have been two or more acute attacks, the distal end of the appendix becomes edematous. This is really an unfinished cure on the part of nature, and following this an acute attack may light up at any time. If the latter does not take place, there may be instead a succession of very mild attacks, extending over a long period of years, engrafted upon a state of more or less permanent sensitiveness at McBurney's point.

Cæcum mobile. To Wilms, of Basle, we owe our knowledge of this pathological state, an interesting clinical picture indeed; but I omit further consideration of it, except to state that many a woman has been ovariectomized where this condition was a true etiological factor of her symptoms; hence, I urge more frequent recourse to bismuth injection and Röntgen study.

Appendicitis and annexitis. We formerly believed that in all cases of pelvic peritonitis the excitant entered via the external genitals, gonorrheal, puerperal, or tuberculous, and in this way produced the local peritonitis. From the investigations of Pankow, we now know that the appendix may be an important causative factor. We know that the tip of the appendix is the most frequent site of infection; we have learned that this distal end is in close approximation to the right annexa. Pathological anatomy has taught us that pus here will gravitate to the cul-de-sac of Douglas, adhesions will form, the pus will be resorbed, and the sequelæ are obliteration of the Douglas fold with retroflexio et retroversio uteri fixata. Krönig has demonstrated the existence of corpus luteum abscess, following appendicular infection; so we now know, positively, that an appendicular abscess may be the forerunner of pelvic peritonitis, perisalpingitis, endosalpingitis, and perioophoritis. Pankow's statistics for the etiological factors of annexal diseases is as follows:

Gonorrhea	.....	43 per cent.
Tuberculousis	.....	22 per cent.
Puerperal sepsis	.....	13 per cent.
After appendicitis	.....	22 per cent.

Appendicitis and sterility. We have seen that twenty-two per cent. of all annexal disease is due to appendicitis or periappendicular abscess; as a result of its complications we have perisalpingitis, perioophoritis, and pelvic peritonitis; the abdominal outlet of the tube becomes closed and sterility follows. Schridde's investigations have shown that the appendicular inflammations have a predi-

lection for the serous coverings of the generative organs, more so than the other causative factors, namely, gonorrhea, puerperal sepsis, and tuberculosis; the latter rather favor endosalpingitis. Hence the sterility of appendicitis is the most hopeful form, as we can often successfully restore the tubal lumen.

PROGRESS IN GYNECOLOGICAL TECHNIC.

Operations for retroflexio mobilis have made rapid strides. Outside of the master work in the operation for cancer of the uterus, the German gynecologists have done yeoman service in their efforts to improve the operations for the relief of the foregoing and allied conditions. There are numerous methods and it is not the scope of this paper to detail them all. I can do little more than mention the most valuable. Olshausen's ventrifixation has for its purpose the suspension of the uterus intraabdominally. Vaginal fixation (Mackenrod and Dührssen) is also carried on to a large extent abroad and gives good results. Kocher's exohysteropexy is an operation in which the fundus uteri is stitched to the parietal peritoneum, thus making the greater portion of this organ extraperitoneal. The uterus in this position is then lapped by the rectus fascia. The Doléris operation has its champions in Schauta and Bumm, and is the procedure by which the redundant round ligaments are forced through a rent in the rectus fascia, both ligaments being then united in the centre. This is the operation which Gilliam modified later.

Alexander-Adams operation. I will treat of this procedure in detail because it is the operation of choice in Germany and Austria for the relief of retroflexio mobilis. It has its prominent adherents in Küstner, of Breslau; Werth, of Kiel; Zweifel, of Leipzig; Kocher, of Zurich; Futh, of Cologne; and Edebohl and Goldspohn in this country. I understand that American operators in general are opposed to this operation; they base their opinions on three supposed fallacies, 1, that the round ligaments are too thin to support the uterus; 2, that they are difficult to isolate; 3, that traction on them does not elevate nor antevert the uterus. The answers in defence follow: 1. Sellheim's experiments showed that this ligament in nulliparae has a thickness of 2.2 mm. at the external ring, three mm. at the internal ring, and 3.4 mm. at its insertion into the uterus. In multiparae it is 3.5 mm. to four mm. On splitting the aponeurosis the ligament will be found to be thick and strong. 2. The ligamentum teres is sharply defined anatomically; we need only place the finger over the external ring, with the woman in a position of complete relaxation, and a thick cordlike band will at once become evident; further, on opening the aponeurosis of the external oblique muscle, the two nerves which accompany the ligament can be easily made out—the ilioinguinal and external spermatic. These followed inward will be seen to pass under the ligament, thus giving us our landmark. 3. Those who have acquainted themselves with the technic of this operation, will realize the absurdity of this statement. We can demonstrate the anteverting and lifting powers of these ligaments by allowing an assistant to pull strongly on them, bridlelike, the operator palpating bimanually the fundus uteri at the

same time; drawing the bands toward the anterior iliac spines will elevate the uterus, traction toward the symphysis will antevert it.

Prolapsus. Prolapse operations have also made wonderful strides in the last decade. Through improper and deficient nutrition, through multiple pregnancies, and lowering of the social status by which women are forced to do all the manual labor in the fields, the female population of Germany, especially of Schlesien and Schleswig Holstein, come trooping into the Frauenkliniken of the big cities, with the uterus hanging between the thighs, the pelvic floor no longer a support, the vaginal walls covered no longer with mucous membrane, and the bladder and rectum no longer internal organs. This state of affairs has made skilled plastic operators of the men in these German and Austrian clinics. Every operator has a multitude of prolapse operations at his command to fit the individual case. The one that gives the best results and meets most of the requirements, is the Wertheim-Schauta or interposition operation. In his inaugural dissertation over the permanent results of this operation carried out in the service of the Frauenklinik at Kiel, Thissen reported 223 cases with 206 permanent results after five years, and seventeen recidivists or 92.4 per cent. of successes. What other prolapse operation can make such a showing? The Schauta-Wertheim operation consists in making a vertical incision in the anterior vaginal wall, extending from a little below the urethra to within two cm. of the external os, prolonging this in a circular fashion around the cervix, and then stripping away the bladder and rectum. The fundus is now brought forward, the plica vesico-uterina is found and opened, and the uterus brought out into the wound; the plica is stitched to the back of the uterus at about the level of the internal os, and after putting the organ into position, the anterior vaginal wall is attached to the front of the uterus. This makes the latter an extraperitoneal organ, fixing it between the bladder and vagina.

Metropathia chronica et hemorrhagica. Since Scanzoni's labors in gynecological pathology, we have learned to distinguish or rather to isolate a distinct form of uterine disease—an idiopathic metritis, a disease in which the bleeding from the uterus plays a dominant role, and which is not associated with inflammation or annexal disease. Indeed, the only objective sign is an hypertrophied, hardened organ, showing histologically a hyperplasia of the connective tissue of the myometrium. These are the cases that we formerly termed and treated as chronic endometritis, and in which curettage availed little or nothing. In this disease we may find also histologically, distinct changes in the uterine vessels, but it must be remembered that this bears no resemblance to the so called uterine arteriosclerosis. In the hemorrhagic type, the women are near to the climacterium, and the dominant symptom is the intermenstrual and intramenstrual bleeding; this is usually found in women who have borne frequently and this is the type of patient often ovariotomized or x rayed, to the chagrin of the doctor and the disgust of the patient. The only hope lies

in a prompt hysterectomy. The operation can usually be performed in a few minutes via the vagina, with a lessened amount of shock, and with none of the sequelæ that entail the removal of the ovaries; the latter are left behind, so preventing the outbreak of that terrible symptom complex, the result of spaying, with its tremendous vasomotor irritation, its profound metabolic changes, and its deep psychical influences.

CONCLUSIONS.

I have tried in the foregoing to dilate upon some gynecological topics that were in mind and those which I believe are stamped with the mark of progress; I have left out some weighty problems and I have omitted a discussion of some broader subjects. There is much that is new to say in every chapter of gynecology and there are many new chapters. There are many investigators and investigations in this field, some that we hear little about in this country. Where the pathologist works hand in hand with the clinical gynecologist, as is the custom in Germany and Austria, the sparks of knowledge fly in all directions. Pathology is the basis of all medicine; pathology is still in its embryo stage in America, while it is the main armamentarium of the German medical school and, like poverty, it is always with them.

I should like to dilate on asepsis and the toilet of the operating room! I should have wished to give some true reasons for the superiority of spinal over general anesthesia. There is much to say about the postoperative care of gynecological patients; there is a great deal to relate in emphasis of the pleas and admonitions of our own Howard Kelly on the subject of the conservation of the ovaries. There are weighty arguments to offer for the vaginal route versus the abdominal; there are plastic operations unmentioned. Chronic metropathia is a weighty subject and there are volumes to say about annexal disease. We have learned a great deal about extrauterine conception. Advances in the pathology and therapy of myoma uteri are numerous. Entirely new operations are in use abroad for the cure of vulvar and vaginal carcinoma. Bladder diagnosis via the cystoscope is the largest and most important new branch of the gynecological tree, and carcinoma uteri, its pathology and its surgical technic form by far the biggest new star in the gynecological firmament. Of the latter I shall have much to say in the near future, including statistics gathered personally from the world's greatest gynecological institutions and their heads. The Wertheim operation for carcinoma uteri is the most extensive operative manœuvre carried on within the abdomen. The Wertheim operation cures fifty-five per cent. of cases; of no other cancer operation can we say as much, except possibly for operations for the removal of epitheliomas of the skin. Reuben Peterson asks, "Why do they (abroad) get so much better results in the operation for the cure of cancer of the uterus?" This is a profoundly important question. I believe I possess a key to the solution—more alert general practitioners, a far reaching educational propaganda among the women of the land, and a more radical surgical technic.

958 EASTERN PARKWAY, BROOKLYN.

THE TREATMENT OF TYPHOID FEVER WITH BACTERINS.*

A Preliminary Note.

BY EDWARD WAITZFELDER, M. D.,
New York.

In presenting this preliminary note on the bacterin treatment of typhoid fever, I shall confine myself entirely to the clinical features, leaving consideration of the probable mode of action for a future communication. Although, in the past, many methods of directly attacking acute infectious diseases have been attempted, all have failed because no heterochemical substance which is bactericidal without being lethal to the host, has as yet been discovered.

With the exception of hemorrhage and perforation of the intestine, all the severer symptoms and complications of typhoid fever are due to the toxins from the invading microorganisms, and anything which will limit their number or inhibit their toxigenetic function should produce an amelioration of the symptoms and a consequent lowering of mortality. For a long time I have believed that the duration of typhoid fever has been too long and its mortality too high, and I am hopeful that by the administration of bacterins we may lessen these two most distressing features of the disease. It does not seem Utopian to me to think that in the near future it will be classified among the milder infections.

During the recent outbreak of typhoid fever in New York city, sixteen cases came into my service at Gouverneur Hospital during the months of July, August, and September. Of the sixteen patients, fourteen were treated with bacterins and two ordinary, average cases with the average amount of toxemia and temperature were used as controls; that is, they received no bacterins and were treated symptomatically.

There were five males and eleven females. The youngest patient was four years old, the eldest about sixty years of age; four were complicated with nephritis; two of these cases were in alcoholics—both these patients died; one patient had severe bronchitis. In two cases a posttyphoid psychosis developed, which cleared up in about four weeks after the temperature became normal. In one case perforation of the bowel occurred; an operation was performed five and a half hours after perforation took place. The patient died forty-eight hours subsequently. Hemorrhage from the bowel occurred in one case and this patient's temperature fell to 93° F.; he recovered. One patient was pregnant six months; one case was complicated by a *Bacillus coli* bacilluria.

All the patients were placed on high calory diet, the amount in children varying from 500 to 2,000 calories a day, and in adults from 700 to 3,000 calories a day. We tried in every case to increase these amounts, but the patients simply would not take them.

In every case the typhoid bacillus was recovered from the blood, feces, or urine. A Widal reaction was noted in a majority of the cases, but in no case

*Read before the Medical Association of the Greater City of New York, December 20, 1915.

was a diagnosis of typhoid fever made until the organism was recovered by culture. The injections were given intramuscularly, mixed with from ten to twenty minims of sterile water, were almost painless, and in no instance did they seem to produce any reaction. The doses varied from sixty-six millions to 800 millions, the larger dose apparently acting best. Perhaps it would have been better had the intravenous method been used; but as I began the treatment hypodermically, it was thought best to continue that way. The vaccine used was prepared by the New York city board of health for immunization, and each c. c. contained one thousand million (one billion) killed typhoid bacilli.

This limited number of cases average as follows:

	PERCENT
Days of temperature from admission to hospital to normal temperature	20-11/14
Estimated days of disease to permanent normal temperature	26-1/14
Estimated days of disease on admission to hospital	8-2/14
Days of temperature from beginning of bacterin treatment to permanent normal temperature	16
Average number of bacterin injections	10-2/14
Mortality	14-2/14

As regards the number of bacterins to be used, I feel that at the beginning of this series the dose used was entirely too small and I rapidly increased the amount, trying in the case of adults and even adolescents to give in excess of 500 million bacterins; each day increasing the dose until an effect was produced in the lessening of the toxic symptoms and temperature, or a contraindication manifested itself. Just what that would be, I cannot say, as in none of the patients was there any unfavorable symptom. It is possible that a white blood cell count or a differential white blood cell count may be a gauge as to

important factor. Three of these cases are worthy of special comment.

CASE I. Helen E., aged twenty-one years; six months pregnant. I felt this was one of the most important in the series on account of the likelihood of abortion and the high mortality which accompanies that complication. I gave the case much thought and finally decided that the increasing toxemia and increasing temperature were more apt to induce abortion than the bacterins; so on the fourth day I gave 300,000,000 bacterins intramuscularly; at this time the temperature was 103° F. This was repeated every day for eleven days, the dose being gradually increased to 450,000,000 bacterins. The toxic symptoms disappeared, the temperature gradually fell and became permanently normal on the sixteenth day after beginning treatment. At the time of her discharge from the hospital the fetal heart was quite distinct and intrauterine fetal movements were active. (Two days ago I heard that pregnancy has been uninterrupted and she is now waiting for labor to begin.)

CASE II. Ida G., aged fourteen years, on the twenty-first day of her illness, had four hemorrhages, of a pint each, within a period of twelve hours the temperature falling from 104.2° to 93° F., where it remained for four hours and then gradually rose to 105.4° F. the following day. I have been unable to find an equally low temperature in this disease followed by recovery.

CASE III. Mary K., aged seven years, presented many irregular symptoms. Beside having a general bronchitis, her temperature range was very irregular during the second week, having morning exacerbations with evening remissions. The Widal reaction was continually negative until the sixteenth day. The picture presented was more like acute military tuberculosis than typhoid fever, and bacterins were withheld until the twenty-sixth day in hospital, when the blood culture was reported positive for typhoid bacillus. Bacterins were then given daily for four days; the temperature rapidly declined and became normal nine days after the first injection, and remained so for twenty-five days, when a relapse occurred lasting ten days, after which convalescence was uninterrupted.

An examination of the records of the hospital of the outbreak of typhoid fever in the same months

	Days of fever from admission to hospital to permanent normal temperature.	Estimated days of disease to permanent normal temperature.	Estimated days of fever from beginning of bacterin treatment to permanent normal temperature.	Number of bacterin injections.	Dose of bacterins.	
1 F. D., aged 33 years.....	36	23	7	10	11	400 to 550 millions
4 R. G., aged 12 years.....	30	34	1	28	13	250 to 450 millions
5 L. S. (3 cases in same family), aged 5 years.....	16	23	7	11	3	250 millions each
6 M. L., aged 28 years.....	24	27	3	22	10	500 to 800 millions
7 M. S., aged 18 years.....	10	24	8	12	4	500 to 650 millions. Bacterins discontinued at beginning of defervescence
8 G. C., aged 4 years.....	20	22	2	17	13	150 to 300 millions
9 L. G., aged 16 years.....	46	19	3	15	14	300 to 500 millions
10 F. M. (patient has marked arteriosclerosis) aged 50 years.....			30(?)		8	300 to 500 millions. Died on eighteenth day in hospital
11 M. S. (sister of Case 7), aged 11 years.....	33	42	3	37	27	100 to 500 millions
12 J. S., aged 7 years.....	22	34	12	21	6	100 to 200 millions
13 M. C., aged 27 years.....	22	34	10	9	4	500 to 650 millions
14 M. K., aged 7 years.....	48	22	3	9	4	60 to 130 millions
15 H. E. (6 months pregnant), aged 21 years.....	20	28	8	10	11	300 to 450 millions
16 L. G. (sister of Case 9), aged 14 years.....	31	37	3	20	5	250 to 500 millions. Bacterins discontinued on account of hemorrhage
Two additional cases were under treatment at this time in which no bacterins were given. Used as controls.						
1 F. S. (brother of Case 9 and 11), aged 14 years.....	12	20	1			
2 M. A., aged 12 years.....	17	40	1			

the effect of the bacterin treatment, and I regret that the thought did not occur to me in time to make the observation.

It was noted that the greater number of the patients were able to walk about the ward in a week after leaving bed (this was on the tenth day after the temperature became normal). This restoration of strength was due in great part to the high calory diet, but the rapid subsidence of toxemia was an

of 1913, show that the first twenty consecutive cases, comprising practically the same class of patients as to age, sex, occupation, and social condition (in whom bacterins were not used), the average duration of temperature from admission to permanent normal temperature was twenty-six and three fifth days; the same as in this series. In the two control cases in this series it was thirty-three days.

The period of convalescence was materially

shortened; all the patients were in condition to resume their usual vocation within one month after leaving bed, the average invalidism therefore being less than nine weeks.

From this limited experience I am inclined to think the administration of bacterins in typhoid fever is of service, in that it lessens the toxic symptoms, viz., fever, cardiac weakness, delirium, and exhaustion. I include the latter symptoms because, in the control cases and in those previously treated with high-calory diet, without bacterins, exhaustion was more marked and prolonged. A number of the cases showed signs of cardiac depression at the time of admission or shortly after; this was materially improved within a few days after the use of the bacterins and in no case was it a factor in the third or fourth week, ordinarily the time when it is most marked and dangerous. The delirium also rapidly lessened in duration and severity. Three patients who were in high delirium on admission, with irregular heart action and cyanosis, became rational about a week after treatment was commenced. As to the temperature, I am somewhat in doubt. I cannot agree with Calliston that the duration was shortened, but I am inclined to think the severity was lessened and in no case was it higher after than before the use of bacterins.

In presenting this report, made from the hospital charts and my observation of the cases, I must confess that I am strongly biased in favor of the treatment. It is logical, scientific, and exact. It measures up to and beyond the expectant plan of treatment, the one in present use, in that it reduces mortality and shortens the period of illness, and I feel that when a more extensive experience has determined the proper dose, the use of bacterins will become the rational and adopted treatment of typhoid fever.

104 WEST SEVENTY-FOURTH STREET.

Abstracts and Reviews.

SYPHILIS IN GENERAL SURGERY.*

By EDWARD MARTIN, M. D.,

Of the University of Pennsylvania.

To the surgeon, Doctor Martin observed, syphilis was of import because of its prevalence; its protean clinical manifestations, closely simulating tumors, or the proliferation, or destructive effects of other infections; but more particularly because, unlike all other infections, its direct lesions were so consistently, effectually, and promptly bettered or cured by medication that, with some exceptions, operative measures constituted a species of malpractice. Hence, to the surgeon, the questions of incidence and diagnosis were major ones.

As to the incidence of syphilis; a clinical examination of the West Point cadet corps failed to show a single case of syphilis, but the Wassermann survey indicated a five per cent. incidence, from which it seemed clear that from two to five per cent. of the commissioned personnel of the army were syphilitic

at the time they entered the service. Since applicants to West Point were physically picked men, the prevalence of syphilis among college men in general was probably slightly greater than it was among West Pointers. (Vedder: *Prevalence of Syphilis in the Army*.) From a Wassermann survey of candidates for enlistment, he concluded that about twenty per cent. of the young adult male population from which the army was recruited were affected with syphilis.

Out of 100 cases taken at random from the medical wards of the University of Pennsylvania hospital, there was a positive Wassermann reaction in nineteen, and of these only two gave clinical evidence of syphilis. These cases entered the hospital for the cure of diseases ranging from cholecystitis, renal sclerosis, gastric ulcer, and tuberculous pyelonephritis to goitre and most of them exhibited neither characteristic history nor clinical signs of specific disease.

Concerning diagnosis, the surgeon asked two questions: 1. Was the lesion under consideration syphilitic? 2. If not, had an underlying syphilis a distinct influence on its progression, or upon the outcome of surgical intervention undertaken for its cure? If these two questions could be answered in the negative, the query as to whether the patient had or had not syphilis was of minor immediate moment, though it was true that the spirochetes, exhibiting a special predilection for the perivascular tissues and the heart muscle, by the devitalizing effect consequent on impaired nutrition, predisposed to all other infections, to neoplasms, and to slow ulcerative processes.

Regarding the first question, Was the lesion syphilitic? With one exception, the extragenital chancre, surgical intervention was rarely proposed for the relief of either primary or secondary syphilis. But not infrequently, chancre, occupying other than its usual habitat, was regarded as epitheliomatous, and excision was ordered, particularly in the case of digital chancre as it affected medical men; it was painful, persistent, and atypical in appearance and not until it had been cut, curetted, cauterized, and otherwise stimulated to wider growth, and usually not until the axillary nodes had been excised by a sympathetic colleague, did the patient come to "the man higher up," by which time, even though spirochetes were not recovered from the ulcerating surface, a positive Wassermann and often a secondary eruption established the diagnosis which should have been made by the microscope weeks before.

The rapid evolution of chancre of the lip with the prompt and characteristic lymphadenitis, were sufficient to exclude cancer. Nevertheless, some of these cases were operated in; but the cutting of a wedge, quite inadequate for cancer, did no particular harm in syphilis, though there was resulting deformity.

The major difficulty experienced by the surgeon was in the distinction between gumma and malignant tumor, a difficulty greater than ever before, since the profession was awaking to the need of early intervention, and differential diagnosis of tumor cases in the early stage of development, either from rate of development or physical characterization, was impossible.

*An abstract of a paper read at the New York Academy of Medicine, January 6, 1916. For discussion, see page 428.

Concerning bone swellings, the x ray gave, even at the early stage, such pictures as usually enabled the determination with a fair degree of certainty of the syphilitic, tuberculous, or neoplastic nature of the enlargement. But no such help was afforded in tumor of the soft parts; and in the absence of a history or associated signs, the method of choice was microscopical examination, or wide excision, when it involved neither crippling nor gross deformity; or laboratory tests and the effect of vigorous anti-syphilitic treatment.

If within a week, or at most two weeks, anti-syphilitic treatment did not cause improvement, regardless of a positive or negative Wassermann, the lesion should be considered nonsyphilitic and so treated. The betterment of a specific lesion under well directed treatment occurred quickly. There were in hospitals at this moment thousands of patients perishing from the corrupting influence of a positive Wassermann upon the mind of the surgeon; drained by the steady progression of a condition which called for prompt surgical relief, and even more actively sapped by the long continued and futile administration of mercury, arsenic, and iodide of potassium.

When the lesion was surely nonsyphilitic, though the Wassermann was positive, the question arose as to supplementing the surgical procedure by specific treatment; nor, if it is accepted that a positive Wassermann is a proof of active spirochetes and that a harmless course of treatment will either quiet or kill them, would any but an affirmative answer seem logical. The reason for not so answering and acting, is based on the absence of gross functional or structural changes.

Contemporary Notes.

Fees under Workmen's Compensation Acts.—

Some of our readers, says the *Journal of the Indiana State Medical Association* for January, 1916, are favoring us with fee bills offered by various indemnity companies for services rendered in connection with injuries that come under the Workmen's Compensation Act. Not a single fee bill that has been submitted to us offers fees which, in the main, are anywhere near the fees charged by the average physician in Indiana. For instance, think of reducing and furnishing dressings for a hip dislocation, and receiving ten dollars for it; or of examining an injured person with a view to court testimony, and making a full and detailed report of the same, and receiving three dollars for it; then, be expected to testify in court for ten dollars, or to give expert testimony for fifteen dollars! To top the thing off, most of these fee bills demand that "the latest approved methods of surgery shall be employed." Surely these fee bills that are presented to Indiana physicians are an insult, and the companies that proffer them are preying on the cupidity of the profession. It is bad enough for the average doctor regularly to charge the same fees that were charged thirty years ago when prices for everything were from twenty-five to fifty per cent. lower than they are now, and not half the time nor money was ex-

pended in obtaining a medical education. Will the doctor ever rise to the point where he can be as independent as the ordinary day laborer who refuses to work except for an established fee?

Now and Twenty Years Ago.—In reviewing its own career since its foundation, twenty years ago, the *New Orleans Medical and Surgical Journal* for February, 1916, observes that if, omitting exceptions and details, it was asked to express broadly what it considered the most marked differences between the medical men of now and twenty years ago, it would state the following general propositions:

Looking first on the bad side, it appears that the younger men are less eager to work for work's sake alone, less amenable to discipline, less willing to do their full duty as subordinates, not satisfied to await reasonably for the time to arrive when they can properly assume leadership; while the older men are less inclined to be sympathetically helpful of their young brethren, less considerate of the beginners, they mingle less with them and do not perform their own share of work in the medical societies. The differences noted in the two sets no doubt are interdependent, they bear the relationship of cause and effect, but which is which is not for us to say; let our readers ponder upon the fact and reach their own conclusions.

Viewing the good side, fortunately the contrast is greater. Medical education, training, and practice, all are on a more exact, more truly scientific basis; more interest has developed in preventive medicine, and more advantage is being taken of the wealth of clinical material offered by our numerous and better managed hospitals.

Collect Your Compensation Fees.—Several cases have recently come to our attention, remarks the *Medical Adviser* for January, 1916, in which insurance companies have demurred at payment of physicians' fees, claiming that the injury did not come within the jurisdiction of the compensation commission.

Some of these protests may have merit, but we know of a few in which the company deliberately tried to sidestep a legitimate account by giving the doctor the impression that they were not responsible.

A physician who complacently allows an insurance company to talk him out of a fee not only suffers accordingly, but he is neglectful of his obligations to other medical men, inasmuch as he refuses to take the necessary steps which will not only serve to protect his own income, but discourage the practice on the part of insurance companies of habitually denying responsibility in a large proportion of cases.

We are gratified to note a pronounced inclination on the part of a good many physicians of late to make their demands in an entirely businesslike manner when dealing with these companies, and we hope to see the movement develop to such proportions that, in the future, physicians will cease to occupy the unenviable position which they have hitherto assumed; that of being the legitimate prey of the various grades of human vultures whose ambition in life is to plunder their sustenance from the toil of others.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, FEBRUARY 26, 1916.

THE EAST RIVER HOMES FOUNDATION.

Four years of successful operation of the East River Homes, the sanitary housing philanthropy endowed by Mrs. William K. Vanderbilt, Sr., have demonstrated the value and practicability of caring for tuberculous families in city homes. During this time many patients have been restored to health and working efficiency, in other cases the good results of sanatorium treatment have in a hygienic environment been made permanent, and it is believed that a large work of useful prevention has also been accomplished, especially among children who have been exposed to tuberculosis.

Apart from the excellent medical results, the homes have not only been self supporting, but the trustees administering the foundation have been able from the net income to make considerable appropriations to promote approved tuberculosis work elsewhere. From the rentals accruing during the year 1915 the trustees have recently made grants of \$10,000 to the Home Hospital conducted by the Association for Improving the Condition of the Poor in one of the four buildings in East Seventy-seventh Street; \$10,000 to the tuberculosis work of the Presbyterian Hospital; \$10,000 to the tuberculosis work of the College of Physicians and Surgeons of Columbia University; \$5,000 for the relief of tuberculous war sufferers in Europe; \$2,000 for research and teaching at the Adirondack Cottage

Sanitarium of the Trudeau Foundation; and \$2,000 for research in tuberculosis at the Babbitt Memorial Laboratories of the Loomis Sanatorium. Other appropriations have been made for Röntgen ray equipment for St. Joseph's Hospital for Consumptives in New York city and for the relief of tuberculous children at Sunnyside Farm in Sullivan County, New York.

The economic results attained are a striking object lesson of the possibilities in associating efficient business methods with projects in philanthropy. Substantial recognition of the principles of home relief for the tuberculous as worked out and applied by the East River Homes Foundation has been made by the New York city department of charities in arranging recently for the care of a certain number of the city's tuberculous charges in the Home Hospital. The officers of the East River Homes Foundation are: President, Dr. Henry L. Shively; vice-president, Dr. Walter B. James; treasurer, William K. Vanderbilt, Esq., Jr.; and counsellor, Henry B. Anderson, Esq.

MIXED VACCINES.

The advisability of employing mixed vaccines is receiving increased attention, but little serious work has been done in this country to elucidate the subject. The remarkable growth of the field of vaccines in the prevention and therapeutics of disease has brought as a corollary the question of whether, by a single mixed inoculation, protection may not be afforded against several diseases at once; obviously only against diseases to which there is probability of exposure is protection necessary.

Preventive inoculation has best proved its worth in the case of typhoid fever. In this country at least, typhoid is not infrequently associated with and confounded with paratyphoid A or B, usually the former. Clinically these conditions are scarcely to be distinguished, although typhoid is much the most dangerous. Laboratory diagnosis is necessary to differentiate them. But while the clinical features are similar, vaccination against typhoid gives no protection against paratyphoid of either type. Theoretically, therefore, a combined vaccine of the three specific organisms would be desirable. Combined vaccines are on the market, but certain grave objections to them are only now beginning to be cleared away.

With the combined vaccine, a variety of foreign proteids is introduced and the reaction of the body to these must be seriously considered. It is to be remembered that the action of a vaccine is to call forth a response on the part of the body, consisting of the elaboration of specific antibodies or immune bodies.

If more than one vaccine is given in one inoculation, will the response of the body to each be as high as if they are given separately in simple vaccines? In other words, will each vaccine of a mixture give as much protection as if it were administered alone? Then, too, it would not be astonishing if a mixed vaccine gave a particularly severe reaction, both local and general. Other more theoretical objections have also been advanced.

Experimental as well as carefully controlled clinical light has been thrown on this question recently by Aldo Castellani, who has contributed so largely to our knowledge of the etiology and treatment of diseases of hot climates (*Centralblatt für Bakteriologie*, 1, S. 63, 1, S. 77). So far as the preparation of mixed vaccines is based on scientific experimentation, it goes back to Castellani's demonstration in Kruse's laboratory in Bonn in 1901-2, that inoculation of an animal with three species of bacteria caused the production of agglutinins and immune bodies for all three. If a sufficient minimum was given, the amount of each was practically the same as in animals inoculated with that one species. Castellani has prepared and used in man eight combinations of mixed vaccines. Inoculation of these in man is harmless and the reaction is not marked, except in the case of the mixed cholera and plague vaccines, where a severe reaction occurs, not so severe, however, as in the case of Haffkine's simple plague vaccine.

Castellani's combined vaccines consist of emulsions in normal saline of cultures from agar, which are killed and sterilized by the addition of 0.5 per cent. phenol. He found that this method gave a less painful local reaction than broth cultures killed by heat, and phenol in this strength was efficient. The combined vaccine of typhoid and paratyphoid A and paratyphoid B he also prepares by heating broth cultures to 53° C. Castellani found that persons inoculated with these mixtures usually produced agglutinins for each species and in amount not much under that in control cases inoculated with the corresponding simple vaccine. The only exception to this appeared to be in the case of the mixed typhoid and dysentery vaccines, and here only to a limited degree. He studied only agglutinin production, but it is commonly held that the agglutinins give a rough index of the immunity conferred.

Provided that a mixed vaccine is fully potent for each of its component organisms, and imposes no additional risk, it presents certain definite advantages over a simple or one disease vaccine. One restriction, however, must be kept clearly in mind. Only those combinations should be considered safe which have been scientifically tested, and no organism should be included in the mixed vaccine unless

there is some probability of exposure to infection with it. Travelers or those resident in tropical or oriental countries might well profit by a mixed vaccine which would elsewhere be unnecessary. As every case of typhoid fever is a sanitary crime, so in the light of our present knowledge is it a prophylactic crime for any person exposed not to have the protection of vaccination against the typhoid group, as much as against smallpox.

SAJOUS CLUBS.

A letter to the editors in this issue of the JOURNAL not only embodies a high and thoroughly appreciated compliment to Dr. Charles E. de M. Sajous on account of his leadership in the study of the endocrine glands and his instructive articles on hemadenology in the JOURNAL, but sets an example that might well be followed by students of therapeutics all over the country. Treatment based on the internal secretions is, in some instances, positively startling in its results, and bids fair to revolutionize our methods in several lines of practice; it is also eminently satisfying from a scientific viewpoint, being far removed from our old hesitating empiricism. Similar clubs, therefore, formed to make an intensive study of hemadenology, will prove not only interesting in a high degree, but will furnish indispensable weapons to pediatricist, obstetrician, gynecologist, and the well equipped practitioner generally.

THE PATHOGENESIS OF HEMATURIA IN APPENDICITIS.

Those who have encountered hematuria in subjects stricken with appendicitis have frequently been surprised and have had difficulty in explaining the complication. On account of the diversity of character of the hematuria, several theories have been put forward to explain its occurrence. Are there predisposing factors which may place the renal apparatus in imminence of hemorrhage?

Robinson and Jacoulet conclude that certain dyscrasic conditions acting upon the nutrition, such as arthritis, rachitism, hereditary syphilis, and tuberculosis, predispose the renal gland to hemorrhage. In these affections, nutrition and oxidation are defective, while the lime salts are eliminated more or less abundantly and the decalcified blood is coagulated less readily. The overworked kidney will bleed more easily when an intoxication or infection enters upon the scene.

As to the productive factor, some consider it as the result of venous communications between the digestive tract and the urinary apparatus, admitting the existence of venous congestion in the neighbor-

hood; thus, the inflamed appendix provokes, by extension of the process, a congestion of the kidney which results in hematuria. Others look upon a nephritis as producing the original infection, while some have insisted on periappendicular phlebitis with extension as the cause. Infarcts and thrombosis of the renal vessels have been invoked, but the sudden appearance of hematuria with total absence of sequelæ in the renal glands, renders this pathogenesis doubtful.

Study of reported cases makes it appear that hematuria in appendicitis is of three types: 1, Hematuria from a lesion of the urinary apparatus; 2, hematuria from general causes; 3, hematuria from local causes.

Hematuria during appendicitis may coexist with lesions of the urinary apparatus, such as calculus, tuberculosis, etc. These hematurias are easily explained and have nothing to do with the appendicitis. Hematuria from general causes may be qualified as malignant. From toxemia or septicemia, albumin and casts appear in the urine and the patient presents edema. In other words, we are dealing with a nephritis which may become complicated by hematuria, but this is rare. Hematuria from local causes may be encountered, either before or after removal of the appendix. It is benign, occurs during good general health, and is followed by complete recovery. This type is the most interesting from the pathogenic viewpoint.

Many English surgeons believe that hematuria in appendicitis is due to the adhesions between the appendix, ureter, and iliac fossa on account of their frequency, and that it is therefore of ureteral origin. But this theory is weakened by the fact that these adhesions are not always met with, and the question may well be raised, whether or not there exists a periureteritis or venous thrombosis.

In the face of this uncertainty, on account of the suddenness of the appearance and disappearance of hematuria, from its frequent coexistence with the nephritic colic syndrome, its short duration, and the absence of sequelæ after recovery, Nové-Jossierand, of Lyons, is of opinion that the only explanation of hematuria is reflex renal congestion, the starting point being in the inflamed appendix and reaching the renal gland through the abdominal sympathetic. This theory is based on experiments undertaken by Claude Bernard and Vulpian on the part played by the sympathetic on the renal circulation. The renal congestion should have as main cause the appendicular reflex and as adjuvant cause a neighboring venous congestion. This pathogenesis appears rational and explains hematuria when there are adhesions binding the appendix or when the organ is free.

LEPROSY.

The Public Health Service has recently issued another bulletin, *Studies upon Leprosy*, which is worthy of brief notice. These studies were made at the United States Leprosy Investigation Station in Hawaii.

Chaulmoogra oil, which has long had a good reputation in the treatment of leprosy, has of late years been used hypodermically with glowing reports from some sources as to its success. This method was tried in forty-two cases, in sixteen for a long period. The results have not been brilliant, though the oil was helpful in many cases, and the method is not free from disagreeable complications. Carbon dioxide snow has been found to be a useful local reagent.

A case of leprosy is reported in a nineteen months old child. The disease is so rare in children under five years that this case is worthy of record.

A study of the blood of twenty-two lepers for acidfast bacilli resulted positively in six cases. A report is made of the cultivation of a nonchromogenic acidfast bacillus from one case.

THE DIAGNOSIS OF ACIDOSIS.

Study of the urine has yielded much valuable information to the physician in both diagnosis and prognosis; yet the correlation of the laboratory findings with the clinical condition is far from easy.

One of the most difficult problems is in regard to the condition called, for the sake of convenience, acidosis. By this is meant an increased acidity, or to be more accurate, a decreased alkalinity of the blood. At first it was supposed to be limited largely to patients suffering from diabetes, or from advanced cancer, diseases in which there are more or less marked disturbances of metabolism. The presence of acetone was considered to be an indication of pathological change. In addition to this substance, Gerhardt detected in the urine something which gave a dark wine red hue on the addition of a solution of perchloride of iron. He thought that this was diacetic ether and the material from which the acetone was derived. Later on it was determined that it was diacetic acid. Further investigation suggested that diacetic acid and beta oxybutyric acid were substances from which acetone comes and that the latter was comparatively harmless. It was at first thought that these substances were derived from the breaking down of protein material, but the more recent view is that they are formed from the fats.

In time acetone was found in many other conditions, such as pneumonia, scarlet fever, typhoid fever and nephritis. It was noted also in the urine

after operations, particularly when chloroform was used; if already present, it was increased in amount. As a rule, the risks of anesthesia were not increased if the acetoneuria had been of a chronic rather than an acute type.

It may be realized from the foregoing that it is not wise to lay too much stress on a single urinary examination. Conclusions should not be drawn until all the clinical manifestations are considered. Unfortunately the clinician is inclined frequently to throw the burden of interpretation upon the laboratory, whereas he is in the best position to weigh the evidence.

As a rule, the greater the amount of acetone, the less that of beta oxybutyric acid. Usually in diabetic coma the acetone is completely lacking, while the diacetic and oxybutyric acids are increased. Yet there are times when diacetic acid is the only one of the three found, and the clinical symptoms do not in any way indicate disturbance.

It is evident, therefore, that a diagnosis of acidosis must frequently rest on something more than the finding in the urine of any one of the three substances mentioned. The clinical symptoms and the course of the disease must be taken into consideration, and the diagnosis made with the assistance of the urinary findings, but not based upon them alone.

DYSTOCIA DUE TO CONSTRICTED OS.

J. Owen-Jones and Charles E. Morris write to the *British Medical Journal* for January 29, 1916, on a case of constricted os which came under their care. Such cases are extremely rare.

A young woman had suffered from procidentia uteri; the uterus had been ventrofixed by operation, but the procidentia recurred. She became pregnant for the first time, and on a Sunday began to have labor pains. On the following Tuesday the nurse, having been sent for, called the writers in, because she could not find the os uteri, although the globose head appeared to be low in the pelvis. By digital examination the cervix was found completely relaxed, but the os externum could not be felt; inspection through a good speculum, after some considerable search, revealed a very small opening, which would just admit a director. It was decided to administer a suppository containing one half grain of morphine, and await events. After the expiration of twenty-four hours the pains were strong and regular, and the pulse was increasing in frequency; the speculum enabled a three pronged cervical dilator to be inserted into the os; the blades were separated to their limit (one inch), when amniotic fluid, mixed with meconium, escaped in quantity. The os was now, with the greatest possible ease, dilated by a sweeping movement of the finger, and gave way to the full extent in a very few minutes. A dead child was naturally born, the second stage of labor occupying about half an hour.

Obituary.

HENRY LEOPOLD ELSNER, M. D.,
of Syracuse, N. Y.

On Thursday, February 17th, between 4 and 5 p. m., at the Highlands Apartments, Washington, D. C., the American medical profession lost an eminent colleague in the person of Dr. Henry L. Elsner, of Syracuse, N. Y. Born in that city on August 15, 1855, Doctor Elsner made it his home, and there practised his profession. Graduating from the College of Physicians and Surgeons, New York, in 1877, he took a postgraduate course in Vienna in 1878. He was professor of medicine at the University of Syracuse, and consulting physician to various hospitals in that city. His practice was extensive, his fame as a diagnostician spread far and wide, and from his home in Fayette Park, where he lived and had his office, he was sought in consultation on the long distance wire for hundreds of miles around. He contributed largely to American and German medical journals on various interesting topics, and there is now in press a monumental work of his on *Prognosis*—a labor of love, in the compilation of which he spent years of observation, a year of study abroad, and several months in the surgeon general's library at Washington, where he consulted numerous literary references.

Doctor Elsner was by no means a one sided man. He was not only a prominent physician, but also a public spirited citizen, a devoted friend, charming in his home circle, unselfish, and democratic in his ways. In him his patients lose a physician in whom they had the utmost confidence, and a friend whom they loved and admired. He was a member of various medical societies, local, State, as well as National, while of the Medical Society of the State of New York, the New York Medical Society, the Syracuse Academy of Medicine, and of the Onondaga Medical Society he was at one time or other president. He is survived by a widow and a promising son.

News Items.

Changes of Address.—Dr. Albert D. Greene, to 195 Palisade Avenue, West Hoboken, N. J.

Dr. E. Franklin Smith, to 8418 104th Street (Oxford Avenue), Richmond Hill, N. Y.

The Social and Economic Side of Tuberculosis will be discussed at a joint meeting of the Northern Medical Association and the Southeastern Branch of the Philadelphia County Medical Society, to be held on Saturday, March 11th.

Tufts College to Send a Dental Unit to Europe.—The Tufts Dental School, Boston, is planning to send a dental unit of twenty undergraduates accompanied by a group of graduates to work in the army of the Allies in Europe. It is hoped that they will be ready to leave Boston on June 20th.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, February 28th, Section in General Medicine of the College of Physicians, North Branch of the County Medical Society; Wednesday, March 1st, Physicians' Motor Club (directors), College of Physicians; Thursday, March 2d, Obstetrical Society, Southeast Branch of the County Medical Society; Friday, March 3d, Kensington Branch of the County Medical Society.

The Illinois State Hospitals Medical Association met in annual session at the Jacksonville State Hospital, Jacksonville, Ill., on Thursday and Friday, February 24th and 25th, under the presidency of Dr. Charles F. Read. Papers were read by Dr. F. A. Causey, of the Watertown State Hospital; Dr. A. M. Peterson, of the Jacksonville State Hospital; Dr. J. K. Dyer, of the Lincoln State School and Colony; Dr. J. T. Rooks, of the Kankakee State Hospital; Dr. Charles Ricksher, of the State Psychopathic Institute; Dr. E. W. Fell, of the Elgin State Hospital; Dr. Otis Lake, of the Chicago State Hospital; and Dr. Carl E. Black, of Jacksonville.

A Discussion of Industrial Hygiene.—Industrial hygiene was discussed at a meeting held in Cooper Union, New York, Friday evening, February 18th, by Royal Meeker, commissioner of the Bureau of Labor Statistics in Washington; Dr. S. S. Goldwater, former Health Commissioner; Hugh Frayne, New York organizer of the American Federation of Labor; Dr. Henry Moskowitz, president of the Municipal Civil Service Commission; and Dr. Louis T. Harris, chief of the Division of Industrial Hygiene of the Department of Labor.

The object of the meeting was to explain the work of the industrial hygiene division for the purpose of increasing the interest of both employers and employees in better industrial conditions. Doctor Harris presided.

Department of Health Report on Laboratory Findings in Recent Outbreak of Gripe.—As the result of the bacteriological study of fifty cases diagnosed as gripe by physicians of this city, the department of health has announced that the streptococcus played the leading role in the outbreak of gripe and pneumonia which visited this city last month. This germ was found in large numbers in twenty-six of the fifty specimens examined; Diplococcus lanceolatus, otherwise called the pneumococcus or pneumonia germ, was present in nineteen cases, and the influenza bacillus in nine.

The investigations were conducted at the research laboratory of the department of health and were directed by Dr. Anna W. Williams, assistant director of the laboratory. Each specimen was examined microscopically and by means of several different bacteria.

Red Cross Hospitals in New York.—At a meeting of the American Red Cross Society, held in New York on Thursday, February 17th, it was decided to organize in New York three completely equipped Red Cross units to serve with the military forces of the United States in the event of war. It was also proposed to make arrangements at once for the equipment of three base hospitals in New York, each to cost approximately \$24,000. Mrs. E. H. Harriman, who was present at the meeting, gave the sum required to purchase the equipment for the first of these hospitals. The Presbyterian Hospital has agreed to undertake the organization of the first of the three Red Cross war units, and it is believed that the other units will be organized under the auspices of Bellevue and New York Hospitals. Colonel Jefferson R. Kean, of the Medical Corps of the United States Army, was the principal speaker at the meeting, and his subject was Red Cross Preparedness to Assist the Army and Navy in the Event of War.

Personal.—Dr. Philip F. Williams has been elected to fill the vacancy on the obstetrical staff of the Maternity Hospital, of Philadelphia, caused by the resignation of Dr. E. P. Bernard.

Dr. A. B. Macallum, professor of physiology at the University of Toronto, was the guest of honor at the fifth annual dinner of the Columbia University Biochemical Association, held in New York on the evening of February 10th.

Dr. Eugene F. McCampbell, secretary of the Ohio State Board of Health and head of the department of public health and sanitation of the Ohio State University, has been appointed dean of the medical faculty of the university.

Dr. G. E. de Schweinitz delivered an address on *Drug and Occupational Amblyopias* at the Franklin Institute, Philadelphia, Wednesday evening, February 16th. The lecture was illustrated with lantern slides.

Dr. Judson Daland was elected president of the Philadelphia Medical Club, at the annual meeting held Friday evening, January 21st.

Dr. William A. Hinton has been appointed pathologist to the Boston Dispensary and will take charge of all the laboratory work of the institution, succeeding Dr. Sarah F. Coppinger who resigned recently.

Rush Society Lectures.—The fourteenth lecture in the course will be given on Tuesday evening, March 7th, by Professor Richard P. Strong, of Harvard Medical School, his subject being an Investigation of Typhus Fever in Serbia. This lecture also constitutes the annual address before the Alpha Omega Alpha Honorary Medical Society.

Philadelphia Psychiatric Society.—At the annual meeting of this society, held on Friday, January 14th, the following officers were elected: President, Dr. Owen Copp; first vice-president, Dr. Frank Woodbury; second vice-president, Dr. M. H. Bochrach; secretary and treasurer, Dr. J. Allen Jackson; counselors, Dr. W. D. Robinson, Dr. F. X. Dercum, and Dr. Charles W. Burr.

The Medical Society of the County of New York will hold a stated meeting on Monday evening, February 28th, in Hosack Hall, Academy of Medicine. Dr. Arthur Stein will read a paper on Puerperal Gangrene which will be discussed by Dr. Willy Meyer, Dr. Howard Lilienthal, Dr. Emanuel Libman, Dr. Herman J. Boldt, and Dr. Leo Buerger. Dr. William A. Downes will present a paper on the Operative Treatment of Pyloric Obstruction in Infants, which will be fully illustrated with lantern slides, and discussed by Dr. Charles Gilmore Kerley, Dr. Henry Koplik, and Dr. Howard Lilienthal. Dr. Samuel J. Kopetzky, chairman of the Committee on Legislation, will present a report on the Mills Bill regarding compulsory health insurance.

Mortality Statistics of New York.—The death rate for the week ending February 19, 1916, was a trifle higher than for the corresponding week of 1915. The total deaths numbered 1,628, compared with 1,571 during the corresponding week last year, the respective rates being 15.20 and 15.03 in 1,000 of population. The acute infectious diseases showed a slight increase, namely seven more deaths than occurred during the corresponding week of 1915. On the other hand, there were sixteen fewer deaths from acute respiratory diseases, but the deaths from influenza, heart disease, and nephritis were more numerous during the past week than during the week ending February 20, 1915. The death rate in the boroughs of Manhattan and Brooklyn was lower than during the corresponding week of 1915, while in the other boroughs it was higher. The death rate for the first eight weeks of 1916 is 16.14 compared with 14.81 of the corresponding period of last year.

Industrial Hygiene Conference in Philadelphia.—The first of a series of conferences for the promotion of industrial hygiene in the State of Pennsylvania was held in Harrisburg on February 17th. There were two sessions, one in the morning and another in the afternoon. Dr. John B. McAllister, president of the State Medical Society of Pennsylvania, delivered the address of welcome, which was followed by an address by Dr. Francis D. Patterson, chief of the Division of Hygiene of the Department of Labor and Industry, his subject being the Laws of Pennsylvania Relating to Industrial Hygiene. Dr. Elizabeth B. Bricker, Medical inspector of the Department of Labor and Industry, read a paper on Asphyxiation and Resuscitation. At the afternoon session Doctor Patterson read a paper on Lead Poisoning, and Paul N. Furman, chief of the Bureau of Statistics of the Department of Labor and Industry, read a paper on the Workmen's Compensation Law as it affects the Physician. It is the intention of the department to hold these conferences at least every three months.

Long Island College Hospital, Laboratory, and Clinic to Unite.—It is announced that a merger of the Long Island College Hospital, the Hoagland Laboratory, and the Polhemus Clinic is about to take place, the affiliated institutions to be known as the Long Island College Hospital and Its Allied Institutions. The trustees of the three institutions have agreed upon a united directorship and a combined executive committee. The three corporations thus grouped together will conduct the medical college of the Long Island College Hospital, with a chief executive officer known as the dean of the affiliated institutions. In addition, the bylaws of the Long Island College Hospital are being completely revised and the trustees will assume full control of the college in all its affairs. The affiliation will make the Long Island College Hospital dominant, to all intents and purposes, in the control of the three institutions. The Hoagland Laboratory represents a corporate interest of \$250,000, and the Polhemus Memorial Clinic not quite \$1,000,000, \$400,000 of which is endowment. Now that there is to be combined control, the trustees are making plans with a view to getting an endowment of \$2,000,000.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Eighth Communication.

CHLORAL HYDRATE.

The path of least resistance through the forest of therapeutics has been worn deep and smooth by those who complacently administer chloral hydrate, or a synthetic congener, to any and all afflicted with insomnia. That a soporific frequently brings grateful relief to a distressed mind is well known, but there is not always clear discernment concerning the relative desirability of different methods of treatment. Sleeplessness has many causes; shall not a conscientious endeavor be made to discover the particular cause? Of course, it is much easier to administer at once a hypnotic of attested efficacy, and frequently such an administration is most acceptable to the immediate wishes of the patient; but is the easy way really just, either to our client or to our own intelligence? The frazzled nerves of some may need, instead, the Weir Mitchell rest treatment; others, burdened by the plethora of inactivity, need vigorous exercise. Soaking the feet in hot water is adequate treatment for some forms of cerebral congestion, while drinking a glass of hot milk will suffice for others. Chloral in either case would probably prove equally effective, but it would also pave the way for a personal willingness to resort to the same easy remedy for less important reasons.

Nevertheless, chloral is an exceedingly important drug, though its use as a soporific only should be discontinued, except in real emergencies. To quiet nervous excitement at critical periods, it is very satisfactory, even alcoholic mania usually subsiding under its influence. This effect is the result of increased depression, the primary action of the alcohol being so rapidly augmented by the chloral that the secondary resurgence of the lower faculties is promptly inhibited.

To a depression of the receptive faculties chloral owes its soporific value. This shutting out of sensory impressions, this obtunding of the faculty of perception, contributes to conditions conducive to sleep. But if there exist painful sensations, chloral will usually be found inadequate.

Chloral lowers the reflex activity of the cord; hence it is useful in acute or excessive irritability of this region, especially in the hyperexcitability of strychnine poisoning.

Therapeutic doses of chloral have ordinarily little or no effect on the heart. Toxic doses cause a marked slowing through direct action on the heart muscle, this slowing being accompanied by auricular weakness and ventricular dilatation. Great caution

should be exercised, therefore, in the administration of chloral, lest a susceptible or diseased heart be seriously embarrassed.

The Treatment of Urgent Pleurisy.—Samuel West (*Practitioner*, February, 1916) deals separately with the four chief forms of pleurisy, the dry, pleurisy with serous effusion, empyema, and pneumothorax. To relieve a bad stitch in pleurisy counterirritants and local anodynes are of little use. Even morphine often fails. Nothing is more certainly effective than local bleeding by the application of leeches, which may be encouraged by warm poultices on which some laudanum has been sprinkled. If leeches are not desirable, the side of the chest may be strapped with strips of adhesive plaster. Cough and hiccough are very troublesome. Opium or morphine is usually needed to control cough, but even full doses of morphine subcutaneously often fail to control hiccough. Cutaneous hyperesthesia occasionally accompanies the stitch in the side and may be very annoying. If the affected area of the skin is brushed over once or twice with tincture of aconite, it will be relieved quickly and may not return. A ten or twenty per cent. solution of cocaine on a pad of lint will answer the same purpose, but tincture of aconite is better.

Serous effusion gives rise to urgent symptoms only when it is large, develops rapidly, is bilateral, or is complicated with some disease of the lung or heart. Urgent symptoms must be relieved by paracentesis; in their absence this operation is indicated only when the effusion persists for some time without signs of diminution. The risks of paracentesis are slight, but an aspirator should not be used; siphonage is the better plan. The symptoms that may lead to a stoppage of the paracentesis are pain, cough, general distress, and change in the character of the fluid as it flows. The pain is due generally to the stretching of adhesions, the cough to the irritation of the lung by its expansion, and a stoppage of the withdrawal of the fluid for a few minutes often is sufficient to give relief. General discomfort and distress ordinarily indicate that the fluid has been withdrawn too fast, and the paracentesis should be stopped for a day or two. If blood or air appears suddenly in the fluid, the operation should not be proceeded with; if pus appears suddenly a loculus containing pus has been opened and the case will ultimately become one of empyema. Copious expectoration is rare and occurs some time after the paracentesis. After the paracentesis is concluded, ten to twenty drops of laudanum and a bandage carried firmly around the chest for a few hours, add greatly to the patient's comfort. Refractory cases have to be treated like empyema.

Empyema has to be drained by an operation, but the pus should be found with the needle at the time

of operation before the knife is used; neglect of this precaution will sooner or later lead to trouble. The cavity should be emptied completely; when there are flakes of curdy pus that obstruct the tube and interfere with drainage, and when there is fetor, the cavity should be washed out. In double empyema it is better not to open both sides at the same time, but to allow a day or two to intervene between the operations.

Intense dyspnea with extreme and rapidly increasing cyanosis in pneumothorax indicates aspiration of the air; if the symptoms are not urgent and no fluid is present, the case had best be left alone. Hydropneumothorax needs the treatment of serous effusion, pyopneumothorax that of empyema.

Citrated Whole Milk in the Feeding of Infants.—Eric Pritchard (*Practitioner*, February, 1916) concludes that the citrated whole milk method is physiologically unsound because it allows no latitude for adaptation to the individual digestive, assimilative, metabolic, and secretory activities. It affords little scope for the study of the influence of variations in the diet, and if the principles of percentage feeding are understood, a satisfactory food can be synthesized in a variety of ways to satisfy the physiological requirements of any particular child. Dried milk, if properly modified and of good quality, has all the advantages and few of the disadvantages of so called dairy milk.

Ronald Carter, writing in the same journal, obtains much better results by abandoning all routine methods and concentrating on the individual requirements. He found the citrated milk most useful in wasted infants.

Radium Treatment of Uterine Fibroids.—J. and J. L. Ransohoff, in the *Lancet-Clinic* for February 5, 1916, state that, except in unusual cases, radium or the x rays is the treatment of choice in uterine fibroids and in cases of essential uterine hemorrhage. Radium has many advantages over the x rays in these cases. It can be brought into direct contact with the diseased uterus, whereas the x rays, for their effect, depend almost entirely on their action on the ovaries. Radium is therefore more likely to decrease materially the size of the tumor, often causing, in fact, its complete disappearance. With radium thus employed, moreover, there is no risk of a deleterious action on the skin. Radium is rich in beta radiation, which is entirely lacking in the x rays. The beta radiation, as shown by Abbe, exerts a marked inhibitive action on new tissue, particularly on its bloodvessels. It undoubtedly acts on the endothelium of the capillaries, causing obliteration of the latter. In certain cases of menorrhagia it is possible with radium to control the hemorrhage without bringing on the menopause. The radium used for introduction into the uterus should be enclosed in pure rubber tissue, to obviate the burning effect of the secondary rays. As a rule, no additional filter other than a 0.5 mm. silver tube, in which the radium is contained, is necessary. Sometimes, where the radium is to be left in an unusual length of time, further filtration through 0.5 mm. of brass is carried out. Preliminary curettage, as a rule, is not required, though thorough dilatation

of the cervix under anesthesia is desirable at the first sitting. The radium is allowed to remain from six to twenty-four hours, according to the size of the tumor and the severity of the hemorrhage. In medium sized fibroids repetition of the treatment two or three times at intervals of two weeks is generally sufficient, though in very large fibroids more frequent applications are necessary. The amount of radium used in the cases treated by the authors was fifty to 100 mgm.

New Hypochlorite Solution for the Treatment of Wounds.—Cruet and Rousseau, at a meeting of the Société de biologie, Paris (*Presse médicale*, December 16, 1915), recommended an improved form of Dakin's solution for the treatment of wounds, especially where the aim is to prevent supuration, infection having presumably taken place. The solution is made by extracting twenty-five grams of pure calcium hypochlorite with a sufficient amount of water at temperature of 50° C. to yield finally 1,000 c. c. of solution. After filtration, eight grams of sodium chloride or twelve grams of magnesium chloride are added, then gradually two or three grams of lactic or phosphoric acid, until the solution becomes slightly acid. An advantage of this preparation over Dakin's solution is that it can be employed warm.

Oxygen Injections in Surgical Tuberculosis.—Gendron and Bouchet, in *Bulletin de l'académie de médecine* for December 28, 1915, highly recommend oxygen injections, coupled with local hyperemia, in the treatment of localized tuberculous processes. In tuberculosis involving synovial membranes especially gratifying results were observed. In twenty-seven cases of subcutaneous tuberculous lesions in an early stage, the procedure carried out comprised local revulsion with hot water, the hot air oven, rubbing with resinous materials, injections to provoke hyperemia repeated every two weeks, and insufflation into the tissues, at the periphery of the lesions, of oxygen gas under pressure. Absorption of the tuberculous lesions always took place much more rapidly than after the ordinary procedures; extirpation was in no instance required, puncture to evacuate pus gathered because of the hyperemia being, however, necessary in a few instances. In a series of cases of subcutaneous cold abscesses, hyperemia was first induced with compresses of hot water or the hot air oven, and the pus then evacuated aseptically, the abscess washed out with hydrogen dioxide solutions and hyperemia-producing injections made into the cavity. Marked local reaction followed, an abundant collection of pus forming. After aspiration of this pus and irrigation of the cavity, a slow current of oxygen was passed, at a pressure of 0.05 to 0.06 of an atmosphere by the water manometer, through the cavity by means of a two way trocar, the part being meanwhile covered with a hydrogen dioxide dressing. A simple dressing, exerting slight pressure, was finally applied, and absorption of the disease focus promptly followed. The procedure was applied with success likewise in suppurative inflammations of large joints and even in the spinal foci of Pott's disease. In treating bone lesions, special care was taken to carry the hyper-

emia-producing injections very gradually into closer approximation to the disease focus. In tuberculous sinuses, the contents were first abstracted with a vacuum bulb, the hyperemia-producing solution injected deeply in their lumina, and the procedure then applied as in abscesses. Experience with the method in thirty-seven abscesses and nineteen sinuses showed that the necessity for surgical intervention is, in general, obviated. Extensive openings into tuberculous foci are avoided, thus reducing secondary infection. Sinuses never follow puncture of abscesses thus previously rendered hyperemic. All danger of intoxication from bismuth or naphthol is avoided, since these substances are not used. The combined application of hyperemia and oxygen brings about strikingly rapid absorption of the tuberculous lesions.

Naheim Baths in Cardiovascular Diseases.—

James Henry Honan, in the *Medical Record* for February 5, 1916, asserts that in the carbonic acid brine baths the salts in solution exert more action than the gas bubbles. These baths are best given at 32° to 34° C. and the cold bath is reserved for cases with subnormal intravascular pressure with a flaccid arterial wall. Slowing of the pulse is constant and important and is due to a lengthened diastole, thus resting the heart muscle. The carbon dioxide brine bath is a therapeutic measure of the highest value, in almost all forms of cardiovascular disease, as it is a natural stimulant of the heart and vasomotor system, and is an agent in producing general elimination, equalizing impaired circulation, correcting blood pressure, and arresting tissue change.

Cresatin in Gonorrheal Ophthalmia.—

Cyril Barnert, in the *Medical Record* for February 5th, says that he has found in cresatin (metacresol-acetic-acid-ester) a synthetic phenol derivative, a specific in gonorrheal ophthalmia. One application of the pure cresatin on a cotton swab to the cocaineized cornea and conjunctiva usually gives marked and rapid relief of symptoms and disappearance of the gonococci. A second application is sometimes necessary, but a third rarely so. A twenty-five per cent. solution in liquid petrolatum is an efficient prophylactic. This treatment limits the duration of the ophthalmia to twenty-four or forty-eight hours after the first application. The drug is absolutely noninjurious to the tissue cells of the cornea or conjunctiva.

The Oven Bath as an Eliminant.—B. S. Price, in the *American Journal of Electrotherapeutics and Radiology* for January, 1916, recommends the oven bath as an accelerator of tissue drainage in various conditions in which accumulations of injurious waste substances take place. The material required is an oven table or cabinet, a bath tub, a table for subsequent massage, and a generous supply of Turkish bath sheets and towels. The patient, whose digestion should be well advanced at the beginning of the bath, is covered only by a Turkish bath robe and two bath sheets, with additional protection for the hands and feet. His head is covered with ice packs. The temperature of the air in the oven is quickly raised to 500° F., the air being always kept dry, and maintained thus until

the patient's temporal pulse becomes full, regular, elastic, and soft. The face is, by this time, deeply flushed, and most patients feel sleepy and relaxed. The duration of the oven bath ranges between half an hour to over an hour, according to the condition of the patient. He is removed from the oven and at once placed in the bath tub, which has been filled with water at 105° to 109° F. The bath robe is allowed to remain on the patient for protection against chilling. During an immersion of about fifteen minutes, the temperature of the water may be carefully lowered from 2° to 4° F. Cold compresses to the head are continued throughout. The patient may then be brought above the surface of the water and receive a brisk salt rub, wash off, be placed on the table, and subjected to light massage. Draughts of air or rapid cooling must be studiously avoided, and the patient kept covered continuously. He is finally rolled to his bed and allowed to lie there five hours or more, during which time the circulation normally adjusts itself. The treatment is held not only to promote tissue drainage, but to increase oxidation, activate phagocytosis, produce diuresis, and relieve dyspnea and lividity. A great increase in urinary output and in the intestinal excreta takes place in the succeeding twenty-four hours. In cases with suppressed elimination the quantity of solids in the urine is greatly increased. The treatment, which may be applied several times weekly, is recommended, among other conditions, in uremic or diabetic coma, pulmonary or portal engorgement, nervous fatigue, and gastroenterogenous toxemia.

Typhoid Inoculation in the Forces in India.—

The duration of immunity after inoculation for typhoid is uncertain. Immune substances can be found in the blood for a varying time, sometimes for several years, and after they have disappeared the individual responds more quickly to another inoculation. According to Alexander Fleming, in the *Practitioner* for January, it has been observed in the British army in India that while in the preinoculation days the most dangerous period, as regards typhoid, was the first year of the soldier's sojourn, the maximum incidence now is in the third year. This seems to show that the immunity conferred by the vaccine lasted at least two years.

Treatment of Visceroptosis.—

Sidney J. Meyers, in the *International Journal of Surgery* for January, 1916, says he has used the Rose binder with considerable success. The bandage is from thirty-six to thirty-eight inches in length and from six to eight inches wide, the lower border tapering each way from the centre to about two and a half inches wide at the back, the upper edge being left straight. A notch is cut at the proper point to avoid contact with the iliac crest. The bandage is applied with the patient in the extreme Trendelenburg position, thus causing the viscera to gravitate toward the thorax. Beginning with the middle of the bandage at the symphysis, it is applied upward and laterally as tightly as possible without causing discomfort. After the wide piece has been properly adjusted, reinforcement is secured by applying a two inch strip upon each side, extending to the

higher point on the back. It can be worn almost indefinitely without causing serious cutaneous irritation. It is usually worn a week, however, and re-applied.

Treatment of Eclampsia.—P. O. Sundin, in the *Southern California Practitioner* for January, 1916, says that there are two forces, one advising active interference, the other advising the following out of the expectant plan, coupled with elimination and medication. Albuminuric patients seen early in pregnancy give little trouble—hot baths, purgation, and salt free diet usually suffice. After the child is viable and convulsions have set in, absolute rest, lavage of the stomach and rectum, morphine or chloral is given, combined with starvation, or strict milk diet. If there is no improvement by these measures, early delivery is demanded by induced labor. In the presence of convulsions, immediate emptying of the uterus is required. The fatality of eclampsia does not depend upon the number of convulsions, but upon the toxicity judged by the quantity of urine, highly bloody urine, absence of lucid intervals between convulsions, and a high pulse rate (above 120). Venesection is indicated when the blood pressure is high. With symptoms of uremia and severe and often repeated convulsions without lucid intervals, the coma lasting in spite of blood letting, etc., vaginal Cæsarean section is indicated, if before the seventh month and the cervix is not too rigid. If later, and the cervix is long and rigid, abdominal Cæsarean section is done. The writer followed out the expectant treatment in seventeen cases, in only one of which accouchement forcé was employed. This death was the only one in his experience.

Treatment of Diabetes by the Allen Method.—Alfred Stengel, Leon Jonas, and J. Harold Austin put the patient to bed and oblige him to fast, except that he is permitted to take alcohol, water, and sodium bicarbonate. Alcohol is given in the form of whiskey in hourly doses, from fifty to 250 c. c. daily. The fast is continued for from twenty-four to forty-eight hours after sugar has disappeared from the urine. After the fast, say the authors in the *Pennsylvania Medical Journal* for January, 1916, green vegetables should be allowed and increased until sugar again appears in the urine. Then there is another day of fasting. Although the patient improves and his tolerance increases, his weight is not permitted to reach the normal; he is kept about ten pounds below his former weight. It is the most effective treatment for cases exhibiting high ketonuria.

The Allen Treatment of Diabetes.—J. T. Halsey, in the *New Orleans Medical and Surgical Journal* for February, discusses in detail the Allen treatment of diabetes, which is in a number of particulars, as our readers are aware, a radical departure from that which in recent years has been generally approved and accepted as the best. The chief and most important features of this treatment are:

1. Inauguration of treatment by a period of absolute fasting, lasting ordinarily from one to four or five days, in extreme cases for ten days.

2. Underfeeding, i. e., giving much less than is ordinarily considered an adequate ration, for a period of variable length following that of absolute fasting.

3. Determination of individual tolerance for carbohydrates and proteins, as well as for fats which in general have been regarded as harmless or even beneficial in diabetes, whether mild or severe. The degree of tolerance should decide the quantity of these foodstuffs to be permitted.

4. Careful avoidance of an increase of weight unless the patient is decidedly underweight.

The advantages alleged or demonstrated are: More rapid and certain abolition of the glycosuria and of its cause, the glycemia. More rapid and more successful building up of the carbohydrate tolerance, in other words, of the ability to oxidize carbohydrates. Prompt and complete relief of the acidosis or acidemia, and as a result prevention of, or, if present, the clearing up of diabetic coma.

Treatment of Myocarditis.—James M. Anders, in the *Pennsylvania Medical Journal* for January, 1916, states that in the treatment of chronic myocarditis, prophylactic measures are of great importance. During the stage of compensation gentle exercise is allowed. The diet should be regulated, and cases which are clearly dependent on lues should have mercury and salvarsan. In the stage of insufficiency, absolute rest is essential. Stimulants may have to be used. In these cases digitalis is of little value. Morphine and heroine, in combination with salts, are advisable. A prescription which is of value is:

R Strychnine,gr. 1/40;
Caffeine citrategr. ij;
Sparteine sulphate,gr. 74.

Venesection may have to be performed in excessive hypertension with the danger of apoplexy.

Chemotherapy in Syphilis.—In the course of an extensive research on syphilis in its various aspects, J. E. R. McDonagh (*Lancet*, January 29, 1916) was led to investigate the chemotherapy of the disease. It was found that the action of arsenic was catalytic, accelerating changes which normally occur spontaneously. The intensity of this catalytic action was proportionate to the degree of the colloid state of the metal, whether it be arsenic, mercury, or other agent. The reaction occurring between the spirochetes, the lipid-globulin molecules of the serum, and the aminogroups of salvarsan was found to be one of absorption. This was accelerated by the complement which permitted the arsenic to fulfil its role of increasing the amount of active oxygen. The drug, salvarsan, is both organotropic and parasitotropic, the former property being the more important according to the new conception of the reaction, most of the organisms being destroyed indirectly. The arsenic probably becomes transformed into a peroxide and acts as a peroxidase. For therapeutic effects a reducing process is as essential as an oxidizing one, and chemotherapeutic studies led the author to the discovery of a new compound—diorthoaminothiobenzene—which he named "intra-mine" for convenience. This substance was found to be nontoxic in comparatively large doses and

could be injected intramuscularly into man with only slight local pain. The new substance was found to give better results than salvarsan in the primary and generalization stages of syphilis, while in the later stages the opposite was the case. The best results were secured in the early stages when the injection of intramine was preceded by a few doses of some metal as an oxidizing agent. Salvarsan was used with good results to precede the administration of intramine. Metals other than arsenic were used in colloidal combinations and with quite favorable effects, but before their use can become general further study must be made. The experiments and clinical observations serve to prove that it is not the arsenic in salvarsan which is the direct sterilizing agent, but rather the colloidal nature of the compound.

Treatment of Infected Wounds.—In the course of a discussion of his clinical experiences in the treatment of infected gunshot wounds (*Brit. Med. Jour.*, Jan. 1, 1916), H. M. W. Gray advocates the packing of the wound with gauze containing tablets of Wright's salt mixture. The gauze will usually adhere rapidly and become more or less incorporated in the granulations and should not be disturbed for several days. Only the external layers of dressing should be changed and these, together with the skin, should be treated with some antiseptic. The use and retention of the tablet and gauze pack for several days without disturbance usually results in a rapid decline in fever and a marked improvement in the patient's general condition. Unless there is some specific indication for the earlier removal of this dressing (continued fever, decline in general condition, offensiveness of discharge), it should remain for six to eight days. At such intervals it may be changed, each new application being more lightly applied than the previous one and the change being done under anesthesia at first. It is necessary to change these dressings only five times or less in a month. When the wound becomes healthy it will be greatly reduced in size and can then be closed by secondary suture.

Clinical and Therapeutic Experiences with Tetanus.—On account of the danger of pneumonia in tetanus ether should never be used to control convulsions, according to Bruno Oskar Pribram (*Berlin. klin. Woch.*, Aug. 23, 1915), chloroform being alone suitable. Ether is unsuited on account of its power of increasing the bronchial secretion, and further because it is likely to precipitate dangerous or fatal spasm of the glottis or diaphragm. Since the perfection of means for prolonged artificial respiration it has become possible to employ morphine for the control of tetanus spasms with gratifying results. The danger from morphine lies solely in its power to kill by paralysis of the respiratory centre, but this can now be largely disregarded if means for artificial respiration are always at hand. Morphine should be given in repeated doses until the spasms are wholly removed; as high as 0.3 gram (five grains) a day may be required in severe cases. As much as this has been given by the author without inducing respiratory paralysis in tetanus and without the need for artificial respiration. In acute

and severe cases the patient should be anesthetized at once with chloroform, and a dose of morphine given immediately. Anesthesia should be continued for about half an hour to give time for the effects of the morphine to become manifest and then the latter drug should be continued according to indications. Morphine will usually have to be continued for a week to ten days before it is safe to assume that the tetanic state has passed. These therapeutic measures should be combined with the usual treatment, including antitetanic serum.

Treatment of Pellagra.—H. E. Bond, in the *Journal of Tropical Medicine and Hygiene* for October 15, 1915, maintains that there exists in pellagra a causative bacterial organism in the intestines which, through its toxic products, affects primarily the sympathetic nervous system and secondarily the central nervous system. The affection is akin to Addison's disease. The actinic rays of the sun, in addition, so act as irritants to the exposed skin surface as to intensify the condition. The gastrointestinal tract should, as far as possible, be disinfected in the treatment of the disease, and with this end in view calomel and betanaphthol were found serviceable. The ingestion of thyroid substance also proved of value. Externally, an ointment consisting of betanaphthol, balsam of Peru, and zinc ointment is recommended; to be followed, when the bullæ have burst and a raw surface has been left, by tar, salicylic acid, ammoniated mercury, and zinc ointment. In the diet Bond advises the daily use of ripe bananas. Salted fish should be avoided. The patient should keep in the shade as much as possible.

Studies in Antiseptics.—As the direct result of work with the hypochlorites, H. D. Dakin, J. B. Cohen, and J. Kenyon (*Brit. Med. Jour.*, January 29, 1916) have prepared an antiseptic compound which they have called "chloramine," its chemical name being paratoluenesodiumsulphochloramide. The substance is a white, crystalline solid which is freely soluble in water to the extent of about fifteen per cent. at room temperature. It is faintly alkaline, has a bitter taste, and is stable under ordinary conditions. It is not corrosive, even in concentrated solution, and does not precipitate proteins. It is practically nontoxic to the lower animals and its germicidal power is intense against the common organisms which infect wounds, being about as active as an equal weight of sodium hypochlorite; but since its molecular weight is about four times that of the latter, it is actually about four times as active. Being less irritating, it may, however, be used in five to ten times the concentration. It has already been used clinically as an antiseptic and has given excellent results. It may be employed in a variety of ways: as a wet dressing, to irrigate, and to impregnate gauze or cotton. It has also proved of value as a mouth wash in one or two per cent. solution, and to irrigate the bladder and urethra in half per cent. solution. The drug probably acts by directly attacking the bacterial proteins with the formation of substances in which the chlorine is linked to the nitrogen of the protein molecule. The union probably occurs through the aminogroup of the protein

molecule. Since it is a highly reactive substance, which decomposes hydrogen peroxide and alcohol, it should not be combined with other antiseptics.

Prophylaxis in Epidemic Poliomyelitis.—W. A. Sawyer, in the *American Journal of Tropical Diseases and Preventive Medicine* for September, 1915, reports a practical demonstration of the fact that the active virus of poliomyelitis may occur in rectal washings obtained from a patient fourteen days after the beginning of the paralysis. Since the virus may leave the body from the rectum, as well as from the nose and mouth, precautions should be taken in the care of poliomyelitis patients to prevent infection, not only from nasal and buccal discharges, but also from feces and soiled bedding.

Treatment of Pyelitis.—Harry A. Peyton (*Jour. Florida Med. Assn.*, January, 1916) says that the prognosis as to cure depends largely on whether or not there is inflammatory dilatation of the renal pelvis with deep mural infection. The keynote of successful treatment of the chronic cases lies in the use of pelvic lavage through the ureteral catheter passed about half way up the course of the ureter. The lavage solution may contain argyrol, protargol, formaldehyde, aluminum acetate, or silver nitrate, of which the last named seems to be the most satisfactory. Lavage should be started with very dilute solutions, the strength of which may slowly be raised up to four per cent. Not more than five c. c. of the solution should be introduced, and the catheter should be left in place until the solution has drained away. The treatment may be repeated weekly.

Relation of Morphine to Postoperative Complications and Immunity.—From an analysis of an extensive series of unselected cases, Benjamin Franklin Davis (*Journal A. M. A.*, Jan. 22, 1916) concludes that the preoperative administration of an eighth to a sixth of a grain of morphine and 1/150 to 1/120 grain of atropine is of little value in the prevention of postoperative shock. Such doses also play a negligible part in nausea and vomiting, tympanites, paralytic ileus, and retention of urine following operations. They have no effect on immunity. The preoperative use of morphine should be abandoned, since it does not add to the efficiency of the anesthetic, causes postoperative nausea and vomiting in a quarter of the cases, and deprives the operator of the patient's cooperation. It should not be denied, however, after an operation to patients whose suffering cannot otherwise be controlled.

Intraspinal Administration of Mercurialized Serum.—The technic worked out by Edward Livingston Hunt (*Journal A. M. A.*, Feb. 8, 1916) is to withdraw about fifty c. c. of blood from an arm vein, collecting it in a sterile cylinder, four hours after an intravenous injection of salvarsan. This blood is slanted, the clot allowed to separate, and the serum left over night in the refrigerator. The following morning, the serum is centrifugated and the clear serum poured into a sterile cylindrical graduate and to it is added one fiftieth of a grain of mercuric chloride. The mercuric chloride is added in the form of a stock solution, of which one and a third c. c. contains approximately the requisite

amount. The serum-mercury mixture is then made up to thirty c. c. with sterile saline, inactivated at 58° C. for half an hour, and injected within an hour. The injection is made with a large syringe and with little or no force. The foot of the bed is elevated for an hour and phenacetin is used freely for the control of pain. In a few cases mercuric chloride was mixed directly with twenty c. c. of spinal fluid and the whole reinjected, but this seemed to give severe reactions. Several patients also received serum prepared with sublimine. It was found that the reactions following the use of mercuric chloride serum did not differ from those seen with salvarsanized serum. Sublimine seemed to give less satisfactory results clinically and on the cell count. The injections were not followed by ill effects, and patients with tabes and cerebrospinal syphilis were much benefited.

Salvarsan-Mercury-Iodide Treatment in Syphilis.—M. v. Zeissl (*Berliner klin. Woch.*, Aug. 23, 1915) reports a striking instance of the complete cure of syphilis by a single intramuscular injection of salvarsan (0.5 gram) given less than two months after infection. Four years later, a permanent cure was proved by the patient's acquiring a fresh infection. In general the treatment of syphilis should be undertaken as soon as possible after infection to avoid the consequences of the late stages and the parasymphilitic affections. The best treatment comprises the administration of repeated doses of 0.45 gram each of salvarsan, combined with injections of mercury succinimide or application of gray ointment and increasing doses of the iodides, such as merjodin. In the majority of cases the combination is essential for the cure of the infection and confidence cannot be placed entirely on any one of the drugs.

Intravenous Injections of Sodium Salicylate in Acute Rheumatism.—Pedro V. Cernadas, in *Semana Medica* for December 23, 1915, recommends daily injections of from one to two grams of sodium salicylate. The solution is made as follows:

Sodium salicylate,	5 parts;
Caffeine citrate,	0.25 part;
Distilled water,	25 parts.

of which from six to ten c. c. is given daily. The salicylate must be chemically pure and the solution kept in the dark. It is of special value where medication by mouth is not well borne.

Weaning from Morphine.—Immediate withdrawal, combined with rapid elimination of the morphine from the system, is the plan advocated by H. Mason Smith (*Jour. Florida Med. Assn.*, January, 1916). A daily morning hot pack, lasting for two to three hours, should be given and continued for eight to ten days. The diarrhea which follows the withdrawal of the morphine should not be checked, but elimination should be aided by the daily administration of an ounce of sodium phosphate, which has the added property of serving in some measure to correct the excessive secretion of acid gastric juice. This should be kept up until the depletion desired has been secured, and then purgation should be discontinued after one dose of castor oil. A single dose of morphine early in the course

of the treatment may be required if the patient shows signs of collapse. Drugs, other than the sodium phosphate and some mild alkaline water for the gastric hyperacidity, should not be used. The treatment thus outlined never has to be continued for more than ten days. There is usually a loss of from ten to twenty pounds, and the patient should be kept under care until this has been regained and about an equal amount of weight added. This may be accomplished readily by rest, tonics, and liberal feeding.

A New Phase of Organotherapy.—Robert Bell, in the *Canadian Journal of Medicine and Surgery* for February, 1916, has adopted a method of fortifying the defective organs by supplying in increased abundance their natural stimulus which is obtained from the potent principles of the solar plexus and splanchnic ganglia of healthy animals. These have been made into what are known as "gangloid" palatinoids, each of which contains five grains of ganglion extract, the dose being one palatinoid forenoon and evening. It can be given in combination with thyroid extract.

Vaccine Therapy in Typhoid in the Immunized.—Comparative observations made in a single outbreak of typhoid fever by Karl Mayer (*Medizinische Klinik*, January 2, 1916) proved that anti-typhoid vaccine materially shortened the course of the disease and diminished its severity and mortality among patients who had previously received prophylactic injections of vaccine. The vaccine was given subcutaneously in increasing doses at intervals of two days. Only three to five injections were required to reduce the temperature to normal. The vaccine was a sensitized one, containing killed organisms and standardized in terms of weight of fresh culture per c. c. of finished product.

Mydriatic Activity of Atropine and Scopolamine.—Georg Joachimogin (*Berliner klin. Woch.*, August 30, 1915) determined the relative activities of these allied drugs by local application to eyes of cats and found that scopolamine was ten times as active as atropine. He also found that the cat's eye was as sensitive as that of man. The dose of atropine required to produce distinct dilatation of the pupil was one drop of a one to 150,000 solution, or about 2/10,000 mg. of the sulphate. He also found that solutions of atropine sulphate without preservative retained their activity unimpaired for at least four weeks.

Aborting Middle Ear Inflammation and Infection Leading to Mastoid Abscesses.—Frank E. Miller, in the *Canadian Journal of Medicine and Surgery* for February, 1916, advises that the external ear be cleaned as thoroughly as possible and a sterilized Eustachian catheter covered with morphine, grain one quarter, and atropine sulphate, grain 1/150, inserted into the ear, and pus or other infectious material drawn off by aspiration. The patient's head is now inclined so that the external auditory meatus presents like the flaring part of a funnel formed by the auditory canal. A four per cent. solution of cocaine is placed into the canal so that a small puddle is formed, into which are

dropped from two to four hypodermic tablets of morphine, grain one quarter, and atropine, grain 1/150. A piece of sterile absorbent cotton is covered with antiphlogistine previously heated and loosely wound around a wooden tooth pick and placed into the ear. A clean piece of cotton protects the ear cavity from without. The application is removed at the end of forty-eight hours, when the ear is washed out. At this time the otitis and mastoiditis have usually disappeared. If the tympanum is bulging, it can be punctured without pain under this local anesthesia.

Emetine in Dermatitis herpetiformis.—On the belief that this condition is usually of an infectious toxic nature and since it is often associated with pyorrhea alveolaris, M. F. Engman and Robert Davis (*Journal A. M. A.*, Feb. 12, 1916) tried the effects of the administration of emetine. Four cases are reported in which the condition was very greatly improved. It is not suggested that the drug had any specific action on the dermatitis, or that it is suitable for the treatment of the condition in general. It is merely suggested that it may be of assistance in those cases in which pyorrhea is the probable source of the toxic substances.

Effect of Salvarsan and Neosalvarsan on the Bactericidal Power of the Serum.—On the strength of the observation that the administration of salvarsan in syphilis exerted a beneficial action on secondary infections, S. R. Douglas and L. Colebrook (*Lancet*, Jan. 22, 1916) undertook a series of experiments to determine the effect of salvarsan and neosalvarsan on the bactericidal power of human serum. Experiments *in vitro* showed that both drugs exerted a marked action in increasing the bactericidal action of both blood and serum. When salvarsan was administered to man and the blood tested for increase in bactericidal power, this was found wanting. Neosalvarsan, on the other hand, materially increased the bactericidal power of the blood after systemic administration. This effect, however, appeared promptly after the administration of the drug, reached its maximum in about one hour, and fell rapidly in the third or fourth hour. The bactericidal power was determined to be probably due to the presence in the blood of some arsenic compound, since heating to 60° C. failed to influence it, thus excluding the action of immune bodies. The authors suggest its possible value in the treatment of various septicemias, or of deep suppurating wounds.

Therapeutic Use of Saline Solution.—M. Engelander (*Med. Klin.*, January 2, 1916) reports favorable results from the intravenous injection of doses of 100 c. c. of a two per cent. solution of sodium chloride in a variety of conditions. Benefit was secured in typhoid fever, in a case of rheumatism and serositis, influenzal infections, muscular rheumatism, and pneumonia. The mechanism of the beneficial action is not known and the author offers no theories. The immediate result was often a chill, a rise of temperature, and even nausea, vomiting, and collapse. These effects were only transitory and were followed by a fall in the temperature to normal and an improvement in the patient's condition.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

August 23, 1915.

The Herman-Perutz Reaction in Syphilis, by J. Zadek.—A modification of this reaction, involving a better adjustment of the proportions of the several components, led to marked improvement in the sensitiveness of the test. The reaction, as modified, was compared with the Wassermann reaction in a larger series of unselected cases. In syphilis in all stages the reaction gave nearly seventy-three per cent. of positives compared with fifty-two per cent. for the Wassermann. The greater number of positives with the former reaction was largely due to the facts that it was more often present in the early stages of primary syphilis, and that it was less readily influenced by treatment than was the Wassermann test. On the other hand, the Herman-Perutz reaction gave a slightly larger proportion of mistaken positives in nonsyphilitic cases than the Wassermann. The nonspecific reactions were found to occur most commonly in advanced pulmonary tuberculosis, carcinoma, typhoid fever, and sepsis; conditions in which a differential diagnosis from syphilis is seldom doubtful. In the proper sense of the word neither reaction is specific, each being merely a colloidal precipitation which is more or less characteristically found in syphilis.

August 30, 1915.

The Toxin-Poor Type of Dysentery Bacilli, by G. Arnheim.—From studies conducted in a widespread epidemic of bacillary dysentery due to the strains Flexner and Y the author concludes: The diagnostic value of the dysentery Widal test is slight at present. The cultivation of these types of dysentery bacilli requires much improvement, since at present positive cultures are to be obtained in only a small percentage of the cases. The carrier problem in bacillary dysentery plays an unimportant role, since the organisms rapidly die out in the intestinal canal. Cultural and agglutination studies lead to the belief that the Flexner and Y types are identical. In exceptional cases the organisms have been found in the urine. Examination of foods for contamination with dysentery bacilli gave negative results.

MEDIZINISCHE KLINIK.

January 2, 1916.

Experiences with Renal Functional Tests, by Carl von Noorden.—Virtually all the tests which have been suggested are discussed. The methylene blue test is regarded as practically worthless; the phenolsulphonephthalein test and the sodium fluorescein test add little to what can readily be determined clinically and give no indications as to the portions of the kidneys which are affected by disease. Ambard's urea coefficient is too difficult for general application and is subject to too many disturbing factors, beside the necessity for rigid diet to make it of general utility. Schlayer's lactose test presents too frequent variations and is too disturbing to the patient. The potassium iodide test, when combined with the determination of the iodine ex-

cretion into the saliva, gives the most accurate and most serviceable results. The technic is set forth and the indications derived from it may be summarized thus: If there is a difference of as much as twenty minutes between the appearance of the iodide in the saliva and urine, there is a slight disturbance of the excretory power of the kidneys; if the difference ranges up to thirty-five minutes, the disturbance is moderate and if the difference reaches up to sixty minutes, the disturbance is severe. Normally all of the 0.2 gram of iodide should have been excreted in twenty-four to thirty hours. Excretory delay is slight if prolonged to forty hours, moderate from forty to sixty, and severe from sixty to eighty hours or over. In severe cases there is usually both a prolonged interval between the appearance of the drug in the saliva and in the urine and a marked delay of total excretion. The potassium iodide test is easily carried out, may be repeated as often as required, is not materially influenced by diet, and gives information of value in prognosis in doubtful cases. The combination of the potassium iodide test, the water, sodium chloride, and urea retentions, and the determination of rest-nitrogen in the blood constitutes a full investigation of the renal function, so far as the more important tests are concerned.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

November 23, 1915.

Observations on 39,215 Antityphoid Injections, by G. Mauraing.—The report covers one year's antityphoid vaccination in the sixth district of the city of Paris. The series includes seventy-one injections against the B paratyphoid organism. The number of subjects immunized was 11,316; 162 additional applicants—about 1.4 per cent.—were refused immunization, forty-seven because of albuminuria, thirty-seven because of tuberculosis, and three because of heart disease. In nearly all subjects either three or four injections of the H. Vincent vaccine were administered. Where the examiners were in doubt as to the advisability of admitting certain subjects to the course of preventive inoculations, a trial injection of 0.25 c. c. of the vaccine was first given; in the absence of a reaction, the regular injections of 0.5, one, 1.5, and two c. c. were subsequently administered, these subjects being kept under especial watch. No less than 268 doubtful cases were thus procured the benefit of the injections, which would otherwise have been excluded, comprising ninety-seven cases of developed but doubtful typhoid fever, 127 cases of tuberculosis, thirteen of cardiac disorder, and five of orthostatic albuminuria. No local redness, edema, or infection of any sort was observed in any instance. General reaction was absent after 92.23 per cent. of the injections; mild, after 6.18 per cent.; moderate, after 1.40 per cent., and severe, after 0.19 per cent. The moderate and severe reactions were generally characterized by headache and fever, with or without nausea, and occurred, as a rule, in subjects predisposed by alcoholism or overwork. Vaccination was well borne in tuberculosis of bones and joints. Prolonged fever, hemoptysis, and congestion of the apices were observed in a few cases of unsuspected tuberculosis in which small trial injections had not

December 21, 1915.

been given. Uranalysis is considered necessary in all subjects with a history of scarlet fever, diphtheria, or rheumatism, or not in good health at the time.

Late Tetanus at First Simulating Intestinal Obstruction, by Brochet.—A soldier, sustaining three wounds by shell fragments, was given a prophylactic dose of antitetanic serum within two hours. About three months later, bowel movements suddenly ceased. On the third day, abdominal pain appeared, and soon after bilious vomiting. The breath became fecaloid, and tympanites, together with tenderness and rigidity of the abdominal wall, was noted. On the fourth day, slight trismus and contractions of the lower extremities appeared, followed, in succeeding days, by more pronounced manifestations of the same type. The bowels were opened with castor oil, and a large amount of serum, together with the Bacelli phenol treatment, resorted to. The patient gradually recovered. No late surgical procedure or faulty dressing can have been responsible for the development of tetanus in this case. Tetanus spores had probably remained latent in some part of the patient's organism and later become active, possibly owing to the spell of cold weather prevailing at the time.

November 30, 1915.

Atypical Localized Tetanus, by A. Routier.—Six cases of localized tetanus, all in wounded subjects who had received preventive injections of antitetanic serum, are reported. The mode of onset was the same in all instances, pain suddenly appearing in one limb or in the neck without evident reason, in the absence of any foreign body, and not always in the vicinity of the wound. Such a sudden apparently causeless pain in the limb of a wounded man is held always to suggest tetanus. Total or partial contracture of the painful limb soon follows. A rise in temperature may occur either at the outset or only after two or three days. After two or three days of contracture, similar pain and contracture of the neck, sometimes accompanied by trismus, occur. Exaggerated reflexes and epileptoid trepidation in the affected limb, together with the photophobia, fear of noise and commotion, and the anxious facies of typical tetanus are also noted. Three of the author's six cases succumbed to asphyxia, though extension of the rigidity to the entire body had not taken place. Complete isolation of the patients, morphine, and large doses of chloral hydrate proved insufficient as remedial measures. Pain and contracture were apparently overcome, however, by subcutaneous injections of a mixture of salts recommended by Bottu, consisting of very pure (not commercial) sodium persulphate and of calcium phosphate, the latter embodying sufficient free phosphoric acid to render the saline mixture soluble in ten parts of water. Injections of 0.5 gram of the mixture, dissolved just before use in six c. c. of distilled water, were given three times a day. At each injection the remaining empty third of the ten c. c. syringe was filled with a one per cent. solution of morphine, to minimize pain. The efficacy of this measure was shown by the reappearance of pain and contracture, when it was temporarily discontinued.

Prognosis of Deafness in Military Practice, by Lannois and Chavanne.—Observation of 1,000 cases led to the conclusion that the prognosis of deafness arising in active warfare through the bursting of shells or direct traumatism of the skull depends to a marked extent on the previous condition of the ears. Patients with chronic otitis media or already pronounced sclerosis show a much larger proportion of cases of permanent deafness or auditory impairment as a result of commotion of the labyrinth through the bursting of shells than previously normal subjects. The prognosis also depends on whether direct injury to the skull has been sustained, deafness being the rule in traumatic mastoiditis, frequent in injuries of the face in the vicinity of the ear, and rare in fractures of the cranial vault. In these cases deafness is generally unilateral. In the absence of direct traumatism, concussion of the labyrinth rarely entails deafness; among 615 such cases, with or without tympanic rupture, only two per cent. acquired permanent bilateral deafness. Where deafness shows a tendency to persist, it is serious, acoustic exercises having no effect.

December 28, 1915.

Motor Localization in the Peripheral Nerves, by Pierre Marie, Henry Meige, and A. Gosset.—Faradic stimulation of nerve trunks in numerous cases of wounds afforded proof that the fibres in a motor nerve are distributed peripherally according to a definite topographical plan. Thus, in the median nerve, examined in the arm, a group of fibres specifically innervating the pronator muscles exists in the anteroexternal portion of the nerve trunk. Fibres to the thenar muscles are located posteriorly in the nerve trunk. Definite groups of fibres to the flexor muscles of the carpus and to those of the fingers also exist in this nerve. Analogous fibre localizations were in many instances discovered in the ulnar, radial, sciatic, and internal and external popliteal nerves. Such localizations having been established, it is recommended that they be taken into account in operative nerve suture. The surgeon should see to it that, in bringing the central and peripheral ends of a nerve together, the individual groups of fibres in the two stumps correspond.

PARIS MÉDICAL.

December 25, 1915.

Meningeal Form of Paratyphoid Fever, by Laroche and Lecaplan.—A small epidemic of the B form of paratyphoid fever in which the majority of cases presented the clinical picture of an evanescent acute meningitis was witnessed in a village in which about 1,000 soldiers were quartered. Three cases were of a purely meningeal type; in three others a more or less marked meningeal reaction was combined with typhoid symptoms, and in only one were gastrointestinal symptoms predominant. The disease began with relative suddenness, the prodromal period being only from one to four days in duration. In three cases the typical violent headache, backache, vomiting, Kernig sign, photophobia, etc., of cerebrospinal meningitis were noted. (Hops, L. baies, phagocytes, and corvina also pres.

ent in several instances, were additional sources of confusion with meningococcic disease. The spleen, however, was tender, painful, and slightly enlarged in three cases. Rose spots appeared in four cases. Recovery took place rapidly, except in one case in which, after the usual symptoms had subsided, delirium, hemiplegia, Jacksonian epilepsy, coma, and death took place. Stress is laid upon the frequency of meningeal symptoms in paratyphoid fever compared to their infrequency in typhoid, as well as upon the absolute necessity of examining the cerebrospinal fluid and making a blood culture, to distinguish the cases reported from cerebrospinal meningitis and institute proper treatment.

HYGIEA.

November 1, 1915.

Study of Congenital Pyloric Stenosis in Infants, by P. Hertz.—The material consisted of sixty-one infants, forty-five boys and sixteen girls, in the Rigshospital and the Dronning Louisa Hospital in Copenhagen. The symptoms appeared at different periods from birth up to five weeks, oftenest in the second and third week. The retention occurred in the breast fed as well as in those artificially fed. The acidity varied from day to day and free hydrochloric acid could be demonstrated at times in all the cases. Treatment consisted in careful breast feeding (eight to ten meals of fifty to 100 gm. per diem) and lavage. Rectal injection of mother's milk was tried in one case with a resulting enteritis. The mortality was 14.8 per cent., excluding two cases that were moribund on entering the hospital and one with hemorrhagic diathesis. One case deserved mention from the sudden onset of explosive vomiting on the second day after birth with visible peristalsis and a palpable tumor in the pyloric region, the stools being watery. After twelve days the vomiting ceased and the pyloric swelling disappeared, the peristalsis continuing for two months. The findings in these cases would point to a true hypertrophy, both in the stenosed region and in the stomach, the author considering the difficulty to be of the nature of a pylorospasm, while he inclines to the belief that the hypertrophy is a primary one.

BRITISH MEDICAL JOURNAL.

January 29, 1916.

Epidemic Cerebrospinal Fever, by Edward C. Hort.—Continuing his studies on the etiological organism of this disease, the author reaches the conclusions: There is no adequate evidence that the meningococcus of Weichselbaum is itself the causative organism; on the contrary, the evidence is strong against such a belief. The fresh filtrate of spinal fluid passed through a bacteria-proof Chamberland candle is infective to monkeys, while incubation of such a fluid destroys its infectivity and reveals in the filtrate several different types of organisms, including one physically like the meningococcus. It is believed that the infecting agent is pleomorphic and is infective in only one of its forms—that which passes the filter. The intimate relation, however, between the occurrence of the disease and the presence in the nasopharynx and spinal fluid of the meningococcus is serviceable in diagnosis and in the isolation of carriers of

the disease. The failure of the meningococcus to infect animals sheds light on the frequent failure of antimeningococcic serums to prove of therapeutic value. Work along the lines of the preparation of an antiserum should be pursued with the filtered fresh spinal fluid.

LANCET.

January 29, 1916.

Influence of Febrile Conditions on Inoculation Agglutinins, by H. L. Tidy.—Observations on the agglutinin content of the blood of inoculated persons suffering from a variety of febrile conditions showed that in a large proportion of cases the agglutinins almost or quite disappeared from the blood during high fever. The duration of this loss varied from only a few days to an indefinite period. In inoculated persons, ill with typhoid fever or paratyphoid, agglutinins also disappeared from the blood during the height of the fever, but returned in increased amount after the fever began to decline. From this latter observation the author concludes that the occurrence of marked agglutination by the blood of a suspected case of typhoid fever in a previously inoculated person after the fifth day of marked fever is trustworthy evidence of typhoid infection. Group reactions will also appear about this time in patients ill with paratyphoid fever after the antityphoid inoculation. Since the agglutinins have been proved to run more or less parallel with the degree of immunity, it seems probable that during the height of fever the immunity in some measure may be lost.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

February 5, 1916.

Clinical Determination of Renal Function by an Index of Urea Excretion, by Franklin C. McLean.—An improved and much more accurate method of measuring certain phases of the renal functions is described in detail. It consists, in brief, of an application of Ambard's laws of urea excretion. By means of the urease method of determining the urea content of blood and urine, the figures for both fluids are measured accurately for a given period of time, the blood being taken at the middle of the period of urinary excretion. From these two factors, plus the rate of water excretion and the weight of the patient in kilograms, an index was calculated for the normal urea excretion. The entire examination, including all the laboratory tests, requires only about two hours and the calculation can be made readily by means of a specially constructed slide rule. The advantages of this new method, other than ready applicability, are that the data secured are direct quantitative measurements of one of the most important renal functions; that the method is broadly applicable; that it may be repeated indefinitely on the same patient; that the findings are independent of the nitrogen or fluid intake, of the presence of vomiting, of refusal of food, or of the presence of diarrhea, delirium, or coma. The index has been studied parallel with the phenolsulphonephthalein test and has been found to accord with it closely in most instances. It is interfered with by few factors and is much more delicate in the detection of small but significant changes

in diseased conditions than is the phthalein test. Its full clinical significance has not yet been entirely worked out, but its practical value is great from a clinical point of view.

February 12, 1916.

Needless Surgical Operations in Tabes, by John W. Nuzum.—Eight and seven tenths per cent. of a group of 1,000 tabetics observed by the author had been submitted to laparotomy one or more times under mistaken diagnosis. Sixty-five per cent. of the tabetics operated upon suffered from visceral crises, showing the influence of this symptom on the surgeon. In seventeen per cent. the crises were the initial symptoms of the disease. Failure to examine the nervous system was the chief cause for the mistaken diagnoses, which were most commonly of gastric ulcer, gallbladder disease, and appendicitis. An effort should be made to exclude tabes in cases presenting histories of paroxysmal vomiting, rheumatism, paresthesias, disturbances of the bladder, or fractures without violence. Spinal fluid cytology and Wassermann examinations prove of the greatest value in doubtful cases.

Routine Wassermann Examinations, by I. C. Walker and D. A. Haller.—In the routine application of the Wassermann test to 4,000 general hospital cases, 600 were found to give complete fixation, showing that syphilis is even more prevalent than usually supposed. Forty-eight of the patients were in the early stages of the disease, 306 in the later stages, and 120 showed involvement of the central nervous system. The cases of unsuspected syphilis greatly outnumbered those of frank syphilis. The importance of syphilis in epilepsy was shown by the occurrence of a frankly positive Wassermann reaction in fourteen per cent. of the cases of this disease, excluding those with fractures of the skull. Contrary to common belief, there was no evidence favoring a close relationship of syphilis to chronic nephritis, with or without hypertension. On the other hand, there was some suggestive relation between the frequency of the Wassermann reaction in diabetics and the cause of the disease. The affinity of the spirochete for the vascular system was marked in the series of cases studied. Opposed to common belief, acute infectious processes such as typhoid, pneumonia, scarlet fever, and active tuberculosis were found not to influence the occurrence of falsely positive reactions.

Significance of Certain X Ray Findings in the Alimentary Tract, by C. L. Palmer.—It was found that the stomach was capable of changing its position without change in bodily posture, and that when this mobility was absent it was due either to mechanical restraint or to lack of power, the former being the common cause. Persistent supraposed stomach was found to be due to restraint commonly from adhesions. Persistent infraposed stomach was usually due to loss of power to move. Long gastric retention was usually due to gastric cancer, less often to chronic cholecystitis. Shorter retention was usually due to cicatricial contracture of the pylorus. Diagnosis of gastric or associated conditions made from roentgenograms and clinical

evidence was correct in nearly every case as demonstrated by operation or necropsy.

Genitourinary Symptoms from Anal, Rectal, and Colonic Diseases, by Alfred J. Zobel.—Many different symptoms referable directly to the genitourinary organs, but due to diseases of the anus, rectum, or colon, or vice versa are discussed. In many cases the symptoms due to disease in one region were confined entirely to the other, so that without careful examination of both regions no correct diagnosis could be made. For the most part the reference of symptoms to either region from disease in the other was due to pressure or to nervous reflexes.

MEDICAL RECORD.

February 12, 1916.

Rocky Mountain Spotted (Tick) Fever, by Henry C. Michie and Houston H. Parsons.—The results are given of an investigation in the Bitter Root Valley of Montana from July, 1911, to January, 1913. The disease is never found in lower animals and, though the specific cause has not been determined, it is transmitted by the bite of a tick. Symptoms at onset are chill, pains in joints, with the appearance on the fourth day of a macular eruption on wrists and ankles which spreads to the palms, soles, forearms, and calves. The temperature rises to 105° or 106° F. by the seventh or eighth day, ending in favorable cases by lysis on the ninth or tenth day. Toxemia is marked and black vomit common, while nephritis appears early. The spleen is hard and enlarged, while the blood is dark from the start with a low leucocyte count. A sudden rise in the leucocytes late in the disease is of bad import. The treatment is rather unsatisfactory, being mainly supportive and symptomatic; the only drug of much service is sodium citrate given intravenously to the limit of tolerance from the start. Sixty c. c. of a five per cent. fresh sterile solution may be given intravenously twice daily. The death rate in the Bitter Root Valley is about ninety per cent. in persons twenty-five years of age or over; it is lower in younger people.

Retroversion and Retroflexion, by Adolph Jacoby.—Backache is rare in pure retroversion, but is usually found where there is an associated parametritis. Retroversion and retroflexion are usually found together. Symptoms are not numerous or pronounced and depend largely on associated pathological conditions, and thus the treatment varies with these accompanying conditions. After correcting the malposition by the bimanual method, the uterus may be held in place by a Hodge or Smith pessary. In 109 cases of retroversion occurring in 300 consecutive cases, the remarkable points were the rarity of symptoms in the uncomplicated cases and the complete absence of backache formerly considered constant.

Effect of Emetized Blood on the Typhoid Bacillus, by Marcus Beekman.—Emetine hydrochloride in one half grain doses hypodermically, every six hours, for twenty doses was reported by Frazier in March, 1915, as having aborted eighty-two cases of typhoid fever. Following up this treatment from a laboratory standpoint to discover the

effect of emetine on the bactericidal action of the blood serum, Beekman found that after such injections the typhoid bacillus grew readily on the serum of the patient, and therefore no bactericidal power was imparted to the serum by the drug.

LANCET-CLINIC.

February 5, 1916.

Role of Urine Stasis in Pyogenic Kidney Infections, by L. E. Schmidt.—Operative experience led to the conviction that stasis of urine in the pelvis of the kidney is an important factor in infections of this organ. Any obstructive condition causing "back pressure" in the urinary system may be considered a factor of such stasis. Among these conditions are urethral stricture, with the secondary changes in the bladder and upper urinary tract, enlarged prostate causing similar changes, the pregnant uterus or tumors or inflammations exerting pressure on the ureters, movable kidney and enteroptosis causing distortion or kinking of the ureters, etc. In the kidney itself stasis may be promoted by any cystic condition of the organ, hydronephrosis, renal or ureteral lithiasis, and a horse-shoe condition of the organ. At least four fifths of the author's cases showed the colon bacillus as infecting organism. Only a small percentage of cases are ascending in character. Careful search for a cause of renal stasis should never be neglected, especially if symptoms arise before infection has taken place. If it is possible to correct the cause, the earlier this is done, the less the danger attending infection. When stasis of urine and infection coexist, no matter what the bacteriological finding, the case generally becomes a surgical one. If only congestion and not stasis permits of infection, however, and the latter is of the colon type, it may clear up under suitable nonoperative care.

JOURNAL OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

November, 1915.

Reflex Manifestations of Intranasal Origin, by B. F. Andrews.—A stimulus applied along the course of the trigeminal nerve may produce its effect at some remote area; for example, an impacted molar may produce an intense earache; a root abscess with no subjective pain referable to the offending organ may produce pain in the eye, or ear, or some other region. Likewise, after some tonsillectomies patients complain of intense pain emanating from the ear. Headaches of intranasal origin are quite common. Eustachian closure and subsequent interference with hearing may result from a septal ridge pressing on the inferior turbinate. In like manner intranasal stimuli may produce coughing and sneezing, which may in turn account for at least a certain percentage of cases of asthma associated with hay fever. Malformations of the middle turbinate, where it is bent on itself and makes pressure either on the lateral wall or on the septum, or is long and drags upon the inferior body, or contains pneumatic cells, or is hypertrophied, with consequent pressure upon surrounding structures, are responsible for many disturbances. Likewise the inferior turbinate often encroaches upon its neighbors, the lateral wall, septum, or floor, and sets up trouble outside of the

nose. Adhesions and cicatricial scars following cautery operations or traumatism come in for their share of responsibility.

SURGERY, GYNECOLOGY, AND OBSTETRICS.

November, 1915.

Management of the Placental Stage of Labor, by J. O. Polak.—The placenta will separate spontaneously if the normal mechanism is allowed to obtain. Any manipulation of the uterus before the clinical evidences of separation are apparent, disturbs this normal mechanism. Post partum hemorrhage is best guarded against by the observance of the physiological processes, and partial detachment, the result of manipulation, predisposes to bleeding. The normal mechanism of placental delivery is that described by Schultze. The Duncan mechanism of expulsion occurs only in low implantations of the placenta and where manipulation has been untimely and vigorous. The placenta may be retained in the uterus for hours or days without danger to the patient, provided that it is attached or completely detached, which insures that the bleeding will be negligible. Sepsis is dependent upon the penetration of the uterus by the hand or instrument through infected passages, and not upon the retention of the placenta. Manual extraction is admissible only in partial separation with hemorrhage. In retention of the placenta without hemorrhage, the cord should be cut off close to the cervix, the case watched until the signs of separation are apparent, when the placenta may be expressed by the Credé method while the patient is under surgical anesthesia. Invasion of the uterus by way of the vagina is fraught with danger from infection, and on exploration, should the placenta not be found presenting at the internal os, intrapelvic delivery should be abandoned and delivery accomplished through sterile avenues by suprapubic extraperitoneal hysterotomy. When the adhesion is so great that its removal entails the digging out, piecemeal, of the placenta, excision of the placental site or hysterectomy should be the choice.

December, 1915.

Renal Tuberculosis Treated by Nephrectomy, by E. G. Crabtree and Hugh Cabot.—Young patients with early lesions of the kidney which usually show considerable cortical tuberculosis and perinephritis, do less well after nephrectomy than those of more advanced age. Male patients offer more difficult problems in treatment than females, and the prognosis is less favorable. Genital lesions are uncommon in the female, while thirty-two per cent. of the male cases show genital involvement. Early mortality should not exceed five per cent. and late mortality not more than twenty. Sixty per cent. of the cases were cured, in which there was unilateral involvement. In ten to fifteen per cent. of the cases the progress of the disease will not be checked by nephrectomy. The results for their series for drainage of the wound after nephrectomy compare favorably with undrained wounds in recent cases in regard to sinus formations. There is approximately twenty-five per cent. which heal by first intention and seventy-five per cent. in which sinuses develop, irrespective of the method of wound closure employed. In undrained sinus development is late and

where the follow-up system is not carried out, may give a false idea of the value of the treatment.

Fracture of the Femoral Shaft: End Results, by S. P. Martin.—From the analysis of 242 cases of fractured femur, the writer draws the following conclusions based upon the end results: In children fractures of the shaft of the femur involve mainly the middle third, and in ninety per cent. of all cases are followed by complete recovery. In children the average time of treatment is eight weeks, there being no stiffness in the knee at the end of that period. In adults between the ages of fifteen and twenty-five years there is about fifty per cent. of complete recoveries, while after twenty-five years the permanent disability is proportionate to the age of the patient. In the absence of shortening there may be a lasting weakness in the thigh. The average time of treatment is eight months, and at the time of discharge (eight to ten weeks) there is stiffness of the knee in 100 per cent. of the cases. Among adult laboring men ninety per cent. never become able to perform their regular occupation, but among those not of the laboring class the great majority are able to perform their regular occupations. Efforts for obtaining better results should be directed to: 1. The employment of more weight in procuring extension, in the effort to entirely overcome the deformity; 2, early resort to open operation if extension seems inefficient; 3, the systematic use of massage and passive motion continued for months; 4, a longer use of crutches than is now customary; 5, education of the patient.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held on Thursday, January 6, 1916.

Dr. WALTER B. JAMES in the Chair.

Syphilis and Internal Medicine.—This paper, written by Dr. LEWELLYS F. BARKER, of Johns Hopkins University, was read by Dr. Sydney R. Miller; it appears in full on page 385 of this JOURNAL.

Syphilis in Neurology.—Dr. JOSEPH COLLINS presented this communication, which appears in full on page 389 of this JOURNAL.

Syphilis in General Surgery.—An abstract of this paper, by Dr. EDWARD MARTIN, of the University of Pennsylvania, appears on page 409 of this JOURNAL.

Dr. B. SACHS, of New York, said that in view of Doctor Collins's strong presentation, he felt he should have to prove that there were some diseases of the nervous system which were not due to syphilis. However, he thought Doctor Collins was right in establishing the point of view that syphilis as an etiological factor was of great importance. He had been much impressed recently by the statement of a medical man from the west, who had been for a short time at Mt. Sinai Hospital, in reply to a question as to what had impressed him most in the routine work of the neurological service. The reply was, "the number of cases of grave syphilis." From that point of view Doctor Sachs thought it was just as well to have a few words to say on that subject.

It was astonishing to find how often syphilis of the nervous system was of grave importance and there were a remarkable number of these cases at Mt. Sinai. They had been chiefly cases of cortical encephalitis which yielded promptly to treatment, thus supporting the diagnosis. Perhaps the gravest of all the forms had been the form of basilar involvement in which the symptoms pointed distinctly to involvement of the cranial nerves, especially of those arising from the pons and the medulla. These cases began with general malaise that led on to some form of headache and marked bulbar symptoms. There had been six in his service within the last two months. By intensive treatment a fatal issue had been prevented, but two of the patients died in a peculiar fashion, rather suddenly and from respiratory failure, the cardiac action continuing for some time after respiration had ceased, so that artificial respiration was maintained for hours. These cases of basilar syphilis were not frequent, but they were all characteristic, so that it was well to bear them in mind. The cases of cortical encephalitis were more stubborn; they lasted longer, but the majority yielded to treatment, though some gave way to dementia. With regard to other forms, there was particularly the group of epileptics. It was well for the general medical man to realize that it was gradually being learned that among the epilepsies, the so called group of idiopathic epilepsies was growing smaller. A case at the hospital gave the history of a first attack a year ago and recurrent attacks followed; there was nothing to guide one, except that the Wassermann was strongly positive and the corresponding treatment was introduced; but in spite of the most active treatment the man acquired a status epilepticus and was now going into a state of dementia. There was difficulty in enumerating all the conditions that syphilis might be associated with. When all other etiological factors in a case had been excluded, a Wassermann reaction of the blood was considered of great importance, even though the cerebrospinal fluid was negative; it was an indication that the patient had constitutional syphilis. It was well to call attention to the fact that insistence on treatment was well and good, but there were a certain number of Wassermann positive cases where with all the treatment in the world the Wassermann reaction in the blood could not be made negative, and in those cases there was no sense in pushing the treatment to the extreme; good medical judgment must be relied upon.

In regard to spondylitis, syphilis was an important factor. There had been cases in which tuberculous and traumatic influences could be eliminated, but syphilis was positively confirmed by the Wassermann reaction and by the immediate effect of specific treatment. If he referred to the greatest of all surprises that he had had in the practice of medicine, in regard to the syphilitic origin of disease, they would be certain cases of trigeminal neuralgia. He had in mind particularly a woman who for years and years had been to various physicians for relief, but who lost the pain within a few weeks after the introduction of salvarsan and mercury treatment after the Wassermann reaction of the blood had been found to be four plus. He approved thoroughly of the aphorism of Doctor Barker: "If

there was little doubt, have a Wassermann done, and if there were grave doubts, have it done by two or three different observers."

Dr. JEROME M. LYNCH, of New York, thought it was important that the surgeon should be on his guard and eliminate syphilis, for the surgeon could aggravate the condition by his activity, whereas the physician could not do any harm. He referred to a few cases under the branch of surgery in which he was interested, i. e., diseases of the intestines and rectum. A man suffering from hemorrhoids for a number of years had been treated at various clinics, and operation had been finally suggested, which he had postponed owing to the demands of his occupation. On examination, Doctor Lynch was struck by the relaxed condition of the sphincter. It was characteristic of syphilis of the spinal cord to find this muscle absolutely contracted, and on examination of such a patient to find it flabby and relaxed. The patient denied syphilis, but admitted being exposed on several occasions. A Wassermann was made and it was four plus; the man was referred to Doctor Fordyce and appropriate antisyphilitic treatment introduced and the patient improved. If there had been an operation, the condition would have been very much aggravated. There were other cases; one of severe abdominal pain. In one, in a doctor from Australia, the gallbladder had been drained and the appendix removed; on examination it was found that he had tabes; he was referred for antisyphilitic treatment and his condition improved.

Dr. BOLESŁAW LAPOWSKI, of New York, said that the papers presented were, according to the program, to bring to consideration pathological conditions which, although due to syphilis, not only had not been treated as such, but their connection with syphilis had not been even suspected. Only the advanced methods of the diagnosis of syphilis taught the physician to recognize the true etiology of the disease, and ergo the proper treatment. Considering the papers presented, especially the one dealing with diseases of the nervous system, he wondered what the syphilographers, who were no more with us—Robert W. Taylor and Prince Morrow, for instance—would have said could they have come back to earth for a few hours and listened to Doctor Collins's discussion of 250 victims of about thirty diseases of the nervous system, due to "unsuspected" syphilis which was only "discovered" by the new methods of examination. Surely they would have asked why was syphilis not suspected and looked for in those cases, and they would have referred to the old classical books on syphilis from which it could be learned that in many of the diseases mentioned the prime factor was syphilis, and in nearly all of them, even including trigeminal neuralgia, syphilis was to be suspected and searched for. By a thorough and critical consideration of the clinical symptoms, obtained not from the standpoint of the neurologist alone, but from examination of the skin, eyes, visible mucous membrane, bones, and internal organs, corroborative evidence of past or present syphilis could be found. And in cases where clinical or laboratory examinations failed to show the presence of the suspected syphilis, the classical method, *dis juvantibus*, even, at present, still re-

mained the ultimate, unfailing refuge of the physician.

There was indeed advance in medicine, especially in knowledge of syphilis, which helped to detect this disease in unsuspected cases, but it had not, in his opinion, been presented to them in the symposium of this meeting.

Dr. HUGH B. BLACKWELL, of New York, said that among those having unsuspected syphilis, there was a most serious complication which had not been referred to, namely syphilitic deafness. This complication took place in the late secondary and tertiary or in the hereditary forms of syphilis, in which there was frequently no clinical symptom of specific disease. It was manifested by a sudden loss of hearing, which might be partial or complete, accompanied by symptoms of dizziness. When the loss of hearing was profound, the prognosis as to complete recovery was poor. Prior to the complete loss of hearing, these patients usually gave a history of having had several minor attacks of partial functional impairment, the degree of deafness being more marked with each attack, the interval between the attacks being days, weeks, or months. If the condition was recognized and active antiluetic treatment instituted immediately after a minor attack had taken place, with only a partial loss of hearing, the prognosis as to ultimate recovery was much better than in cases where paralysis had been allowed to continue until loss of hearing was absolute.

It followed, therefore, that physicians treating sudden loss of hearing, however slight, should look for a syphilitic condition; if this was affirmatively determined, active constitutional treatment should be instituted immediately and pushed to the limit of the patient's endurance, as only by so doing could the tragedy of profound deafness be prevented.

Dr. LEON T. LE WALD, of New York, wished to refer to cases which should be included in this discussion, e. g., syphilis of the stomach. In a series of about 2,000 cases referred to him for Röntgen examination of the gastrointestinal tract, syphilis of the stomach had been encountered eleven times. Some had been submitted to operation by Dr. W. A. Downes, at St. Luke's Hospital, on account of advanced stenosis. Removal of sections for microscopical examination had proved the correctness of the diagnosis. Other cases had been relieved by appropriate antisyphilitic treatment.

Dr. MAX EINHORN, of New York, wished to mention syphilis of the liver, which was frequently seen; it simulated cancer. Under an antiluetic regime it could be successfully treated. His paper on syphilis of the liver, published fifteen years ago in the *Medical Record*, embraced his experience up to that time, but he had seen many cases since. Syphilis of the liver was of the greatest importance. Tumors of the liver had been recognized as of syphilitic origin at operation after opening the abdomen, and then antiluetic treatment had reduced the tumor and benefited the patient.

Dr. SYDNEY MILLER, of Baltimore, hoped that any remarks he might make would not be considered as indicative of Dr. L. F. Barker's opinion, since he had had no opportunity of talking over some of these questions with him. He was inclined to go on

record as being opposed to some of the statements made by Doctor Collins with reference to the value of the Wassermann reaction, particularly in cerebrospinal lues. There certainly were cases in which the early objective phenomena were absent, in which, however, cerebrospinal lues undoubtedly existed. Moreover, there was a large group of cases of cerebrospinal syphilis in which the cerebrospinal fluid changes might be entirely absent and nothing but a positive blood Wassermann reaction to indicate the underlying cause for some of the symptoms, and of course it was well known that the spinal fluid itself would show abnormal changes when the blood serum was quite normal. It might be disastrous to assume that cerebrospinal syphilis did not exist in a patient who showed a positive blood Wassermann reaction, a normal spinal fluid, and equivocal physical signs. It was for this reason that the performance of a routine blood Wassermann on all patients, particularly those admitted to a neurological or psychiatric institute, was distinctly indicated. Such a routine examination made on all the cases admitted to the Phipps Psychiatric Clinic uncovered not a few cases of syphilis occurring in persons showing phenomena apparently in no way related to the disease. The subsequent examination of the spinal fluid in cases showing a positive blood Wassermann reaction further subdivided this group into those who were undoubtedly suffering from true cerebrospinal syphilis, and those in whom subsequent developments substantiated the suspicion that they were also suffering from a masked form of this disease.

Dr. JOSEPH COLLINS said that in regard to the issues of Doctor Sachs, he had not included stiff spines in his series, because there were no such cases in his group. In regard to the second point, the specificity of the Wassermann in the serum which Doctor Sachs believed was the expression of generalized syphilosis, when that condition was found the patient did not necessarily have syphilis of the nervous system, which was what interested him. He did not believe Doctor Miller could bring any statistics to prove that there were many cases of spinal syphilis in which the Wassermann in the serum was positive and that in the cerebrospinal fluid negative.

Letters to the Editors.

FORMING SAJOUS CLUBS.

PITTSBURGH, Pa., February 17, 1916.

I, the Editor

The subject of the ductless glands and internal secretions has become one of the utmost importance to the modern student and practitioner of medicine. You, in your excellent periodical, always in the van of medical progress, have assisted materially, from time to time, in forcing recognition of this fact by the general medical profession, and never so much as by the publication of the series of articles on hemadenology by Doctor Sajous. For this reason it has occurred to us that your readers would, perhaps, be interested in the aims and purposes of a little group of physicians called The Sajous Club, and that men in other cities might be stimulated to organize similar groups. Some months ago it occurred to several of us, following different lines of medical practice, that we were not sufficiently informed regarding the influence of the ductless gland in the etiology of the various conditions which we, in our

several capacities, are called upon to treat, or in the therapeutic opportunities which hemadenology offers. It required but little explanation and persuasion to interest men in other specialties, with the result that very quickly organization and policies were definitely outlined and regular sessions begun.

There is no constitution, no bylaws and no officers, not even an official secretary. One man sends notice of meetings, and arranges programs until he desires a change, then hands over his duties to another. Membership is made of one man from each of the specialties, qualifications being only those of interest in the subject, and acceptability to every other member. Each member has the privilege of appointing an associate, a sort of understudy, who assists in research and in looking up references, and who has the privilege of attending meetings and taking part in discussions, but has no voice in matters relating to the policy of the club.

Meetings are held at intervals of about two weeks, in a private room at the University Club, at 5 o'clock in the afternoon. At 7 o'clock a moderately priced dinner is served to which all who do not have other engagements for the early evening remain. The broadening influence of combining the scientific and social interests of men of different specialties, ages, personalities, and outside contacts is apparent. Each man has chosen a special line of study and investigation closely related to his own line of practice, and upon which he will, when his studies are completed, prepare a paper. At each meeting subjects for consideration at the following meeting are chosen and members selected to open and direct the discussion, which is pursued with the utmost informality.

As convenience made it necessary to have a suitable name, that of The Sajous Club was chosen, in recognition and admiration of the pioneer labors of Dr. C. E. DeM. Sajous, who has, by word and pen, for many years endeavored to convince our profession of the importance of this subject.

CLEMENT R. JONES,
E. A. WEISS,
CHARLES N. SCHAEFER,
J. BRONFENBRENNER,

WILLIAM H. MERCUR,
EDWARD STIEREN,
J. HOMER MCCREADY,
E. BOSWORTH MCCREADY.

ERRATUM.

A most annoying error in the proof in our issue for February 19th made us attribute to Adams and McCrae's excellent work on pathology, the statement that rhinitis was often apparently due to cold and dirt. The last word should obviously have been *wet*. We tender our apologies to Dr. William Brady, of Elmira, who must have been perplexed at our comments on his letter.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

An Autobiography. By EDWARD LIVINGSTON TRUDEAU, M. D. Illustrated. Philadelphia and New York: Lea & Febiger, 1916. Pp. 322.

Few physicians, we think, were ever more beloved of their patients and their colleagues than the late Edward L. Trudeau. The simplicity of character, bonhomie, innate honesty, and general charm of the distinguished phthisiographer, which were at the bottom of this general esteem, are well brought out in this autobiography, at the close of which the author felt himself already in the shadow of the valley. "Autobiographies must of necessity run perilously near the fatal precipice of egotism," he writes on the first page, but egotism is conspicuously absent from this unpretentious book. Trudeau's was apparently rather a sad life, and he did not seem to possess the optimistic outlook of the average tuberculous patient. He had many profound shocks, the principal one being the death of his son, Ned, from which he never recovered. Those whose names appear in this volume may well be proud of the fact because the writer speaks in the most appreciative terms of their

friendship and help. The autobiography naturally incorporates the early history of the modern treatment of tuberculosis, in which the writer played so conspicuous a role, and is a valuable document on that account. To all who knew the Adirondack specialist this book will be of fascinating interest, while those who knew him only by reputation will by no means regret the perusal of an autobiography which is not only important in many ways, but is delightfully written. The book is well printed and handsomely illustrated.

Makers of Modern Medicine. By JAMES J. WALSE, M.D., Ph.D., LL.D., Litt.D. (Georgetown); Sc.D. (Notre Dame); L.H.D. (Catholic University), Professor of Physiological Psychology at the Cathedral College, New York; Sometime Dean and Professor of the History of Medicine and of Nervous Diseases at Fordham University School of Medicine; Member of the French, German, and Italian Societies for the History of Medicine, New York Histological Society, New York Academy of Medicine, American Medical Association, American Association for the Advancement of Science, etc. Catholic University Edition. Enlarged by the Addition of the Life of Virchow. New York: Fordham University Press, 1915. Pp. vii-441. (Price, \$2.)

This review might have appeared earlier if we had not appreciated its flavor so highly. Constant writing has not only matured Doctor Walsh's style, which is now most interesting, but also his point of view, which has gained in breadth and charity. The only reason for retelling the lives of the distinguished men who form the subjects of this book, is an ability to render them more significant and more entertaining, and this the author has accomplished. Doctor Walsh in this book has not had the opportunity he enjoys so much of pointing out how much the ancients knew, for the men discussed are mostly moderns, but the thoughtful reader will find many an idea in these pages properly accredited that is dropping out of sight too soon, probably to be revived later with a flourish of trumpets as quite new. Such is a theory of O'Dwyer's concerning the probable immunity of an emphysematous lung to pneumonia. The biography of Virchow is a masterly piece of work, enjoying the advantage of the author's personal acquaintance with the great pathologist. We are grateful for the information that the man himself pronounced his name *Firko*, and freely acknowledged his Slav origin. These authoritative statements ought to settle many disputes. Of considerable interest, also, although the information is given necessarily at second hand, are the biographies of Pasteur, Schwann, Claude Bernard, Galvani, Jenner, and others. The book will probably add to Doctor Walsh's already large circle of readers.

Potter's Compend of Human Anatomy. Revised by D. GREGG MATHENY, M.D., L.R.C.P. and S. (Edin.), L.F.P.S. (Glasgow), Associate in Anatomy, Jefferson Medical College, Philadelphia. Eighth Edition. With 130 Illustrations; Also Numerous Tables and 16 Plates of the Arteries and Nerves (Blakiston's Quiz-Compend). Philadelphia: P. Blakiston's Son & Co., 1915. Pp. xiv-428. (Price, \$1.)

Potter's compend is one of the well known series of quiz-compend published by Blakiston. The present one has reached its eighth edition after being favorably known for the past twenty years to teachers and students of anatomy. It is based on the writings and lectures of recognized authorities and thus has the advantage of not being dominated by any one authority. The author's experience in teaching students has fitted him well for the task of producing a book which takes up all the important chapters of descriptive anatomy and condenses them into a very small volume suitable for quiz work.

Practicum der chirurgie. Ein Leitfaden für Aerzten, Chirurgischen Assistenten und Medizinalpraktikanten. Von Dr. O. NORDMANN, Oberarzt der II. chirurgischen Abteilung des Auguste Viktoria-Krankenhauses Berlin-Schöneberg. II. Teil. Spezielle Chirurgie. Mit 161 teils farbigen Abbildungen. Berlin; Wien: Urban & Schwarzenberg, 1915. Pp. xii-219-632.

The author has had chiefly in mind the needs of the physician and surgical assistant rather than those of the practitioner of surgery. The book gives the essential points

in the principles, symptomatology, and treatment of injuries and surgical diseases, beginning with the head and ending with the lower extremities. Written by a practising surgeon, the book has the advantages coming from the personal experience of the author. While not very numerous, the illustrations are unusually well executed and are helpful in elucidating the text. The latter is concise and well adapted to the student. The book teems with practical points in technic and aftertreatment. The personal experiences of the author at the front up to January, 1915, have been included and add very much to the value of the book at the present time.

The Rat. Reference Tables and Data for the Albino Rat (*Mus norvegicus albinus*) and the Norway Rat (*Mus norvegicus*). Compiled and Edited by HENRY H. DONALDSON. Memoirs of the Wistar Institute of Anatomy and Biology No. 6. Philadelphia, 1915. Pp. iv-278. (Price, \$3.)

This memoir of the Wistar Institute of Anatomy and Biology represents not only work done by the author and his immediate colleagues, but also the results of the work of other investigators of the rat, collected and tabulated as far as possible. To the pure scientist specializing on the rat and its development, this book would be of great value, but to the ordinary practitioner it would not present many attractions. Consequently, except within a very limited field, this volume would not appeal.

Interclinical Notes.

A student of Columbia University writing to the *World* for February 22, 1916, in defense of the new paper, *Challenge*, offers what he calls the "real facts" in the case. The facts would be enough.

There is a wonderful picture of New York city in the *Outlook* for February 16th; it is a photograph taken after a snowstorm from the roof of the Woolworth Building, and shows what a painter might accomplish from the same viewpoint. Another unusual picture is that of an entire Egyptian tomb which was brought to New York and set up in the Metropolitan Museum of Art. There are some verses of an uncommon type by Charles Alexander Richmond, president of Union College, entitled Brother Jonathan.

Mexican Current Opinion for February, 1916, begins in Mexico, goes thence to Washington, then to Germany, to Greece, to Italy, and the Balkans. Senator Stone, King Peter, and Yuan Shi Kai make an interesting trio for editorial comment. The theatrical department, as usual, makes a long excerpt from a current success—this time from *The Great Lover*. We are the only people, we believe, who tolerate a foreign accent in a theatrical star. The greatest living singers are not permitted to appear in the government theatres of Paris on account of a faulty accent. The scientific department of *Current Opinion* voices some belated doubts concerning the existence of atoms and molecules. We hope our readers will remember that the existence of ions is only a theory.

A typical Scottish piper is handsomely portrayed by Mr. Flagg on the cover of *Leslie's* for January 20th. It is said that in war, the best place for the piper is in front of Scottish troops, but behind the regiments from other lands. The frenzied Scots leap forward at the sound of the pibroch, while their allies rush with equal speed upon the foe in order to escape the music.

According to Richard Spillane, in *Commerce and Finance* for January 19th, the so called class rush in institutions of learning has nothing to commend it. In the report of the one at the University of Pennsylvania we are informed that, in addition to the killing of William L. Lifson, a score of other students were injured in the struggle, and several were found unconscious after the fight. The most seriously hurt were Gordon Smyth, sophomore, concussion of the brain; Arthur Essick, sophomore, sprained leg; and John Hill, freshman, lacerations. The others suffered from shock or exhaustion. If there is anything conducive to

manliness in such a contest some one connected with the colleges might explain. The University of Pennsylvania has put a ban on this feature now that Lifson is dead. That it did not do so before is proof only of negligence. Every college should wipe out such barbarity. There are lots of healthy sports in which the young men can work off their superabundant energies without maiming or killing each other.

* * *

What the Bureau of Mines accomplishes for the underground population of the United States makes up an interesting contribution to the *Survey* for February 5th. The mine rescue car and stations alone cost over \$30,000. There are studies to promote sanitation and ventilation, to make known the dangers of coal dust, to secure the least dangerous blasting explosive, to render comfortable the homes of the miners, to encourage gardens and the proper disposal of sewage. There is an attractive first aid team of women in nurse's garb. Tuberculosis is the great scourge, as our readers are aware.

Meetings of Local Medical Societies.

MONDAY, February 28th.—Medical Society of the County of New York; Poughkeepsie Academy of Medicine.

WEDNESDAY, March 1st.—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatric Society of New York; Society of Alumni of St. John's Hospital, Brooklyn; Schenectady Academy of Medicine; Long Island Society of Anesthetists.

THURSDAY, March 2d.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, March 3d.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association.

SATURDAY, March 4th.—Benjamin Rush Medical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 16, 1916:

Carter, H. R., Assistant Surgeon General. Bureau letter dated February 4th, amended to read "two days' leave of absence from February 3, 1916." **Lancaster, J. F.**, Acting Assistant Surgeon. Leave of absence for seven days from February 2, 1916, amended to read "five days' leave of absence from February 2, 1916." **McCoy, G. W.**, Surgeon. Authorized to attend a meeting of the Council on Pharmacy and Chemistry of the American Medical Association at Chicago, February 19, 1916. **Marshall, E. R.**, Passed Assistant Surgeon. Granted ten days' leave of absence on account of sickness from February 12, 1916. **Perry, J. C.**, Senior Surgeon. Granted one day's leave of absence, February 16, 1916, under paragraph 193, Service Regulations. **Safford, M.**, Victor, Assistant Surgeon. Granted ten days' leave of absence from February 14, 1916. **Tanner, W. F.**, Assistant Surgeon. Granted ten days' leave of absence from January 28, 1916. **Wayson, N. E.**, Assistant Surgeon. Granted one day's leave of absence on account of sickness, February 9, 1916. **Young, G. B.**, Surgeon. Directed at the request of the State Board of Health of Virginia to deliver an address on Public Health at Emporia, Va., February 24, 1916.

Boards Convened.

Board of medical officers convened at the Marine Hospital, Detroit, Mich., for the reexamination of an alien.

Detail for the board: Senior Surgeon H. W. Austin, chairman; Surgeon H. W. Wickes, recorder.

Board of medical officers convened at the Marine Hospital, Providence, R. I., for the reexamination of an alien. Detail for the board: Passed Assistant Surgeon E. R. Marshall, chairman; Acting Assistant Surgeon M. W. Houghton, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the week ending February 10, 1916:

Kremers, Edward D., Captain, Medical Corps. Granted two months' leave of absence, on surgeon's certificate of disability.

Births, Marriages, and Deaths.

Married.

Johnson—Coppinger.—In Boston, Mass., on Tuesday, February 8th, Dr. H. Leonard Johnson, of Franconia, N. H., and Dr. Sarah Elizabeth Coppinger. **Myers—Ray.**—In St. Louis, Mo., on Wednesday, February 2d, Dr. E. Lee Myers and Miss Faletia Ray. **Steenberg—Gillilan.**—In Lincoln, Neb., on Wednesday, February 9th, Dr. Donald B. Steenberg, of Boston, Mass., and Miss Ruth Gillilan.

Died.

Apted.—In Grand Rapids, Mich., on Sunday, February 13th, Dr. Ralph C. Apted, aged forty years. **Blaydes.**—In Covington, Tenn., on Monday, February 7th, Dr. James E. Blaydes, aged seventy-six years. **Buell.**—In Cumberland, Md., on Tuesday, February 8th, Dr. M. Catherine Buell, aged fifty-eight years. **Campbell.**—In Troy, Kansas, on Thursday, February 3d, Dr. William B. Campbell, aged fifty-six years. **Charbonneau.**—In Worcester, Mass., on Wednesday, February 9th, Dr. Joseph Charbonneau, aged fifty-nine years. **Coit.**—In Los Angeles, Cal., on Sunday, January 30th, Dr. George W. Coit, aged seventy-nine years. **Deans.**—In Rocky Mount, N. C., on Saturday, February 5th, Dr. T. J. Deans, of Nashville, Tenn., aged thirty years. **Dorough.**—In Girard, Ala., on Sunday, February 6th, Dr. John W. Dorough, aged forty-eight years. **Elsner.**—In Syracuse, N. Y., on Thursday, February 17th, Dr. Henry L. Elsner, aged sixty-one years. **Evans.**—In Columbus, Ohio, on Monday, February 7th, Dr. Arthur E. Evans, aged sixty years. **Fahnestock.**—In Fostoria, Ohio, on Friday, February 11th, Dr. J. H. Fahnestock, aged seventy-four years. **Hammond.**—In Chicago, Ill., on Tuesday, February 15th, Dr. Jabez Dean Hammond, aged fifty-six years. **Kahlo.**—In White Sulphur Springs, W. Va., on Saturday, February 12th, Dr. George D. Kahlo, aged fifty years. **Kitchen.**—In Indianapolis, Ind., on Saturday, February 5th, Dr. John M. Kitchen, aged ninety years. **Krieger.**—In Cincinnati, Ohio, on Tuesday, February 8th, Dr. John C. Krieger, aged fifty-seven years. **Laliberte.**—In Minneapolis, Minn., on Saturday, February 5th, Dr. Alfred L. Laliberte, aged forty years. **Litchfield.**—In Salamanca, N. Y., on Wednesday, February 9th, Dr. Walter M. Litchfield, aged fifty-three years. **Lumpkin.**—In Athens, Ga., on Thursday, February 3d, Dr. James M. Lumpkin, aged eighty years. **McFadden.**—In Milford, Texas, on Sunday, February 6th, Dr. J. R. McFadden, aged eighty years. **Medden.**—In Seneca Falls, N. Y., on Saturday, February 12th, Dr. James E. Medden, aged fifty-six years. **Morse.**—In Thorndike, Me., on Sunday, February 6th, Dr. Frank Wilmont Morse, aged thirty-six years. **Scholes.**—In Lynn Grove, Ky., on Thursday, February 3d, Dr. Charles I. Scholes, aged fifty-eight years. **Von Geltsch.**—In Madison, Wis., on Saturday, February 5th, Dr. Ernst Von Geltsch, aged fifty-eight years. **Wellington.**—In Swansea, Mass., on Friday, February 11th, Dr. James Lloyd Wellington, aged ninety-eight years. **Whitehead.**—In Charlottesville, Va., on Sunday, February 6th, Dr. Richard N. Whitehead, aged forty-nine years. **Wright.**—In Powder Spring, Ga., on Friday, February 4th, Dr. W. D. Wright, aged sixty-seven years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal ^{and} The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 10.

NEW YORK, MARCH 4, 1916.

WHOLE No. 1944.

Original Communications.

GALLBLADDER DISEASES,*

Etiology, Symptoms, and Treatment,

BY CHARLES H. MAYO, M. D.,
Rochester, Minn.

The etiology of diseases becomes clear only as the bacterial or toxic causation is appreciated. For ages we have known of specific general and local diseases by name, and the symptoms were well understood, as was the gross pathology. However, that they were caused by specific bacteria each for itself has been known for a few decades only. We now know that the symptoms are the expressed reactions of the protein cells of the body against disease by infection or toxin in developing immunity. The finding of tubercle bacilli, typhoid bacilli, pneumococci, and similar disease causing germs has been epoch making in the advance of medicine. It was known of several diseases before the germ was discovered that immunity developed in the person after recovery, as in measles, scarlet fever, and smallpox; and it was also known that other diseases left him less resistant or anaphylactic, as in the diseases of the lung, rheumatism, tonsillitis, etc. The effect of disease on the body and its increased or diminished resistance or method of recovery led to a consideration of these factors in the blood and tissues as they developed in a living laboratory. Serums and vaccines were made to stimulate body resistance. Drugs are already reduced to few in number, compared with the past, and these have been chosen for their effect upon the circulation, the glands of nutrition, elimination, and internal secretion, and upon the nervous system. To conform with the demands of the medical profession, drug houses are already supplied with antitoxins, serums, and vaccines. Undoubtedly the greatest advance in modern medicine is the knowledge that practically all diseases are the result of protein changes, usually from infection, and that some degree of bacteriemia exists in all infections. Formerly we considered a bacteriemia to be present only in the most grave conditions of pyemia or septicemia. A better appreciation of the effect of bacteria in producing disease would exist if we could think of them as not all being pus producers. Some of the worst offenders are nonpyogenic. The very existence of life means a constant fight against its destructive agents until we finally succumb to them.

That the diseases of the gallbladder are of infectious origin is generally conceded, but how they occur and produce their local and general effects is not generally understood as yet.

The great advance in medicine has been the proof, by the specific reproduction of disease, that all of the local pathological processes in the body, possibly not even excluding malignancy, are caused by infection, just as are the general specific diseases. Thus the bacteria cultivated from the deep tissues of gastric or duodenal ulcer and injected into the veins of animals will have a selective affinity for similar tissue cells and reproduce ulcer in three fourths of the animals so treated, although the bacteria have an equal chance for location in all of the tissues of the body. This is true of appendicitis. It is also true of actively diseased gallbladders. Cultures from such tissues when put into the blood reproduced by selection disease of the gallbladder, even to occasional stone formation, in sixty-eight per cent. of forty-one animals (Rosenow). In experimental work the ducts are resistant to the infection while the gallbladder is vulnerable. Transmutation of bacterial types from one to another of similar form through variations in culture and environment has been noted by several observers. The world is indebted to Rosenow for the proof of this, and the discovery that the specific selective affinity of bacteria for similar tissues is so widely varied. This includes nerve lesions and those of the spinal cord, production of localized herpes, iritis, retinal hemorrhages, neuritis, rheumatism, nephritis, and myositis all coming into the same class of specific diseases which can be reproduced in animals from bacteria cultured from the tissues. Strains developed from the gallbladder carried through artificial media develop gastric ulcer in an increasing proportion. Culture from animal to animal increases infective pancreatitis in side chains.

Considering these diseases of the gallbladder, while it was conceded that they were due to infection and also that stones resulted in the same manner, we now have proof that stones long since removed from the gallbladder may retain living bacteria for years. Where formerly the gallstones were considered the entity, infection now takes the first position; the stones are of secondary production and often do not occur in the more severe types of infection, as in strawberry gallbladder. The nearly pure cholesterol stone probably occurs with less infection than any other form and is usually free from bacteria. Payr has shown that the bile of pregnant women contains much more cholesterol than that of nonpregnant women or of men.

*Read before the Bronx County Medical Society, January 12, 1916.

Chronic infection, or infection occurring during this period with stasis and the excess of cholesterin, has something to do with the fact that four out of five cases of gallstone occur in women, and of these about the same percentage have borne children; in many of them the first attack occurred during pregnancy.

Infection being the necessary factor, its origin has led to several theories, first, that the bacterial life of the intestine ascended the common duct and entered the gallbladder; second, that the portal circulation took living bacteria to and through the liver, entering the bile from the liver side. It has also suggested that bacterial invasion by way of the lymphatic channels could occur. The first two theories imply that the bacteria, once gaining entrance to the bile in the gallbladder, enter into and destroy its mucous lining. While this is not an utterly inconceivable theory, yet it must be remembered that the mucous lining is constructed for surface protection and should be as resistant as the skin. Rosenow, however, has shown that the structure is vulnerable by an attack in the rear, through the vascular system. Bacterial infarcts of the capillaries at the base of the mucous membrane cause the local and general inflammation of the structure, local areas of necrosis with bile stained tissue occurring in the so called strawberry gallbladder. Typhoid fever is a fairly common source of diseased gallbladders, and of the so called typhoid carriers this organ is undoubtedly the common offender. In typhoid fever the blood is teeming with bacilli and the attack is through the vascular system.

Possibly twenty cases of congenital absence of the gallbladder in man have been reported. There are several animals, including the deer, horse, rhinoceros, and a few others that do not have gallbladders, but have proportionately larger ducts. The gallbladder in the human subject, when at rest, holds about an ounce of bile. It enters the common duct of the liver at an acute angle. The duct above this point is known as the *hepatic*, and below it as the *common* duct. In about sixty-two per cent. of people the common duct passes through the head of the pancreas, and into the wall of the duodenum between the muscularis and mucosa, joining the pancreatic duct just before opening into the intestine behind a considerable fold of overhanging mucous membrane.

Possibly an ounce an hour of bile is delivered and fifty ounces of secretion, including that of the pancreas, may pass the duct in a day. The mechanics are much like those of a perfume atomizer with a bulb. Under normal conditions of flow it should be able to create a negative pressure in the pancreatic duct as a stimulus to secretion. In thirty-eight per cent. of people the common duct does not go through the head of the pancreas, but passes through the wall of the intestine in the same manner. Coffey's experiments show that in cadavers the duodenum can be burst by distention with gas or fluids before regurgitation can occur into the common duct. Moreover, Archibald has demonstrated a small automatic valve at the opening of the duct into the intestine. This general mechanism explains how a hardening of the head of the pancreas in a patient whose common duct passes

through it, would result in jaundice, while such an occurrence in one of the other type might not. The mechanism of duct union, common and pancreatic, indicates the manner in which the pancreas can become involved secondarily in infections, especially obstruction of the ampulla by a stone. The lymphatic drainage from the head of the pancreas passes through the lymph glands of the common and hepatic ducts. A cholecystitis causing great enlargement of these glands can produce duct pressure and jaundice or a lymph edema or a lymphborne infection of the head of the pancreas may occur, just as at times is seen lymph edema in the arm following amputation of the breast and removal of the axillary glands. The gland group in both instances drains three regions.

The gallbladder in health is capable of expanding to contain several times its ordinary capacity without the consciousness of the person, unless there is obstruction causing cramping or spasm of its muscular structure or infection of its wall, in which case it can neither expand nor contract without the knowledge of its possessor. Herein lies the cause of certain symptoms noted in disease, and while the gallbladder itself is looked upon by some as an unnecessary organ, it has something of a function, although not an essential one. Man, being an omnivorous feeder, often eats such food as is slow of digestion or active in producing gas. A fair amount of distention of the duodenum by fluids in stasis or by gas would necessarily partially obstruct the common duct by flattening of that structure in the wall of the bowel, thus calling upon a reserve capacity which would distend the gallbladder until such a point as its muscular structure empties it against the duodenal pressure by rhythmic contraction, just as the ureter normally empties urine into either an empty or full bladder, in health a wholly automatic or unconscious action. The common duct is stiffer walled but almost similar in structure to the gallbladder, and whenever the loss of the gallbladder occurs by congenital absence, disease, or removal, the common duct is found enlarged. The cystic duct enters the common duct at an acute angle, and in compression of the gallbladder the pressure is exerted on the common, and not on the hepatic duct. Infection is so severe at times as to cause local peritonitis which results in adhesions of stomach, bowels, and omentum about the gallbladder or to the adjacent liver, all of which means bacterial invasion. The infection may be sufficient in the presence of stagnation, bile salts, and an excess of cholesterin to produce stone. The original infection may not cause peritonitis and may clear up, leaving stones in an otherwise healthy gallbladder. Such might be retained for many years unrecognized, and the only symptom would be the mechanical one of obstruction. Should obstruction by stone in the cystic duct occur and persist, there is developed a cystic gallbladder, or possibly empyema, or cancer as a terminal result. Cholecystitis may persist for many years with or without stones. In these cases, infection being the factor, reflexes, usually gastric, are more strongly marked, attacks of colic may occur, not so severe as in stone, there is more tenderness which lasts for several days instead of disappearing as in stone colic with-

out cholecystitis, and local tenderness is greater. Qualitative food dyspepsia is marked—greases, raw apples, and foods of slow digestion make much gas and gastric stasis as reflex symptoms. Severe infection (strawberry gallbladder) is often mistaken for duodenal ulcer. Although not free from some symptoms at all times, these patients have recurrence of spells or attacks of from one to three weeks' duration, with prolonged intervals of great improvement, much as is seen in ulcer. The gastric symptoms, however, when severe, do not occur regularly in type and on an empty stomach, but occur before meals, two or three hours after meals, or in the night; the gastric delay may cause nausea or vomiting (the latter often being induced for relief), but may be quieted by soda, as in ulcer, which still further complicates the diagnosis. The recurrence of attacks undoubtedly means that the original focus, probably connected with the mouth or possibly the appendix, is still an active one, and the recurrence of symptoms is similar to the recurrence of rheumatism under like circumstances. Moreover both lesions, ulcer (gastric and duodenal) and cholecystitis, may occur in the same individual and be originally caused by the same bacteria. As Rosenow has shown, while the great proportion of reproduced disease occurs in similar tissues, various side lines of involvement of other tissues occur, although in much lower percentages. Chronic infections retained in the gallbladder are often the source of headaches and myocardial degeneration with associated nephritis. The x ray becomes a valuable aid in differential diagnosis, but too much dependence must not be placed upon the interpretation of its shadow report against history and symptoms for the diagnosis of either gastric lesions or gallstones; we must remember that infection is the entity and gallstones are secondary to it, that although gallstones can often be shown in a radiograph, surely a great help, the latter cannot show the severe infections, the papillary cholecystitis, soft stone, or inspissated bile. Largely to depend upon it as now developed, would be to step back twelve years in the advance of gallbladder and gallduct surgery and its diagnosis. The improvement in x ray diagnosis of abdominal lesions has been so rapid that some obscure questions may soon be cleared by it.

Pain at the left costal arch and in the epigastric region, which would be quite positive of gallbladder disease if it were referred to the right, is occasionally elicited, and such symptoms are usually a referred gallbladder pain, possibly a gastric or duodenal ulcer to be differentiated, but still to be considered a surgical lesion.

TREATMENT.

In treatment, remedies to relieve the intestines of stasis, a selection of such food as is easy of digestion and gives no distress according to the statement of the patient, affords relief in the milder cases; taking hot water before meals is of benefit in cholecystitis by starting the emptying of the gallbladder and the flow of bile before food enters the stomach and gas formation begins, leaving the gallbladder with a temporary reserve capacity within the limits of unconscious distention following the meal. Stone

temporarily obstructing the cystic duct is relieved by relaxation obtained by opiates or vomiting.

There are but few lymphatics on the gallbladder at the fundus; some occur at the neck and more along the main ducts. Blocking of the cystic duct with infection of the gallbladder gives but little increase in temperature. Infection involving the hepatic and common ducts, rich in lymph absorbers, is accompanied by chills and fever, the temperature often reaching 104° or 105° F. Should obstruction of the common duct persist, it is accompanied by jaundice. Where persistent infection is the common factor, constipation is the rule. With associated pancreatitis, varying attacks of diarrhea are often noted, and it has frequently been seen that through some perversion of secretion of the pancreas or stimulus to the secretion of the duodenum, the gastric acids disappear with attendant disturbances of digestion.

A knowledge of the structures and function as well as the mechanics of delivery is essential to the proper surgical treatment of these diseases. That they are not well understood is evidenced by the fact that in four months, July to October, 1915, inclusive, of 370 patients coming to our clinic for the relief of gallbladder and gallduct disease, forty-eight, or thirteen per cent., had been previously operated on for the same condition, some of them twice. The majority of these patients were women, and naturally a number had had the right ovary removed, a larger number the appendix, and a few had had fixation of the right kidney.

With reference to the question of gallbladder drainage—cholecystostomy, or cholecystectomy—the surgeon is guided by the question of infection or the apparent usefulness of the structure. Can it perform its function, which is not a necessary one? Patients with stones originating from an infection which has subsided, can be relieved by removal of the stones and drainage in a high percentage of cases. In the cases of more severe infection with many adhesions and still further attachment of the gallbladder to the abdominal wall incident to drainage, the removal of stones relieves the patient of the acute colic of obstruction, but more or less gastric symptoms, which he terms dyspepsia, still persist. Such gallbladders should be removed, and also in all cases in which infection is the factor. How can we tell that a gallbladder is diseased? As a rule, infection thickens and whitens the gallbladder. It is often noted, however, that a blue gallbladder not only may have stones, but without stones may have serious changes in its mucosa due to infection. The lymphatic glands along the cystic, hepatic, and common ducts are always swollen in infections of the gallbladder. They are palpated with a finger through the foramen of Winslow and a thumb over the duct, and should be examined as frequently as opportunity offers in order that the surgeon may determine the size of the normal gland. A seriously infected gallbladder cannot exist without evidence of the infection showing in the glands which drain it. They are also swollen in cases of papilloma of the gallbladder, a rare condition, but one that is also due to infection and is possibly a factor in the etiology of cancer. In 2,940 cholecystectomy opera-

tions at our clinic, papilloma was found in 130 cases.

It is hardly fair to base our judgment as to the present state of surgery on reports including the relative value of results in cholecystectomy or cholecystostomy which were made during the imperfect and developing period of the early surgery of these diseases, say twenty to ten years ago, or including a proportionately large series of unproved medical cases so diagnosed. Autopsies, as a rule, have been made in large numbers in charitable institutions, upon people naturally who had suffered hardships throughout their lives or they would not have been in such institutions. The finding of gallstones at autopsy in such individuals has led some observers to speak of them as "innocent gallstones." As stated by W. J. Mayo, it is not the gallstone that is innocent, but the doctor, and the late patient is unable to tell his story. The whole progress of present day surgery in all lines has developed from the ocular observation of pathological changes in the living made possible by aseptic surgery. Most surgeons gauge their own ability and know their limitations. Cholecystostomy may appeal to them as a means of cure or of safety. Again, the drainage operation may be chosen for primary safety with later cholecystectomy recommended as probably necessary in the future, a two stage method. Cholecystectomy requires more skill in its technic and greater care to avoid injury to the bowel, the vessels, and the main bile duct.

Since our appreciation of the fact that infection is the prime factor, we have revolutionized the surgical treatment of this condition at our clinic, as the following table shows:

TABLE SHOWING THE RELATIVE MORTALITY OF CHOLECYSTECTOMY AND CHOLECYSTOSTOMY.

<i>Cholecystectomies.</i>				
	Total operations.	Cancers.	Deaths.	Proportion deaths. Per cent.
1907-1909	304	..	4	1.3
1910	111	2	3	..
1911	160	2	3	3.0
1912	211	7	4	1.9
1913	295	2	5	1.6
1914	817	1,767	5	0.6
1915 (first 10 mos.)	680	..	11	1.6
Totals	2,493	13	32	1.3
<i>Cholecystostomies.</i>				
	Total operations.	Cancers.	Deaths.	Proportion deaths. Per cent.
1907-1909	1,080	..	15	1.4
1910	426	2	7	1.7
1911	481	2	4	0.8
1912	427	1	3	0.7
1913	293	3	10	4.9
1914	157	435	..	2.5
1915 (first 10 mos.)	74	..	1	1.4
Totals	2,854	8	44	1.5

It will be seen from the foregoing table that the mortality following cholecystectomy is less at present than that following cholecystostomy (1.2 per cent. against 3.4 per cent.) for the last three years, or including all cholecystectomies 1.5 per cent.

From a series of form letters of inquiry sent to consecutive groups of patients who had been operated on by cholecystostomy during the past several years—none more recent than one year—242 replies were received, which showed that fifty-three per cent. of these patients were cured, thirty-eight per cent. improved, and nine per cent. not improved. Of the cured patients 129, forty-nine per cent. had stones, eleven per cent. had stones and empyema, eighteen

per cent. stones and cholecystitis, and twenty-two per cent. cholecystitis.

Draining in empyema cases should result in a shriveled, functionless gallbladder. In some cases the irritation of stones must cause persistence of cholecystitis, which disappears after their removal and drainage.

From a series of form letters of inquiry sent to patients who had been operated on by cholecystectomy during the past several years—none more recent than one year—219 replies were received, which showed that seventy-one per cent. of the patients were cured, twenty-two per cent. improved, and seven per cent. not improved. Of the improved patients, forty-eight or fifty-seven per cent. had stones and cholecystitis, and forty-three per cent. had cholecystitis alone.

CONCLUSIONS.

Cholecystitis is an infective disease of the gallbladder. The bacteria are in the tissues of the gallbladder.

Infection may be mild, acute, chronic, or recurring.

Gallstones may occur in mild infections.

Cholecystostomy or cholecystectomy without stones or local evidence of infection will not improve the symptoms for which the operation was made.

Gallstones may cause mechanical obstruction.

Cholecystostomy (with removal of stones, if present) gives high percentage of cure only if the infection has subsided or has been maintained by stones.

Cholecystectomy with or without stones in diseased gallbladders or existing cholecystitis gives a high percentage of cure.

Reflex gastric symptoms are caused by the infection.

The infection may through local peritonitis cause adhesions to bowels or stomach or of the liver to the abdominal wall.

Symptoms of mild gastric trouble may be nearly constant, increase with exacerbation of infection and subsidence of attack, much like those of ulcer.

The etiology may be a small local focus primary in the mouth or secondary in the appendix.

Typhoid bacteriemia may be the etiological factor.

MAYO CLINIC.

GALLSTONE DISEASE.*

The Present Indications for Operative Interference.

By BENJAMIN T. TILTON, M. D.,

New York.

I wish to state at the outset my belief that in the absence of contraindications, the clinical diagnosis of gallstones is sufficient indication for surgical interference, inasmuch as early operation is now a safe procedure in proper hands, an effectual cure of the symptoms produced by stone, and the only guarantee against serious complications in the future. Modern abdominal surgery should receive the chief credit for elucidating the pathology of

*Read before the Medical-Surgical Society of New York City, January 15, 1916.

cholelithiasis. Before its advent post mortem dissections had to be the chief reliance, but unfortunately they, as a rule, demonstrated only the final stages of the process. Surgery, on the other hand, has revealed every gradation *in vivo*, and has furnished most valuable specimens for pathological study and classification. We have come to look upon gallstones like so many pathological conditions, as products of infection. The germs gain access to the circulation, reach the mucosa of the gallbladder, and produce inflammatory changes, which under favorable conditions of increased cholesterol in the bile and poor drainage facilities, result in the production of stones. Such a source of infection is the appendix by means of the portal circulation, which probably accounts for the fact that we so often find chronic appendicitis and cholelithiasis combined. It has been found that the bile of pregnant women contains four times as much cholesterol as that of the nonpregnant woman or of the male. This fact, with the lack of exercise and constipation common among females, gives us a vast preponderance of cases among females and among those who have borne children. How often we find the first attack associated with a pregnancy, perhaps the first. The primary infection of the mucous membrane of the gallbladder may be very slight, and may have entirely disappeared after giving rise to the stones, which may thus be looked upon as an end product. On the other hand, the inflammation may remain and be the important element in the disturbances. It is not necessary to do more than mention that infections of the gallbladder may be unassociated with stones throughout.

As far as the changes produced by stones in the gallbladder are concerned, we find all degrees, from a normal condition of the walls to a complete gangrene. The changes from the normal are chiefly inflammatory in character, and are dependent, not on the number or size of the stones, but on the presence or absence of infection, and particularly on the condition of the drainage of the organ. A gallbladder may contain a hundred stones and be practically normal in size and appearance, while in another gallbladder a solitary stone may become lodged in the entrance of the cystic duct, shut off the exit of bile, and result in a gangrenous cholecystitis, with all the inflammatory changes that this condition implies. In case inflammation arises from the presence of a stone or stones, the symptoms are fairly characteristic, particularly in the acute stage, and our efforts are exerted toward overcoming this inflammation by either medical or surgical methods. In cases, however, of a stone or stones without inflammatory changes in the gallbladder, the symptoms are often not characteristic, as long as the stones remain *in situ*. Here we have to deal with vague manifestations which often lead us to suspect other organs, most commonly the stomach. A large percentage of the cases that come to operation give a previous history, often of many years' duration, of stomach symptoms, and have been treated by physicians and stomach specialists as cases of gastritis or ulcer. Some authorities place the proportion of cases giving a previous

history of digestive disturbances as high as seventy per cent.

The patient complains of epigastric distress, loss of appetite, nausea, and sometimes vomiting. Vomiting is usually followed by marked relief. There are no characteristic stomach findings, but in spite of this, the patient is treated for chronic indigestion, year after year. The medical profession is not yet thoroughly alive to the fact that a large majority of these people are suffering from biliary disease. While the practitioner is waiting for his medicines to cure the dyspepsia and to alleviate the repeated attacks of pain, the patient is running the risk of developing one of the serious complications to which gallstones give rise. Then the diagnosis becomes unmistakable and surgery is resorted to, perhaps too late.

The old idea is still widespread that a patient cannot be said to have gallstones unless one or more characteristic symptoms are present. Among these may be enumerated typical gallstone colic, pain in right shoulder blade, jaundice, enlargement of the gallbladder, etc. Careful histories and physical examinations have shown that not more than twenty-five per cent. of those operated on for gallstones had typical colic. As for jaundice, it is rare where the stones are confined to the gallbladder, and is by no means the rule in stones in the common duct. What a vast number of gallstones will be overlooked if we wait for these symptoms to appear!

What are the more common complications which may sooner or later befall the carrier of gallstones? They may be divided into the acute and chronic.

ACUTE COMPLICATIONS.

1. Acute cholecystitis, serous, suppurative, or gangrenous, sometimes with perforation of the gallbladder.
2. Acute obstruction of the common duct by a stone, with cholangitis and jaundice.
3. Acute hemorrhagic pancreatitis.
4. Acute intestinal obstruction by a large gallstone.

CHRONIC COMPLICATIONS.

1. Carcinoma of the gallbladder.
2. Chronic or intermittent obstruction of the common duct, with cholangitis.
3. Chronic pancreatitis.
4. Adhesions between the gallbladder and adjacent organs, causing severe functional disturbances, particularly of the stomach and intestines.

These are real dangers that beset all patients with gallstones, and are the common experience of the general surgeon. They form in many cases the tragic termination of the disease, more tragic because they could in most cases have been prevented by early recognition of the fundamental trouble and prompt removal of the cause by a safe operation. There are many local complications not included in this list, beside conditions in other organs which sooner or later result from gallstone disease, such as nephritis, myocarditis, etc. Those enumerated are sufficient, however, to make out a strong case against gallstones and to show that they produce far reaching disturbances. Can medicine help us in the cure of the initial symptoms produced by the presence of gallstones and the prevention of these dangerous complications?

It is unreasonable to believe that medicines can dissolve stones already formed. Drugs for this

purpose are still dispensed, and clung to by the laity, and probably always will be, but the pathology of gallstones is against the efficacy of such treatment. Even though the stones should be dissolved, the causes will still persist, viz., altered biliary secretion, stagnation, and infection. Any attempt to rid the gallbladder or ducts of stones by increasing the expulsive power, by manipulation, massage, etc., is directly dangerous as well as ineffective. Medicines that tend to help the passage of stones are uncertain in effect and offer no promise to remove all the stones, or prevent the formation of new ones.

Olive oil is highly thought of by the laity as a panacea for gallstones, and probably is more responsible than any other medication for raising false hopes of cure in the patients and keeping them from early and safe operation. Glycerin is now being advocated as a substitute. Let us hope that the public does not hear of it and have fresh false hopes raised of a medical cure for gallstones. Rest, diet, and Carlsbad treatment help by tending to allay inflammation in the gallbladder and ducts, and thus to diminish perhaps the number of attacks of pain due to the secondary inflammation. The stones, however, remain *in situ* and are always able to give rise to renewed disturbances after the rest cure or Carlsbad treatment is over.

A gallbladder, once it has become the seat of stones and inflammation, probably never becomes normal again, and is prone to future attacks, just as an appendix once inflamed is more or less disabled and a source of danger. The functional disturbances associated with the presence of these foreign bodies vary from indefinite distress to the cramplike pains often called "gastralgia." It is important for the physician to be familiar with this whole range of clinical manifestations, beginning with the early formation of stones and terminating, let us say, with the classical attacks due to obstruction of the common duct. Symptoms that were formerly thought to give the first clue to the presence of gallstones, should now be regarded as terminal manifestations. When they appear, we can be fairly certain that the disease is of long standing, and the most favorable time for a complete and permanent cure is often past. What can surgery offer in the cure of the various manifestations of gallstones? It must be admitted by all that when it comes to the acute complications, surgery becomes often life saving. A suppurative or gangrenous gallbladder must be drained or removed to save the patient from perforation, sepsis, etc. Acute obstruction of the common duct, with cholangitis and jaundice, demands usually surgical drainage of the infected biliary system. Acute pancreatitis in most instances can be cured only by laparotomy and drainage. The indications for surgical interference in these serious cases require no special argument. The type of operation that is employed depends a great deal upon the severity of the case, the condition of the patient, and the experience of the surgeon. In general, cholecystectomy is to be preferred, as it is the only sure way of eradicating the inflammatory process. If this persists after removal of the stone and drainage of the gallbladder, as it often does, the patient

will not be completely cured and may require a secondary cholecystectomy. In some of the very acute suppurative or gangrenous cases, especially when the technical difficulties of removing the gallbladder are very great, and the patient's condition is critical, it is better surgery to do the simple operation of cholecystostomy as a life saving measure than to sacrifice the patient for the sake of preventing further trouble in the future. A cholecystectomy, if necessary, may be done at a later period, with much diminished risk. The beginner in surgery of the gallbladder should in general be warned against following the example of experienced surgeons such as the Mayos, who perform cholecystectomy in a large majority of the cases with a mortality of one to two per cent. The operation of cholecystectomy has more dangers to be avoided than cholecystostomy, dangers which experience alone can minimize. It is wiser, therefore, to choose the safer operations until the technic of the more complicated one has been mastered.

Turning to the chronic complications, here too there is coming to be greater unanimity in the profession as to the benefits of surgery. The disturbances due to chronic cholecystitis, with thickening of the gallbladder walls about one or more stones and adhesions with adjacent organs, can be cured only by removal of the diseased organ. The fact that in many of these cases the operative results are not completely satisfactory to the patient and surgeon, should not be laid at the door of surgery. These poor results are often due to the fact that long delay has made possible extensive anatomical lesions which are incurable. Displacement of the stomach or duodenum or dense adhesions must in many instances remain after the operation, causing various functional disturbances and pain. There can be no stronger argument for early operation, i. e., before these serious permanent anatomical changes have developed. In chronic stone of the common duct operation is alone curative and is especially indicated because such a patient is in constant danger of obstruction and ascending inflammation of the bile ducts. Removal of all stones, followed by drainage of the hepatic ducts, is a safe measure and, if thoroughly done, insures a permanent cure. Here, also, long delay may mean permanently altered anatomical conditions about the common duct, which will impair the operative result.

The brilliant results often obtained from a choledochotomy or other extensive common duct operation, are creditable to the technic of modern surgery. Is the necessity for such an operation, however, creditable to the judgment of the medical men, who allow their patients to drift into such a condition, while giving them what the patients suppose to be proper therapeutic care and advice? Eichmyer reports from Körte's clinic a series of 316 cases of which 134 were complicated by common duct involvement requiring drainage of the hepatic duct. Of these seventy-eight were of a purely mechanical nature, of which five were fatal; forty-six had severe or malignant irremediable complications, of which thirty-six were fatal. Every one of these cases, he states, should have been brought to surgical assistance by symptoms which appeared from three to thirty-five years pre-

vously. At that time the operation would have been a simple one, with slight or no mortality. Chronic pancreatitis associated with long standing gallstone disease may, by producing obstruction of the common duct and jaundice, become an indication for surgical treatment. Drainage of the bile passages after removal of the stones cures the pancreatitis and restores the patency of the common duct, provided that the biliary disease is permanently arrested. Medical treatment of this complication, like that of its underlying disease, is palliative only, and gives no assurance against recurrence. Cancer of the gallbladder is the most serious complication of gallstones that we have to deal with, and occurs in about three per cent. of the cases. Unless cancer is discovered very early, the prognosis is bad, and operation in most cases is little more than exploratory. The occurrence of secondary gallbladder cancer furnishes one of the best arguments for removal of the stones at an early stage.

Investigation of the recorded cases shows that in about ninety-five per cent. the malignant change is due to chronic irritation by stones. The cancer develops very insidiously, and the patient may present merely the signs of gastric disturbances or typical colic until suddenly a hard tumor is felt or jaundice appears. The following case is instructive in this particular:

CASE I. A woman, aged forty years, was treated for ten years previously by a well known stomach specialist in this city for "indigestion." She had made weekly visits to his office, during most of this time with only slight benefit. Suddenly jaundice appeared for the first time, and a diagnosis was then made of biliary disease. Upon opening the abdomen, I found an inoperable carcinoma of the gallbladder associated with stones. For ten years this unfortunate woman had been allowed to suffer unnecessary distress due to one organ, while another organ was being treated for symptoms wrongly ascribed to it. After these years of pain and discouragement she became a victim to a slowly developing complication which ended the tragedy.

How different the outcome if failure to relieve the indigestion had led to the suspicion of gallstones and recourse to surgery at some point during those ten years! The mortality from this complication alone is higher than that from early operation in the best hands. How much higher must be the combined mortality of all complications of gallstones, early and late! As a direct result of the inflammatory changes in a gallbladder, adhesions are formed between this and adjacent organs, particularly the stomach, duodenum, and colon. The pain and disturbances of function of the organs involved are too familiar to the physician and surgeon. Certainly, operative measures hold out the only hope here of relief, and are strongly indicated. The chief object is the cure of the cause, viz., the inflammation of the gallbladder. For this purpose, excision is usually the only efficacious operation, removing, as it does, the entire focus of infection. After adhesions have existed for years, more or less permanent changes have taken place in the position of the organs, and their function is seriously damaged. An operation at this period is very likely to be only partially successful, inasmuch as the anatomical changes will not allow a restoration to normal, even though the underlying cause is removed.

Coming to the early cases of gallstones before complications, acute or chronic, have arisen, what is the proper attitude toward treatment? These are the cases where the diagnosis is often in doubt, and hence every means at our disposal should be used to clear it up. The x ray is becoming more and more valuable in this respect. Unfortunately its success depends upon the amount of lime salts in the calculi, so that many stones are not visible, especially in their early stages. Thickening of the gallbladder, and secondary changes in the stomach and intestines, such as angulation, can often be demonstrated by this method. If we have been able to rule out ulcer of the stomach or duodenum and chronic appendicitis, we may be forced by exclusion, to the diagnosis of gallstones. If the diagnosis is reasonably certain after careful weighing of symptoms, the rational procedure is operation. In the early uncomplicated cases there is no more risk in the operation than in any clean abdominal case. Removal of the stones and either drainage or excision of the gallbladder will result in a return to the normal state of affairs that existed before the formation of stones. Exploratory laparotomy has come more or less into disrepute on account of the implication that it is frequently resorted to without sufficient preliminary investigation. Doubtless this insinuation holds good in many instances, and all surgeons have been at fault in too early resort to the knife. It remains true, however, that after a thorough investigation with negative results, including stomach analysis, examination of stool, blood tests, x ray, etc., a patient with chronic digestive disturbances and pain in the upper part of the abdomen, should have the gallbladder explored, even though the diagnosis of stones or inflammation is not certain. In case the gallbladder does not contain stones and is not the seat of inflammation, some other abnormality may be found through the same incision, such as an overlooked ulcer of the stomach or duodenum, a chronic appendicitis, etc., which would have remained undiscovered. A warning may be given here regarding the futility of making too short an incision for the exploratory opening. Very little information of real value, for example, can be obtained by an incision just long enough to admit a palpating finger. Stones in the gallbladder may easily escape detection in this way, and it is impossible to examine properly the stomach, duodenum, or appendix. An illustrative case came last summer under my care.

CASE II. A woman, aged forty years, had had for several years recurring attacks of pain in the epigastrium and eructations of gas not associated with meals. One year ago she had a negative stomach test made, and a diagnosis of possible gallstones followed. Exploration was made at one of the larger hospitals, through an incision scarcely one inch long over the gallbladder. As the finger felt no stones, the surgeon closed the abdomen and the diagnosis of gallbladder trouble was abandoned. During the following year the attacks of pain and indigestion continued as before. When she came under my observation, she was suffering almost constantly, had become emaciated, from fear that eating would increase the pain, and was totally incapacitated from doing her housework or looking after her four small children. I felt that in the absence of evidence of a stomach lesion or of any neurotic element, the most probable diagnosis was gallstones. I advised exploration, even in the face of the apparently negative result of

a year before. Through an incision of moderate size the gallbladder was palpated between two fingers, and stones were discovered. The gallbladder was removed, and sixty small stones were found. On questioning the patient, six months later, she stated that she was entirely well, and had had no return of pain or digestive disturbance.

The proper choice between cholecystostomy and cholecystectomy in these subacute and chronic cases can be made only by the surgeon expert in this branch of abdominal surgery. Upon the wisdom of this choice will usually depend the completeness of the cure. The indications for each cannot be taken up further in a paper of this kind. It may be said, however, that it is the consensus among surgeons familiar with this work, that cholecystectomy is the operation of choice. It takes away the possibility of stones being left behind, or reformed in the gallbladder and, what is still more important, it removes an organ which, if at all inflamed, will be very likely to give rise to further disturbances even without the stones. There may be contraindications on the part of the other organs which do not permit the application of this rule to every case. The earlier, however, in the disease that operation is considered, the less likely are there to be contraindications, as many of the latter come as secondary manifestations of prolonged biliary disease.

Examples of such are chronic nephritis, severe jaundice, and myocarditis—conditions which give us our chief mortality in gallstone operations. Were pain and gastric disturbances the only things to be considered, we should be more justified in continuing medical measures. But it is the momentous possibilities of the future in the way of complications, which must ever be uppermost in the physician's mind, and of which the patient should be warned. Early operation prevents these complications, and nothing else will, with any surety. Are we not inviting disaster by continuing to treat gallstones medically, and allowing them to remain in the body as real and constant sources of danger to life? The analogy with the appendix is close. We never know when an appendix which has once been inflamed will flare up and cause an attack, perhaps one risking the patient's life. It is for this reason that the medical profession is practically united in advising such a patient to have the organ removed. Is it not just as reasonable to advise the removal of gallstones, which are fully as likely as the appendix to cause further attacks and the complications of which are as serious, if not more so. Just as we have lowered to very small figures the mortality of appendicitis by placing it among the surgical diseases and insisting on early operation in every case, just so shall we lower the mortality of gallstones. Acute infections of the gallbladder due to stones, chronic thickened gallbladder, carcinoma, and all other complications will become surgical rarities. Early operation means very low mortality, (one per cent. eventually) and no subsequent complications. Surgery as a *late* resort means operating in the presence of complications, and hence a high mortality. It will doubtless be long before the general profession adopts this view, but I am inclined to believe that more complete knowledge of the manifestations of the disease in the early period, a more

vivid realization of the dangers of the complications which may come at any period, and a consideration of the low mortality of early operation, will finally lead all to this rational conclusion.

14 EAST FIFTY-EIGHTH STREET.

CEREBROCEREBELLAR ATAXIA.*

BY ALFRED GORDON, M. D.,
Philadelphia.

The type of organic involvement of the central nervous system, an example of which is about to be described, is comparatively new. There are very few records in the literature on the subject. The latter has not been fully recognized as yet. The affection is apparently of a congenital nature. It forms a part of a vast group of abnormalities to which the name "abiotrophy" may be properly applied.

CASE. Girl, aged seventeen years, made her first attempt to walk at eighteen months. It was soon noticed that she would stumble and fall very frequently. As to the age at which she began to speak statements were contradictory. One member of the family asserted that she could talk well at two years and her present deficiency in speech began at that age. Another statement was that she spoke well up to four years of age and that the change of speech began at that age and has remained so since. The stumbling and falling while walking lasted until the age of twelve years, since when she kept on improving. Her gait at present was decidedly better than three years ago, when she first came under my observation. At that time, she presented marked ataxia of both hands, so that she had to be fed as she would spill her food and objects would drop out of her hands.

Her gait at that time was more defective than it is now, showing therefore progressive improvement. She swayed considerably while walking and would scrape the floor very noisily. She was considered mentally defective. Her studies in school were very difficult for her and she was kept in the same grade for several semesters in succession. Her speech was deliberate, slow, with accentuation of each syllable. Until the age of thirteen years she suffered from enuresis. Her present condition is as follows: Body well developed. Intelligence below normal. The Binet-Simon test shows that her mental aptitude corresponds to that of a child of ten years.

The gait is peculiar in that she walks stooping somewhat; her trunk sways slightly at each step she takes. In turning around there is a tendency to fall. Slight scraping of the floor with her toes is still heard while she walks. She can stand on her right foot but not on the left. There is no spasticity or undue flaccidity in the lower limbs. The joints have free play and there is no undue laxity. The knee jerks are exaggerated. Ankle clonus is present on both sides, more marked on the left side. Babinski is distinct on the left, but not always obtainable on the right. Deep and superficial sensibility is normal all over the body. The speech is interesting in that it has always been the same. While the pronunciation is correct, nevertheless it is slow, very deliberate, overcorrect; each syllable is accentuated. The speech resembles somewhat that of multiple sclerosis. The eyes show no nystagmus, no ocular palsies; the light reflex is normal, and the fundi show no changes.

The patient began to menstruate at fifteen years. Her thoracic and abdominal viscera are normal. A Wassermann test on the blood, made twice during the last two years, was negative. The family history, as far as it could be ascertained, presents no data worth mentioning. The patient was born at term and normally, and had no disease common to childhood. She has sisters and brothers who are in normal health.

To sum up, we find that the patient presented, more

*Presented to the Philadelphia Neurological Society, January 28, 1916.

markedly three years ago, and to some extent now, symptoms of both cerebral and cerebellar type. To the former belong the evidences of the pyramidal involvement, the speech, and the mental status. To the latter belong the ataxia of both arms and legs, the station, gait, and absence of rigidity. The interesting features of the case are the early onset, the persistence of the staccato speech, the progressive improvement of the motor symptoms, finally the absence of hereditary morbid manifestations.

In 1903, Batten described a symptom-group (*Clinical Journal*, xxii, 6, 1903, p. 81) which he called "congenital cerebellar ataxia." The chief symptoms are onset in early life, unsteadiness of head, trunk, and limbs, unsteadiness in sitting, in standing, in walking, slowness in swallowing, alteration in articulation, finally, the tendency toward recovery. In all of Batten's cases the characteristic speech, a mild degree of ataxia, and a mildly uncertain gait remained. We therefore find many points in common in his cases and in the one related here. In making the differential diagnosis we must bear in mind particularly two affections: Friedreich's hereditary ataxia and Marie's hereditary cerebellar ataxia. In the former the condition is always progressive, beginning at the age of ten or fifteen years, in the lower limbs first. We find there also nystagmus, loss of patellar tendon reflexes, deformity of feet; finally there is an hereditary feature, as usually several members of the family are found to be similarly affected. In Marie's type the affection begins at a later age, viz., at fifteen to thirty-five years. There is ataxia of the extremities, of organs of speech, optic atrophy, exaggerated patellar tendon reflexes, ankle clonus, but nystagmus and deformity of feet are absent. In both these affections there has never been observed a tendency toward improvement. On the contrary, the condition is essentially progressive.

In the *Journal of Diseases of Children* for June, 1913, and later in the *NEW YORK MEDICAL JOURNAL* for May 2, 1914, L. P. Clark called attention to a series of cases exhibiting cerebellar ataxia accompanied by mental defect. In his cases the most characteristic feature was an unusual flaccidity of the limbs, especially in the upper extremities. In addition to this symptom, there were also ataxia in all four extremities, straddling gait, dysmetria, but no changes in the reflexes. In Clark's cases we also observed a marked tendency toward improvement, especially in the cerebellar manifestations, namely, in the ataxia, station, gait, and hypotonia. What remained unaltered was the speech, also the mental defect.

The case described here is not typical of Friedreich's or of Marie's ataxia, as the above mentioned essential characteristics are not fully in accord with the classical manifestations of those affections. The case resembles more those of Batten's and of Clark's, in that in all of them cerebral and cerebellar symptoms are present, in all of them there is a tendency toward improvement, especially in the cerebellar manifestations, in all of them the symptoms begin to appear at an early age, and in all there is absence of rigidity. The difference lies in the state of reflexes. While in Batten's and Clark's cases the patellar tendon and plantar reflexes were

normal, in my case the knee jerks are markedly exaggerated, and ankle clonus and Babinski are present. Evidently, while the cerebellar symptoms have markedly improved, the cerebral manifestations are largely preserved. In view of the uniformity of improvement in the cerebellar symptoms in the cases of Batten, of Clark, and my own, it is to be presumed that the cerebellar portion of the central nervous system is more apt to regain its lost or disturbed function than the cerebrum, or, if there is a congenital defect in the cerebellum, the cerebrum apparently helps in some way in the restoration of lost function by making good, so to speak, the insufficiency occurring in the cerebellum. While this is merely a hypothesis by no means based on post mortem anatomical data, nevertheless the clinical observations lead to this conclusion.

As to the nature of the condition, Batten, Clark, and myself have brought forward no anatomical data, but the resemblance between all these cases in their essentials is so striking that the presumption is in favor of a congenital defect or an agenic abnormality in the cerebrum and cerebellum. In spite of some differences in the clinical pictures of the cases of these three authors, such as the state of the reflexes and the state of tonicity of the muscles, nevertheless the essential features are identical in all. Of particular interest are:

1. The invariable association of cerebral and cerebellar symptoms.

2. The tendency to improvement, especially in manifestations referable to the cerebellum. The difference lies only in the predominance of one group of symptoms over the other. These differences indicate only the existence of varieties, but the existence of the type of the disorder cannot be denied. Batten calls it "congenital cerebellar ataxia or cerebellar diplegia." Clark gave it the name of "cerebrocerebellar diplegia." As the term diplegia actually implies a paralysis, which from our knowledge of the classical type is a permanent condition, and as in our cases there is no paralysis, the name "congenital cerebrocerebellar ataxia" appears to me more appropriate. This morbid type deserves a place in the nosology of the central nervous system.

1812 SPRUCE STREET.

PROGRESS IN THE TREATMENT OF SKIN DISEASES.*

By GEORGE M. MACKEE, M. D.,

New York,

Instructor in Dermatology, College of Physicians and Surgeons, Columbia University; Chief, Department of Dermatology, Vanderbilt Clinic.

For a full appreciation of the advances being made in dermatology it is necessary to broaden our conception of the subject. It is not tenable today to consider dermatology as consisting of diseases which are limited to the skin and which should be treated by means of chemicals and physical agents externally applied, and the empirical use of arsenic, iron, and a few other internal remedies.

Probably the greatest advance, or at least the

*Read, by invitation, before the Section in Pediatrics of the New York Academy of Medicine, January 13, 1916.

most promising evidence of progress that is being made in dermatology, is the recognition that most of the dermatoses are intimately related to internal medicine, that the genesis is only occasionally in the skin, and that the pathological condition is by no means limited to the integument.

We can never hope to treat skin diseases intelligently and successfully until we possess reliable data regarding their etiology and, therefore, the enormous amount of research work being conducted by McBride and Schorer, Rosenow, and many others, in an attempt to associate the causative factors with the internal secretions, with gastrointestinal disturbances, fecal infections, pathological or physiological disturbances in the important viscera, anaphylaxis, etc., must be considered to bear directly upon the therapeutics of cutaneous medicine. Many of the dermatoses are known to be but external manifestations of more or less grave internal disturbances. Syphilis, a disease with which all are familiar, may be used to illustrate the point. Syphilis is a skin disease only in so far as the majority of clinical manifestations occur in the skin. In untreated early syphilis the organisms become disseminated throughout the system and establish foci in the various organs, including even the brain and spinal cord. It would therefore be ridiculous to confine the treatment to the external manifestations of the disease, and hazardous for one who has not a broad conception of the disease to attempt to cure it. The same is true regarding many other dermatoses.

Unfortunately we have not mastered the etiology of such diseases as psoriasis, mycosis fungoides, leucæmia cutis, eczema, erythema multiforme, etc., as we have in the case of syphilis, and until we do, the treatment of such affections must be more or less empirical.

Schamberg and his associates have shown that psoriasis is associated with an enormous retention of nitrogen and that a very low intake of nitrogen will markedly influence the disease. As all know, it is possible to relieve a psoriatic of his lesions by external treatment, but we cannot cure the disease nor shall we be able to do so until we possess more knowledge regarding the internal causative factors.

As a result of research work we have a much better conception of that baffling condition, eczema, and, therefore, we are in a much better position to treat it intelligently and successfully. Sabouraud and Whitfield have shown that the so called eczema that affects the surfaces between the toes and fingers is not only of parasitic origin, but the organism differs culturally from those producing the eczema of the groin and the so called eczema marginatum. Engman and Mook and Fordyce have shown that another type of eczema is a catarrh of the skin following a local infection. In the case of a discharging ulcer, for instance, the patient becomes sensitized to the products of the pyogenic bacteria, with the result that a dermatitis develops in the neighborhood of the ulcer and later becomes more or less generalized through autoinoculation. Another division of eczema is that of occupational origin, where the subject becomes sensitized to various industrial products, such as the various dyes, varnishes, etc. In these types of eczema, where we

have a fairly clear comprehension of the genesis of the affection, definite types of treatment are clearly indicated. Johnston, Schwartz, Heilmann, and others have exhaustively studied the eczema of internal origin as well as other diseases, such as dermatitis herpetiformis, but their researches, although of the greatest value, have not resulted in therapeutic control.

We could relate how we have developed a broader conception of the cutaneous tuberculoses, erythema multiforme, urticaria, etc., but lack of space forbids. The object of these generalizations is simply to show that skin diseases consist of external manifestations of internal pathological conditions, as well as affections of the skin which are entirely local; such, for instance, as scabies; also to emphasize the fact that dermatology is intimately associated with internal medicine, and that real progress in treatment is being made along these lines.

Progress in specific types of therapy has not been particularly noteworthy in the last year or two. Vaccine therapy, particularly in relation to ringworm of the scalp, deserves some consideration. This is by no means new, for it was attempted some years ago in Paris. Strickler, of Philadelphia, about a year ago, reported a series of cases that he had successfully treated with vaccine therapy. Sharpe, working in Fordyce's clinic, has a large number of little patients under treatment in an attempt to confirm Strickler's observations. Sharpe is using a polyvalent stock vaccine made from cultures obtained from numerous cases of large and small spored infections. The work has been under way only for about two months, and inasmuch as cures cannot be expected for from four to six or eight months, it is too soon to form an opinion. The results so far, however, are encouraging. The injections are given once a week and the dose is increased at each treatment. If this work is successful it will be of the utmost importance to the individual and to the State, and will be the means of eradicating the disease from the country. It is a method that can be used by every physician, because the stock vaccine will be prepared by the large and reliable pharmaceutical houses.

Engman's success with vaccines in acne vulgaris has not been duplicated by men in other cities. Engman, however, after several years' experience, is just as enthusiastic as originally, and it is possible that environment may have something to do with the failures in other centres. In New York the acne bacillus vaccine, both autogenous and stock, appears to be of very little value. In pustular acne, however, polyvalent stock mixtures of the staphylococcus are of distinct value if properly used, although they will not produce a cure unless they are combined with other therapeutic measures. Polyvalent staphylococcus stock vaccines appear to be the best treatment for furunculosis. Tuberculin therapy seems to be specific for the benign tuberculous condition seen on the legs of young girls, and known as Bazin's disease or erythema induratum. It is somewhat efficacious in certain examples of lupus vulgaris, but it is of no service in the tuberculides or in lupus erythematosus.

In the past year or two there has appeared considerable literature upon the use of the Kronayer

lamp. This lamp yields a very powerful actinic ray and is rich in ultraviolet rays. The lamp probably offers the best means at our disposal for the production and application of these rays. Clarke, of New York, Clarke, of Philadelphia, Nagelschmidt and Kromayer, of Germany, as well as many others have reported brilliant results in various dermatoses, particularly acne, psoriasis, eczema, alopecia, the cutaneous tuberculoses, lupus erythematosus, naevus vascularis, etc. At Doctor Fordyce's clinic we have found the actinic rays from the lamp to be efficacious in many cases of acne vulgaris. We have found it to be of distinct benefit in certain types of psoriasis, eczema, and lichen planus. In fact these actinic rays are useful in combating many of the low grade inflammations of the skin. It is beneficial in alopecia areata. In the more serious and obstinate diseases, such as lupus and naevi, however, where the ultraviolet rays alone are indicated, we have not attained the same degree of success that was associated with the efforts of our colleagues. We have succeeded in improving to a considerable degree, after weeks and months of treatment, obstinate cases of lupus vulgaris and lupus erythematosus, but as yet we have not been able to make a single lesion completely disappear. We have had no success in the treatment of vascular naevi. It is possible, however, that continued efforts over a longer period of time will yield better results.

Very distinct advances have been made in x ray therapy. There is nothing essentially new, as the present methods have been in vogue in England and on the Continent for some time, but it is gratifying to see physicians in this country realize that the x ray should be employed only by those who through study, experience, and office equipment are qualified to administer it in accordance with the most modern technic. The modern technic consists in carefully measuring the dose. Where the application is intensive the dose is estimated by direct measurement, but in the fractional dose method, where the applications are too small for direct estimation, the doses are computed by indirect means, but controlled by direct measurement. Suffice it to say, that the modern technic in experienced hands is associated with a high degree of safety and, therefore, cases of radiodermatitis resulting from such treatment are extremely uncommon. Intensive doses are administered in diseases in which stimulation is to be avoided, such as epithelioma, or where the dose must be very accurately measured, as in ringworm of the scalp. The fractional doses are employed where stimulation is required, for instance, in acne vulgaris, psoriasis, and eczema.

Radium is now being extensively employed in the treatment of skin diseases. There is a decided misunderstanding relative to the comparative value of radium and the x ray. It should be remembered that there are rays emitted from radium that have varying characteristics, which is also true of the rays from an x ray tube. The gamma rays of radium are of all degrees of penetration. Some will pass through almost anything if afforded sufficient time. Then there are gamma rays that possess very little penetrating power. The rays emitted from an x ray tube, practically speaking, are analo-

gous to the gamma rays of radium, but there is a greater degree of latitude in the penetrability of the gamma rays. In addition, in the case of radium, it is possible to utilize the very marked therapeutic effect of the beta rays. The beta rays produced in the x ray tube cannot be used because they will not penetrate the glass wall of the tube. Now there are some dermatological conditions that respond more readily to the gamma rays of very low penetration and to the beta rays than to the more penetrating rays from the x ray tube. It is this difference that accounts for the superior efficacy of radium, compared with the x ray in certain dermatoses. Therapeutic experiments with exceedingly "soft" gamma rays, and with the beta rays obtained from the x ray tube, are now being conducted, and the indications are that the results will be identical with those obtained with radium. Radium has produced very superior results in the treatment of deep seated vascular naevi, but it is not so efficacious in the port wine mark. It is of use in leucoplakia and lupus erythematosus. In these conditions it is at present superior to the x ray. In inaccessible locations radium can be used to advantage, but where extensive surfaces are to be treated the x ray is indicated.

Autoserum has claimed attention in the last year or two. In the United States Gottheil, Satenstein, Hilario, Fox, Trimble, and others have written of their experiences. Extensive experiments in this work have been carried out in Doctor Fordyce's clinic by Hilario and Rosen. The conclusions are, that while the method may have some value in the treatment of psoriasis, urticaria, and certain vesicular and bullous dermatoses, such as dermatitis herpetiformis, pemphigus, etc., the results do not warrant the time, trouble, and expense.

Refrigeration by means of solid carbon dioxide has withstood the test of time. It is one of the best methods we have for combating lupus erythematosus and various naevi. Like most everything else, however, its use is abused, for it should not be employed in the treatment of such diseases as epithelioma.

In our enthusiasm over recent therapeutic agents we often lose sight of the value of remedies that were successfully employed by the pioneers in dermatology. Not long ago Trimble presented, at the dermatological section of the Academy of Medicine, an interesting series of cases of lupus erythematosus that he had treated successfully with some of the older remedies, such as Hollender's quinine and tincture of iodine method. Davis, of Philadelphia, and Montgomery, of San Francisco, have repeatedly called attention to the superiority of trichloroacetic acid over other forms of chemical caustics in the treatment of such superficial conditions as xanthelasma, lupus erythematosus, certain naevi, etc. It has been demonstrated that keloid follows the use of trichloroacetic acid less frequently than that of any other chemical caustic. Sherwell has succeeded in curing epitheliomata with his method of employing acid nitrate of mercury in cases where both x ray and surgery have failed.

We could discuss almost indefinitely, if space permitted, the newer methods of treatment and the modern use of older remedies. But so far as present and future real progress in the treatment of skin

diseases is concerned, we must depend upon the combined efforts of the dermatologist and the internist with the collaboration, naturally, of the physiological chemist, the bacteriologist, and the pathologist.

58 WEST FIFTY-EIGHTH STREET.

RECOVERY OF STREPTOCOCCUS VIRIDANS FROM NEW YORK STREET DUST.*

By WILLIAM C. THRO, M. D.,
New York.

(From the Department of Clinical Pathology, Cornell Medical College, New York.)

In view of the almost universal presence of *Streptococcus viridans* in infections of the oral cavity and of the respiratory tract—note the work of Hastings (1), Cecil (2), and others (3)—and its almost constant presence on the tips of the roots of teeth extracted from patients with chronic infectious arthritis, the recovery of this particular microorganism from the out of door dust seems a matter worthy of investigation. While we believe that such infections are transmitted, in the great majority of cases, from person to person by contact, sneezing, and expectoration, still it seems to be within the range of possibility that the streptococcus may be spread by the dust. That this dust is inhaled in large amounts no one will deny.

This paper will show that true *Streptococcus viridans* has been recovered from dust collected from a balcony twenty feet above the street level, and that some of the strains are pathogenic for rats. It is possible, too, that this streptococcus may come from the dried feces of domestic animals, particularly the horse, since some of the strains ferment some of the same carbohydrate as *Streptococcus equinus* does, for example.

The separation of the various strains of streptococci has occupied a great many bacteriologists, and considerable has been written on the subject. The use of the carbohydrates was thought to be the solution of the problem, yet in my opinion (3) they are not absolutely reliable. By their use the majority of strains can be separated into a few groups. A number of the strains which I have isolated from the tips of the roots of extracted teeth of patients with arthritis, fall into the same group as a strain of *Micrococcus rheumaticus* obtained from Beattie (3).

Streptococcus viridans, it may be stated here, has also been isolated from New York street dust by the New York board of health, as was stated in the Weekly Bulletin (4). This streptococcus, since it was isolated in 1903 by Schottmüller, who found it in a large number of lesions, has been isolated from a number of infected areas in different parts of the body by Rosenow (5). Dr. John H. Richards (6) has isolated *Streptococcus viridans* by culture of the blood in a number of cases of chorea. It has

been isolated in this laboratory from a case of conjunctivitis, and it seems quite possible that the coccus was carried into the eye by the dust.

The dust was collected on a balcony, unless otherwise stated, at the level of the second floor of a building on First Avenue near Twenty-eighth Street. In the beginning, several methods were tried for placing the material on the culture media. The methods were: First, blood agar plates were exposed for a varying number of minutes to the floating dust. Second, dust was collected on a piece of paper and was then mixed with saline, varying dilutions were placed in melted agar, and plates were poured. Third, the dust was swept off the stone columns and the top rail of the balcony, and after being diluted in normal saline, was streaked on plates of North's media. By all these methods streptococci and other microorganisms were obtained, but the third method was the one preferred.

After twenty-four hours' incubation the colonies were fished off and placed on slant tubes of North's media. After the various cultures had grown out they were stained with the Gram stain. The main object of this investigation being the isolation of streptococci, little attention was paid to other organisms. Of course there were a great many fungi found, and in many cases they overgrew all other microorganisms. The method advised for the isolation of the streptococci is as follows: From the original plates at the end of twenty-four hours' incubation, the colonies that look like streptococcus colonies are fished off and placed in nutrient broth. Next day, the broth cultures are examined in the hanging drop with the 1/12 objective, and if chains of cocci are found the broth is immediately injected into the animal to be used for the pathogenic test. Of course further study of the culture is made to complete the identification.

Bacillus fluorescens liquefaciens was found once. It had the following characters. On plain agar there was an abundant, confluent growth and the agar changed to a greenish yellow fluorescent hue. The bacilli were Gram negative and were actively motile. Gelatin was rapidly liquefied.

One member of the colon group, probably a paracolon, was found. It was Gram negative and actively motile. On agar it grew like the colon bacillus. Litmus milk became acid and coagulated. In Dunham's peptone there was indol on the second trial, but no indol was formed in nutrient broth. Behavior on carbohydrates: On lactose, dextrose, mannite, and dextrin, acid, no gas.

A number of Gram positive cocci were found that were chromogenic. Some of these did not react on litmus milk, gelatin, or Dunham's peptone like true *Micrococcus aureus*, while others in every way seemed similar to that pathogenic coccus.

Streptococcus viridans. Of the streptococcus-like colonies that were fished off and found to be Gram positive, seven produced green pigment in human blood agar plates. Of these, two had very long chains up to eighty in number, but the remaining strains occurred in twos, fours, and groups. None of the strains of cocci was encapsulated. In broth, there was slight growth in all cases, with faint clouding of the media and a small amount of fine sediment. In litmus milk, there was acid pro-

*Gordon found different forms of streptococci in the outflow air of London. *Streptococcus brevis* being the most common type, *Ann. Rept. Inst. Goss.*, p. 421, 1902. Andrews and Hoar have shown that *Streptococcus equinus* is commonest in the air of London. *Lancet*, 1911, p. 708, 1906. Winslow and Kligger found a variety of streptococci in city dust, chiefly of type characteristic of human throat and human intestine. *Pathogenicity of Dust*, *Am. Jour. Pub. Health*, 1912, p. 1012. Report of the Public Health Committee, N. Y. Acad. of Med. *Medical Record*, Dec. 18, 1915.

duction, variable in amount, no clotting, and no peptonization (7), which occurs in *Streptococcus zymogenes*.

Carbohydrates. Several of the strains produced large amounts of acid in saccharose, lactose, mannite, and dextrin, and in these reactions they are similar to *Streptococcus fecalis*. The mannite was slowly fermented.

Pathogenicity. Six of the strains were injected subcutaneously, as broth cultures, into white mice, but all the mice recovered. One strain was inoculated subcutaneously into a half grown white rat, which died in sixteen hours. Blood from the rat's heart was found to contain a nonencapsulated coccus, which was evidently dead as it did not grow out on the media.

The finding in street dust of *Streptococcus viridans*, a very common bacterium in infections of the mouth cavity and of the respiratory tract, seems then to have been demonstrated beyond a doubt.

REFERENCES.

1. HASTINGS and NILES: *Jour. of Exp. Med.*, xiii, 1911, p. 638.
2. *Arch. of Int. Med.*, xv, 150-158, 1915. 3. *Jour. of Inf. Dis.*, xv, 234, 1914, and xvii, 227, 1915. 4. *Weekly Bulletin*, N. S., iv, 38, Sept. 18, 1915. 5. *Jour. of Inf. Dis.*, xvi, 240, 1915. 6. *Jour. of A. M. A.*, lxxi, 110, 1914. 7. *Micrococcus zymogenes*, *Jour. of Exp. Med.*, iv, 521, 1899.

FIRST AVENUE AND TWENTY-EIGHTH STREET.

METHODS OF EXAMINATION IN GASTRO-INTESTINAL CASES.*

BY WILLIAM V. EWERS, M. D.,
Rochester, N. Y.,

Physician, Junior Staff, Rochester General Hospital.

The diagnosis of gastrointestinal disease has been considered often, and it is not my intention to enter upon this phase of the subject; however, I must touch upon some points that have probably been mentioned. It is my aim to try to show the importance of adopting some method for the systematic examinations of these cases.

In the examination of any class of cases, to obtain satisfactory results, we should adopt some more or less routine method of procedure. Gastrointestinal cases are certainly no exception to this rule. Here, thanks to many painstaking investigators, we have a wealth of diagnostic methods. The result is that we are likely to try, first, this method and then that, without following any one method long enough to become proficient; and as a result, we cannot interpret our findings with a sufficient degree of accuracy. Probably most of us like to make a diagnosis with the least possible expenditure of time and energy. If some one prominent in medicine or surgery has found a short cut for arriving at his conclusions, we are very apt to follow him, forgetting that he is in all likelihood bringing to bear upon the case his large experience, which all unconsciously influences him in arriving at his diagnosis. What we want to know is, which of these different methods of examination will give us the most valuable data. We do not wish to use methods that are too time consuming and are not of sufficient importance to be used in ordinary practice.

The writer has more or less of an idea of those things that he thinks of importance in making a diagnosis in these cases. He thought, however, that it would be of advantage to review the findings of men who had reported on a large series of cases and see what points they considered of value in arriving at their conclusions. Several articles have been written, within the last few years, that cover this ground well. Friedenwald (1) has published two, one reporting 1,000 cases of ulcer, gastric and duodenal; the (2) other, 1,000 cases of gastric cancer. Another is Smithies's (3) paper reporting the results from a diagnostic and prognostic viewpoint of the test meal in 7,041 consecutive cases, done by a uniform method. From the Mayo clinic there are two valuable contributions, one by Carmin and Miller (4) on the roentgenological determination of the gastric motility, based on the review of 950 cases that were operated in. The other paper is by Carmin (5) upon the Röntgen diagnosis of gastric cancer. It is not my intention to bore the reader with the review of these articles, but simply to use them as a basis, in bringing out the important points for these examinations. In Doctor Stengel's wards at the University of Pennsylvania Hospital, there is a typewritten pamphlet containing instructions on the methods of procedure to be followed in the examination of the different classes of cases that enter the wards. That for the gastrointestinal cases is very simple and at the same time very thorough. The first thing that should be done, in these as well as all other cases, is the taking of a good history. It frequently happens that patients come complaining of gastric troubles who really are suffering from other diseases; the most common of those that are liable to be masked under the guise of gastric disorders are tuberculosis, and heart and kidney disorders. A few questions along the line of these disturbances may set us on the right track, which the subsequent physical examination may confirm, and save the patient the discomfort and expense of further investigation of the digestive apparatus. The age of the patient is of importance. The majority of the ulcers occurred between the twentieth and fiftieth years and the cancers between the fortieth and sixtieth years of age in the cases of Friedenwald. This, I think, agrees with the findings of other investigators. The same statistics showed a predominance of males, and about half the patients in both groups admitted overindulgence in food or drink. Personally I do not attach much importance to such an admission, for I think that any one who is suffering from a serious digestive disturbance is likely to look upon some occasion when he has been indiscreet in eating or drinking as the starting point of his disease. The most frequent symptom complained of in both the ulcer and the cancer cases is pain; ninety-four per cent. of the ulcer patients and ninety-three per cent. of the cancerous in Friedenwald's series complained of pain. The pain is slightly more dependent on the taking of food in ulcer than in cancer. We should not forget to ask about nocturnal pain, which is quite common in ulcer. The length of time that the disease has lasted is of importance; in the majority of ulcers the disturbance has lasted over several years; this contrasts with the cancers, in which the history shows

*Read before the Rochester Academy of Medicine, December 8, 1915.

that the majority of patients have been sick for a shorter time. The question of the loss of weight should be inquired into; 98.5 per cent. of Friedenwald's cancer patients had lost weight, though some had periods in which they had improved and gained weight. These periods, however, were relatively short. The history should consider the question of vomiting, anorexia, and hemorrhage, either of the stomach or bowels.

In short, the points to be investigated by the history are age, sex, whether pain exists or not, the question of weight, the condition of the appetite, and the presence or absence of vomitings or hemorrhage. If these points are well looked into, we shall probably have a good insight into our patient's condition.

By the physical examination we should try to find if there is any exogastric disease to account for the gastric symptoms. The condition of the appendix and the gallbladder should be investigated, for, as we shall see later, the most common causes of pyloric spasm and hyperacidity outside of true gastric diseases, are disturbances of these organs. Palpation will reveal tender abdominal areas that in ulcer are found in the epigastrium in about ninety per cent. of the patients; in cancer tenderness is not found in such a high percentage of cases, and is not so apt to be confined to the epigastrium. The boundaries of the stomach should be determined by the auscultatory percussion method. Of course tumors should be sought for, and dilatation, if present, should be noted. We must not forget that in ulcer a tender spot in the dorsal region, generally to the left of the spine, is present in a fair proportion of cases; it was present in thirty-two per cent. of Friedenwald's ulcers.

As to gastric analysis, I should like to emphasize the importance of the routine examination of the gastric contents. The use of the stomach tube is still, in spite of the introduction of other methods of examination, a very important aid in the diagnosis of gastric diseases. The tube should be passed in the morning, on the empty stomach, to see if there is retention. Some are in the habit of giving special foods, such as raisins, and deciding by their presence or absence if retention exists. Smithies has found, in estimating the stomach's emptying power, that a twelve hour limit is of more value than a four or six hour one. He gives a meal of mixed food, after the patient has been taken off "diet."

The condition of the gastric juice should be determined from that removed after the usual test breakfast. The quantity of liquid given with this is usually about 250 to 300 c. c. That this is not important, the work of some investigators seems to show (6); for in a series of cases in which some of the patients received a dry breakfast, and the others the usual amount of fluid, the breakfasts abstracted contained about the same amount of fluid. This would agree with our present conceptions of the behavior of fluids that are ingested.

After all that has been said against the unreliability of the conclusions that can be drawn from the estimation of the free hydrochloric acid and the total acidity, the work of the men here mentioned and of most of us who have made such examinations, I think proves the value of such determina-

tions. Smithies points out that pyloric spasm due to subacute cholecystitis, appendicitis, and duodenitis, is often accompanied by high free hydrochloric acid values that simulate ulcer. What distinguishes them from ulcer is the lack of hemorrhage, or the chemical proof of bleeding and the time factor.

The rule still holds true that when free acid is absent, gastric cancer is strongly to be suspected, and on the contrary, high free acid values should still arouse our suspicion in regard to ulcer. Of course we should not let the diagnosis rest on such slender grounds, but still they give us clues that should be followed up. The work of both Friedenwald and Smithies seems to show that the presence of the Oppler Boas bacillus is indicative of cancer. One of the most important examinations is that of the stool for occult blood. This is not a difficult procedure, and can be done by any one in very little time. Personally I use as a routine the benzidin test. I have the patient abstain from meat, fish, or soups made from the same, for forty-eight hours, and then bring in the stool for examination. I think it was the Mayos who pointed out that in ulcer, occult blood is found intermittently in the stool, while in cancer when once found it is almost always present thereafter. Friedenwald found occult blood in the stool in eighty-one per cent. of his ulcer cases and 92.5 per cent. of his cancer cases. Smithies does not think that the examination of the gastric contents for occult blood is of much value, as there are so many factors that may produce it. I think that this is so and I have found at times that it was difficult to obtain the reactions for blood in the stomach contents, though it could be seen macroscopically. I think it well to emphasize the importance of repeating the examination for occult blood, for I have noticed, even in hospital practice, a tendency to be satisfied with one examination.

One of the most important, and by many considered the most important, part of the examination of gastrointestinal cases is the röntgenological. Certainly the introduction of this method in the examination of these cases has been a great help, and it should never be omitted if the patient presents symptoms that are at all serious. I wish to emphasize here that, valuable as this means of examination is, its usefulness is in direct proportion to the experience of the röntgenologist. No person should undertake the interpretation of these findings, unless he has had training under some man of large experience. I purposely say "findings" instead of plates, as the tendency seems to be to make use of the screen as well as of plates. The methods of procedure in this line should be left to the röntgenologist, whose duty it is to interpret the plates. Carmin and Miller conclude from the operative findings in the 950 cases studied by them, that the x rays demonstrated retention in seventy per cent. more cases than did the test meal. Carmin further states in his article on the diagnosis of gastric carcinoma, that ninety-five per cent. of such carcinomas are diagnosed at the Mayo clinic by the röntgenological examination. Without entering further into this subject, the foregoing statements are sufficient to show the necessity of having such examinations made.

To recapitulate: The important things to be done

in the examination of gastrointestinal cases are, to take a history that will bring out the points mentioned above, the physical examination, a gastric analysis, the examination of the stool for visible or occult blood, and the röntgenological examination. In the foregoing, I have not mentioned the use of the duodenal tube and the examination of the duodenal contents. The reasons for this are, first, that I have had no experience with it, and, secondly, though I think in future the examination of the duodenal contents will be of great value, up to the present the method has not been sufficiently standardized for general use.

The objection may be raised that the method of examination I have outlined above is time consuming and expensive for the average patient. My answer to this must be, that most gastric diseases are serious; Cabot says that there are only two gastric diseases, ulcer and cancer; if this is so, many patients will need an operation and should have it early; others need at least prolonged medical treatment. Both these procedures make a drain on the patient's finances, consequently I think he is entitled to a thorough examination. If the patient's financial condition is such that he cannot afford to pay for such examinations, then he should enter the wards of a hospital where such examinations will be made free of charge.

REFERENCES.

1. FRIEDENWALD: *Amer. Jour. Med. Sci.*, cxliv, 157, 1912.
2. IDEM: *Ibidem*, cxlviii, 660, 1914.
3. SMITHIES: *Ibidem*, cxlix, 183, 1915.
4. CARMIN and MILLER: *Arch. Int. Med.*, xvi, 406, 1915.
5. CARMIN: *Amer. Jour. Med. Sci.*, cl, 625, 1915.

140 NORTH GOODMAN STREET.

BRONCHIECTASIS.*

Its Surgical Treatment,

By EARL H. MAYNE, M.D.,
New York.

I hope to call attention to some of the difficulties which this disease presents; and a brief review of the surgical literature on its treatment may be of some slight value.

Until 1904, bronchiectasis was considered wholly a medical disease; at that date, however, it may be said to have entered the borderland class. In 1911, Sauerbruch read an article (the most complete on the subject up to that time) before the International Surgical Congress, at Brussels. In 1914 a symposium on this disease was presented at the meeting of the American Surgical Association in New York. Papers on this topic were read by Charles Henchen, of Zurich, Switzerland, Scudder, Lilienthal, Meyer, Mumford, and Robinson, the most notable contribution being that of Henchen, of the Sauerbruch clinic, Zurich, Switzerland. Volume xxxii, 1914, of the *Transactions of the American Surgical Association* contains all these papers, and will prove most helpful to those interested in the disease.

Even now the most recent textbooks on surgery tell us scarcely anything about the subject; and the same may be said of the textbooks on medicine. Osler devotes about two pages to it and concludes

by saying that "the medical treatment of this disease is not satisfactory." Up to the last decade the surgical treatment was also most discouraging. Since then much has been accomplished by the surgeon, so that in the future its successful treatment will probably lie largely in the field of surgery. Our present knowledge of the origin, anatomy, and clinical signs of the disease is too meagre to permit of well defined principles of treatment.

Bronchiectasis is essentially a disease of the bronchial tree, the pulmonary parenchyma being involved in the more advanced cases and in certain types. The dilatation of the bronchi may be uniform or sacculated. The uniform or diffuse variety may exist for a great many years without interfering seriously with the general health; the circumscribed or sacculated type presents distressing symptoms much sooner. The size of the cavities varies from that of a pea to that of a small lemon. These cavities contain fetid secretions, which may be retained, producing fever and chills, extension areas of pneumonia, great prostration, and marked toxic symptoms. The lining of the cavities may become ulcerated, causing blood to appear in the sputum in small quantities, or, if the ulceration corrodes a bloodvessel, severe or fatal bleeding may supervene.

Etiology. The disease may be congenital as well as acquired. Among the congenital causes may be mentioned hereditary lues, atelectases of sections of the lung that remain undeveloped after birth, congenital defects of the lung, honeycombed, cystic, and sacculated lungs. In the acquired cases, most occur in connection with the primary inflammatory diseases of the bronchi themselves, extensive adhesions between the visceral and parietal pleura, aneurysm of the thoracic aorta, mediastinal disease, measles, whooping cough, and influenza, bronchial pneumonia, and foreign bodies.

For the surgeon the division into the various etiological varieties is less important than the exact topical location, extent, and character of the disease.

Diagnosis. This is very difficult in most of the early cases. The most painstaking observations should be made and all well known means employed to arrive at the true condition. It is surprising how few physical signs are found, even in some of the advanced cases. Many of these cases have been treated for years as cases of pulmonary tuberculosis. The continued absence of tubercle bacilli in the sputum should put us on our guard and help us to arrive at a correct diagnosis.

The central bronchiectases are particularly difficult of diagnosis. The radiograph, while valuable, is less trustworthy in this disease than in any other of the pathological intrathoracic conditions. It should always be employed, however, and pictures taken in both the upright and recumbent positions. Meyer has suggested the injection of argyrol into the bronchial tubes before taking the radiograph in order that the outlines of the diseased areas may be more clearly brought out.

Bronchoscopy should be done in all cases. This will nearly always enable us to determine the presence of a foreign body. There are many kinds of foreign bodies which the shadowgraph will not

*Read before the Medical Association of the Greater City of New York, December 6, 1915.

show. A case in point came to my attention a few weeks ago. A child of eighteen months was brought to a hospital suffering from cough, high fever, chills, and anorexia. The radiograph revealed nothing. The bronchoscope located a foreign body in the bronchus, which proved on extraction to be a water-melon seed. The child made a prompt recovery.

Clubbing of the fingers is present in most cases of any duration; in the late cases it is particularly pronounced. The nature of the excretions expectorated and the presence of the influenza bacillus in the sputum aid us. The quantity of expectoration is usually great, as much as a pint or more being coughed up each twenty-four hours. The collected sputum presents the well known three layer test. Microscopical examination shows large quantities of pus cells in all stages of degeneration, an array of bacteria, rarely elastic tissue.

Symptoms and course. In the early stages the symptoms are often slight; the profuse expectoration and paroxysmal cough are thought to be due to catarrh or throat trouble. As the disease progresses, the sputum increases in quantity; it frequently has a foul odor, a sickening taste, and is often blood tinged. With the occurrence of the putrid sputum, fever, chilly sensations, and night sweats, prostration occurs. Severe hemoptysis is not unusual; toxic symptoms develop, with pains in and about the joints. The clubbing of the fingers is marked.

The course of the disease is chronic, and death is due oftener to complications than to the disease itself. Brain abscess, meningitis, involvement of the spinal cord and its coverings are frequent. Meyer reports three out of ten cases in which developed suppurative meningitis. Pneumonia, gangrene, pulmonary hemorrhage, amyloid degeneration of the kidneys, myocarditis and endocarditis are frequent.

The majority of cases have been treated on general principles for years and found their way to the surgeon only when far advanced or when some serious complication was present. It is therefore small wonder that the surgical results so far have been accompanied by a high mortality.

As our means of recognizing these cases becomes more perfect and the patients reach the surgeon earlier, the statistics will be greatly improved.

The disease is most frequently found in the lower lobe, particularly in the left lower lobe. Of 121 cases observed by Criegien, Tuffier, and at the Zurich clinic, 108 were in the lower lobes.

Henchen says that the operative procedure which has been clinically tested at the present time, and of which a definite valuation is possible, is divided into two large groups: 1. Indirect, extrapulmonary operations which aim to secure obliteration and diminution of systems of bronchiectatic cavities through relaxation, compression or artificial production of shrinking by growth of connective tissue. 2. Direct, intrapulmonary operations comprising methods of drainage, resection, and amputation.

The results obtained by the first procedure are of little value or permanency, except in the early cases, or in cases where the affection is limited to the cortical areas.

The second procedure is unquestionably regarded as the most natural method of treatment of the late

cases, where there are circumscribed, isolated cavities, or cavities consisting of many and large divisions. The best results have been obtained in the single ectatic cavities of the upper lobe. The operation is done preferably in two stages, except where firm pleural adhesions exist. Local anesthesia gives the lowest mortality. From the honeycombed character of these cavities, lancing and drainage alone can cause improvement in the great majority of cases.

The mortality is very high, varying from thirty-five to seventy-three per cent. by different operators. Sauerbruch's statistics, based on 123 cases of bronchial ectases treated by pneumotomy, gives a mortality of thirty-five per cent., with thirty-three per cent. cured; the remainder were not cured and only a little improved. Lilienthal states, in a personal letter just received, "from a considerable experience including five lung resections with one death, I have come to the conclusion that no operation except resection can cure bronchiectasis. A certain degree of relief may be attained by other procedures. The usual cause of death in bronchiectasis is hemorrhage, which occurs sooner or later with or without operation."

Willy Meyer reports sixteen cases of bronchiectasis operated in, with eight cured or improved and eight deaths.

Abscess of the lung accompanying or resulting from bronchiectases, should be classed as chronic. In all abscesses of the lungs not due to bronchiectasis, surgical treatment is very encouraging. Scudder reports twenty-seven cases operated in at the Massachusetts General Hospital, with eighteen recoveries and nine deaths.

CASE (bronchiectasis with multiple chronic abscesses). James S., banker, aged fifty-three years, Spaniard. Family history: Father died at age of eighty-two, mother at seventy-two years. No history of tuberculosis in either branch. Patient had typhoid fever at age of twelve years, with no complications. Gave history of cough and free expectoration as long as he could remember; this was significant in view of his subsequent history. Although the cough and expectoration were annoying, they appeared to have little or no effect on his general health. He was never sick in bed a day (save during the attack of typhoid) until March 17, 1901, when I first saw him. He then had a chill and lobar pneumonia developed involving the upper lobe of the right lung. The onset and progress were unusually severe, marked toxemia and delirium showing on the third day of the disease. The detailed history of this attack of pneumonia was most interesting. After the third day the patient was, for thirteen weeks, totally unconscious of his surroundings. The disease gradually spread until all three lobes of the right lung and both lobes of the left lung had been involved, the lobes earliest involved clearing up before the others became diseased. The nervous system was especially affected by the toxins, so much so that meningeal inflammation was suspected; this being negatived about the fifth week of the pneumonia by a lumbar puncture and examination of the fluid. A marked edema of the uvula and soft palate occurred, which necessitated immediate amputation of the uvula. The kidneys remained normal throughout the attack. At the end of thirteen and a half weeks, the patient gave signs of returning consciousness, the lungs became clear, and convalescence was established. Five weeks later, the patient was able to go to the country, where he rapidly regained his strength, both physical and mental.

Following this unusually severe attack of pneumonia, there appeared to be left over a bronchiectasis affecting the entire right lung, more pronounced in the upper lobe. This condition seemed to have no special effect on the patient's health. A chronic cough with very free expectoration (one to three ounces daily) continued until the latter

part of January, 1915. During all this period the patient attended to his business.

In the latter part of January, 1915, he contracted influenza and was obliged to remain away from business for a few days, although not sick enough to consult a physician. From then on, however, he frequently complained of chilly feelings in the afternoon and of being very tired at night.

On February 24, 1915, I first saw the patient in his present sickness. He had a fever of 102° F., profuse sweating, and chilly feelings, and was expectorating a dark, putrid material, which had the odor of gangrene. The fever abated in a few days, the odor disappeared, and the patient insisted upon returning to business. On March 16th, he was again attacked with fever and had a recurrence of the chills, sweating, and dark, putrid, malodorous expectoration. This attack was of greater length and severity, clearing up in about two weeks. The patient was sent to the country for a few weeks where he appeared entirely to recover his strength. I asked to have a radiograph taken at this time, but this was refused. The patient returned to business for a few days only, when a third severe attack occurred. The physical signs showed the entire upper lobe of the right lung to be consolidated. Temperature ranged from 102° to 105° F.; there were frequent chills; expectoration most offensive varying from eight to sixteen ounces a day; profuse sweating. This attack lasted nearly four weeks. From this time on very profuse night sweats occurred, although a period of more than six weeks followed, with no fever and no odor to the expectoration, and a splendid appetite. A sea voyage was then taken to South America. A week out from New York, another attack set in; this lasted for several weeks, to be again followed by a period of no fever, no odor to the expectoration, and a good appetite.

During this last period of quiescence, the patient lived out of doors practically all the time. Although his general appearance was good, the slightest exertion was an effort, and the slightest cold would produce chilly sensations. A severe chill occurred on August 24th, to be followed again by fever and increased, malodorous expectoration. This attack lasted only a week; it was followed by marked prostration, pains in or near the joints, and great weakness of the muscles. Patient was unable to dress himself alone. On September 9th, radiographs were taken.

X ray findings: The chest wall, diaphragm, heart, and aorta presented practically no abnormalities, except that the aortic area was slightly broader than usually seen. The left lung presented no marked abnormalities. The lower half of the right lung was clear. In the upper portion of the right side of the chest extending from the second to the fourth ribs, anteriorly and from the third to the sixth ribs posteriorly, there was a fairly well circumscribed dense area about three inches in diameter. The lower margin of this area was sharply defined, the upper margin less so. This area of density was seen to extend outward toward the median line, to the hilum of the lung.

Diagnosis: A study of the x ray plates justified the diagnosis of an abscess of the upper lobe of the right lung, with an extension to the bronchi of the hilum.

From this date until October 9th, the condition was fair, but the marked weakness and pains about the joints and in the muscles persisted. On October 9th, another series of x ray plates was made, both in the upright and recumbent positions. The report confirmed the previous findings and noted an extension of the bronchiectatic process.

Repeated examinations of the sputum showed no tubercle bacilli, but constantly broken down tissue, streptococci, staphylococci, and diplococci. The last report on the examination of the sputum stated:

The specimen was pure pus, mixed with broken down tissue, but the tissue was too much broken down for its character to be determined. The microorganisms present were: 1. Two morphologically different streptococci; 2. a staphylococcus; 3. a diplococcus; 4. a bacillus morphologically similar to *Bacillus pyocyaneus* and from the green color of the pus upon incubation, was probably that microorganism.

Blood showed a negative Wassermann. Hemoglobin varied from seventy per cent. to eighty-five per cent. Red cells about four and one half million. A persistent leucocytosis, much higher during the attacks of fever, 18,000 to 25,000, with a differential count from sixty-five to eighty-

five per cent. Blood pressure persistently under 100; diastolic 80 to 75.

The physical signs were almost entirely absent during the periods of quiescence. Three able internists of the city examined the patient and declared that, did not the radiograph show it, an abscess would not have been suspected, except from the history of the case.

The fingers were very much clubbed in this case. Patient reported spitting up blood on three different occasions; a slight quantity on two occasions, and a good deal on the third. He ascribed the blood to a nose bleed; from his description, I judged each to have been a true hemoptysis.

On October 19th bronchoscopy was performed; liquid pus was seen to exude from the upper lobe right bronchus. There was also some granulative tissue. The disease did not extend into the main bronchi. No foreign body was discovered; very slight local reaction from the bronchoscopy.

On October 22, 1915, under nitrous oxide-oxygen anesthesia and very little ether, a sixth interspace incision was made, opening the pleura, the ribs being spread with retractors. Examination showed dense pleural adhesions of the outer lower portion of the right upper lobe. Believing that the patient would not survive the radical operation of lobectomy or resection, the anterior part of the incision was carried upward, and long sections of the sixth, fifth, and fourth ribs were removed in the axillary line. The sixth rib was removed with the periosteum, but it was necessary to leave the pleural periosteum on the other two ribs for fear of entering infected tissue. The middle and lower lobes were apparently healthy. They were sutured to the chest wall. The posterior part of the incision, which ran almost to the angle of the ribs, was closed by a few sutures of muscle and skin, and the entire anterior part of the incision over a large area was treated by ordinary gauze packing.

On October 23rd, thirty hours after the operation, the patient's condition was satisfactory. Respiration, which was very rapid, was coming down. The pulse was 116. Cyanosis was disappearing.

On October 26th, five days after the operation, the packings were removed from the wound, with the exception of the lowermost, and the diseased part was thoroughly exposed. With the Paquin cautery following the course of an aspirating needle which had withdrawn thick, tenacious pus, the tough outer wall of the bronchiectatic cavity was entered and an opening large enough to admit the index finger was seared into the mass. A soft walled, large calibred tube was inserted, and the remainder of the wound packed. This was done in the patient's bed without anesthesia and without distress.

On October 27th, there occurred a slight hemorrhage from the wound. The tube was removed and the bronchiectatic cavity was packed with gauze to be changed daily thereafter. On October 30th, the gauze was removed as usual, and, with the help of retractors, the cavity was thoroughly exposed. On the far side of the cavity there was seen the pulsation of a vessel of considerable size, probably as large as the lingual; so it was decided to omit the gauze packing and place a piece of rubber dam in lieu of the gauze. But while waiting for the nurse to bring the rubber dam, a sudden gush of blood occurred; a light pressure of the gloved finger in the bronchiectatic cavity checked the hemorrhage. The opening was then repacked with gauze and more gauze was placed over this in order to make a mound upon the chest wall, which was pushed inward and held in place by large strips of adhesive plaster. The loss of blood, while only about an ounce, was sufficiently alarming to cause extra nurses to be engaged so that the patient should not be left alone a single instant. His mental condition was good, but a donor *F*. transfusion was secured in case it should later become necessary.

On October 31st, preparations having been made for blood transfusion, it was intended to make an attempt to ligate the pulsating vessel in the wall of the abscess. On removing the packing, however, there was a gush of blood amounting to perhaps two or three ounces. A packing was immediately put in, but blood at once escaped through the mouth, drowning the patient in a few seconds. Within two or three minutes pulse and respiration ceased.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

DIET IN CARDIAC INSUFFICIENCY.*

BY NATHANIEL BOWDITCH POTTER, M. D.,

New York,

Assistant Professor of Clinical Medicine, Columbia University (College of Physicians and Surgeons); Visiting Physician, New York City Hospital and St. Mark's Hospital.

When so eminent an authority as Krehl states: *Es gibt keine besondere Ernährungstherapie für Herzkrankheiten* (1), it seems presumptuous for me to take up the subject of diet in the management of cardiac insufficiency. But the eminent German clinician's statement was probably not intended to include heart disease where the cardiac muscle is failing or has recently failed to meet ordinary demands; and besides, as Mitchell Bruce so aptly puts it, "if the physician does not direct the diet some one else will" (2).

Before taking up in some detail the special form of diet indicated in acute insufficiency of the heart, some general principles applicable to less stormy and less marked conditions of heart weakness may be alluded to with advantage. Whatever the disease and whatever the clinical condition, a wise physician always considers the patient first. Taste and appetite, even among the well, vary as much as any human characteristic. "What is one man's meat is another man's poison." Unless we know more urgent and better grounded reasons for a radical change in a patient's dietetic habits than those founded upon our present knowledge of metabolism in patients with failing hearts, we usually do well to pay some attention to the inclinations of their appetite and their own choice of food.

A few rules, however, directed toward the almost always impaired digestion are worth remembering. No food should be allowed which unduly taxes the digestive organs, and none which is apt to produce flatulence or constipation. A distended stomach or inflated intestines crowd up the diaphragm and embarrass the heart's action. Intestinal intoxication associated with constipation and any undue straining at stool are obviously to be avoided. The meals should be rather concentrated, light, easily digested, and frequent enough to prevent the faintness so often complained of by such patients when the stomach is empty. Little or no water should be taken with the meals and most of that little toward the end or immediately after the meal. Here again habit plays an important part and should not be entirely disregarded. All food should be very slowly and carefully chewed and the meals should be partaken under the most agreeable conditions. It is always imperative to make the evening meal simple and light, for, as Sir William Broadbent has picturesquely suggested, "death may lie in an erring supper" (3).

A third and very important factor depends upon the patient's weight. If overweight or corpulent,

he should gradually be reduced to the normal for his age and height by an appropriate selection of diet; and to accomplish this purpose there is no more valuable prelude than the so called "Karell cure," upon which I purpose to dwell in some detail later on. Rapid reduction cures in patients with failing hearts should never be attempted. Krehl (4) states that these patients are apt to bear reduction treatment poorly. Nevertheless, in my experience, physicians in this country approach such reduction cures with far too great timidity. If the desired loss in weight is obtained slowly and if there are sufficiently long intervals in which the decrease is merely maintained by the regulation of the patient's diet, much good and no harm will result.

A fourth factor of importance is to direct the diet toward combating or relieving one or more of the complications which usually exist in these patients, such as arteriosclerosis, renal inefficiency or a preponderance of stasis in the abdomen such as accompanies hepatic cirrhosis.

From time immemorial some type of more or less complete starvation has been resorted to, in order to preserve failing bodily functions and has even been made an integral part of the prescribed observances in more than one great religion. Biological support of the value of fasting has been adduced by many authors, in the hibernation of bears and the summer sleep of crocodiles. The grape cure employed for so many disorders, Naunyn's "green days," and more recently Allen's fasting period for diabetes, as well as Widal's salt restriction in nephritis may well be compared with the Karell cure in heart disease; for this last mentioned diet represents in its essentials a starvation both of food and of liquid.

In regard to the exact details of the Karell diet I have so frequently met with ignorance among students, interns, and physicians in general practice, that I shall limit my further remarks to the milk cure of Philippe Karell or to such modifications of it as have proved useful in my own experience.

In 1865, this acute observer, physician to the Czar of Russia, presented to the Medical Society of St. Petersburg, the effects of a carefully regulated milk diet in some 200 patients treated by himself and others (5). Too wise a physician to ascribe the value of this diet to any nutritive or medicinal virtue in milk, he did not hesitate to insist upon accurate doses at exact intervals, and to credit its greatest efficacy when applied "to all kinds of dropsical conditions, to the asthma resulting from emphysema and pulmonary catarrh, to obstinate neuralgias originating from the intestinal tract, to hypertrophy and fatty degeneration of the liver, and in general to nutritional diseases sometimes the result of obscure gastrointestinal catarrh and followed by affections of the central nervous system." He limited all liquid or food taken by the patient to skimmed milk in amounts of one half to one glass

*Presented at the symposium upon "The Treatment of the Failing Heart," before the New York Academy of Medicine, May 29, 1917.

(two to six ounces, sixty to 200 c. c.) and at exact intervals three or four times a day. The patient's taste dictated the temperature of the milk; but Karell emphasized its being swallowed slowly, in very small amounts, intimately admixed with the saliva. If well digested, as proved by the existence of solid stools, the amount of milk was gradually increased, until at the end of the second week, two bottles were usually allowed. He insisted upon a scrupulous observance of regular intervals, and arbitrarily selected the hours of 8, 12, 4, and 8. Although during the first week difficulty was often encountered and each feeding seemed a very tiny dose, if his rules were followed patients complained neither of hunger nor of thirst. Constipation frequently occurred at first, a good sign, but it was generally promptly relieved by a simple enema, or by rhubarb or castor oil; if obstinate, coffee was added to the 8 o'clock feeding or stewed prunes or a toasted apple at 4 p. m. If the thirst was distressing, a little plain water or seltzer was allowed. If the desire for solid food in the second or third week became overpowering, Karell permitted a little white bread with salt, or with a small piece of salt herring; at 4 p. m. another piece of bread, and then once a day, in place of milk, a milk soup or a gruel. After five or six weeks of such a cure, the diet was modified according to the conditions, giving milk but three times a day and adding a dinner.

Karell cites cases from Niemeyer's clinic, but adds that his diet found less favor in Germany than in Russia and France. Though discussed by Winternitz (6) in 1870 and warmly recommended by Hirschfeld (7) in the early 90's for the treatment of obesity and some years later by the same author (8) for cardiac patients, it found little favor among the Germans. His (9) attributes this attitude to the influence of such authoritative clinicians as Curschman and Leyden, who objected to the cure on the grounds that its diuretic action was by no means certain, and that so long a period of practical starvation was too dangerous for patients with weakened hearts; while Romberg held that the reduction of fat must be accompanied by a reduction of protein in the body tissues, which in itself must lead to cardiac weakness.

In 1906, Jacob reported from the Lenhartz clinic fifty-seven cures upon fifty patients. The latter for fifteen years had been employing the treatment with excellent results in chronic bronchitis and emphysema, in heart affections complicated with stasis and even with advanced decompensation, and to precede a reduction cure in the weakened heart conditions resulting from obesity. With characteristic Teutonic thoroughness each of Jacob's patients received 200 c. c. of milk four times daily during four to eight (generally seven) consecutive days. After the first five to seven days, he added one egg at 10 a. m. and zwieback at 6 p. m.; then two eggs and some bread, and on the following day minced meat, vegetables, or rice, so that gradually, about twelve days after the beginning of the cure, his patients were upon an ordinary mixed diet. But for two to four weeks longer the total amount of fluid taken during a day was still limited to 800 c. c. Absolute rest in bed was insisted upon until after the inauguration of the above mentioned addi-

tions to the milk diet; and even then great care and individualization were employed when the patient was first allowed to sit up, as well as after two weeks, when brief but gradually increasing exercises were permitted. According to him the cure is indicated both in chronic and in acute heart illness, but his most striking results were obtained when, in addition to cyanosis and dyspnea, marked edema and considerable collections of fluids in the serous sacs existed. The muscular weakness in the ordinary chronic valvular disease, he found, did not respond as well to the cure as that dependent upon an arteriosclerotic myocarditis. A successful issue presupposes a reasonably high pulse wave as well as a sufficient renal capacity to excrete water and salts, but a weak, scarcely palpable pulse requires the quicker aid of digitalis. Although an arteriosclerotic kidney may react to the cure, the latter is not indicated in the parenchymatous form. The essential effect of the diet plus the rest in bed is to diminish the work of the heart. Without taxing digestion or circulation, the bodily functions are for the time being preserved, even by the very small amount of nutriment contained in the diet. The effect of the cure is frequently marvelous, especially in so promptly relieving dyspnea. Diuresis begins slowly, reaches its height on the third or sometimes not until the fourth or fifth day, and for several days continues to exceed the amount of fluid ingested. The cause of the diuresis is attributed by different observers to its action upon the kidneys, by Romberg to its poverty in salt, and by Lenhartz chiefly to the reduction in the cardiac work and the improvement in the cardiac muscle. The only contraindications according to Jacob are: 1. Such extreme myocardial degeneration, whether from deficient nutrition, coronary sclerosis, or chronic inflammatory processes that no favoring influence is able to evoke a response, just as with the use of digitalis. 2. Where the abdominal circulation with a swollen liver and ascites is in the foreground of the disturbance. Here a calomel cure is more often effective. His (11) states that the most reasonable explanations of the action of the cure are: 1. The limitation of the fluid (Oertel); 2, the poverty in salt (Widal and Strauss); 3, the elimination of toxins (Huchard); 4, the antitoxic (against uremia), the mechanical, and the diminishing filling of the abdomen, the last depending upon the intimate correlation between heart action and abdominal pressure (Krauss). He also points out the fact that the valuable new contribution contained in this cure was not, as its author suggests, the milk itself, but its limited amount.

Jacob's essential modifications of the astute Russian's *cure de lait* are therefore: 1. The much greater and more prolonged restriction in the amount of liquid ingested; 2, the brevity of the absolute milk cure; 3, the complete rest in bed; and the subsequent detailed and individual care when the patient is first allowed to sit up and when exercise is first prescribed; 4, the more exact routine followed.

The four charts selected from Jacob's paper (1, 2, 3, and 4) well illustrate the effect of the diet upon four different types of relatively acute cardiac insufficiency:

CASE I (broken compensation, aortic and mitral rheumatic insufficiency). Maid, aged thirty years, December 5, 1901, to February 13, 1902, palpitation, dyspnea, oppression, weight, vertigo. Eight days previous to admission marked increase in foregoing symptoms. Edema of the lower extremities, less of breast, general stasis, bronchitis, engorged liver, urine 300 c. c., specific gravity 1.024, albumin, trace. Note the prompt and marked diuretic effect.

CASE II (arteriosclerosis, myocarditis, hydrops, emphysema). Aged sixty-five years, December 4 to 29, 1907. Rheumatism fifteen and twenty years before, but no subsequent heart symptoms until past year. Dyspnea, feeling of oppression, swelling of the feet. During previous summer two courses of carbonic acid baths with transitory benefit. Since then persistent bronchitis. Recently effectively treated at home with digitalis. Marked general ana-

days without effect. The pulse remained frequent, small, and scarcely palpable. Very slight diuresis. Striking diuretic effect of strict Karelly cure.

CASE IV (myocarditis with stasis). Aged twenty-nine years, March 29 to July 9, 1905. For six weeks, swelling of the legs and pains in the region of the stomach. Cyanosis, enlarged heart, faint tones, rapid feeble pulse, fluid in left pleura, engorgement of liver, ascites, edema of the legs and of the face, urine 1,000 c. c., specific gravity 1.022, albumin, trace. Three days before cure, patient received digitalis but without relief. Symptom of stasis and dilatation of the heart disappeared after cure.

The very low nutritive value of Karelly's diet is one factor and, according to Hirschfeld, the chief one, in enabling the patient to undergo so decided

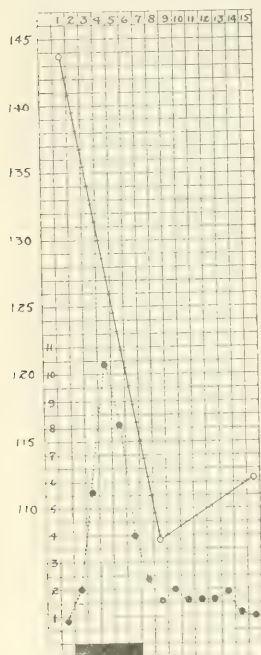


CHART 1—CASE I.

— Karelly diet (4x200 c. c. skimmed milk).
••••• Urine curve: Each square represents one half pint.
— Weight curve: Each square represents one pound.

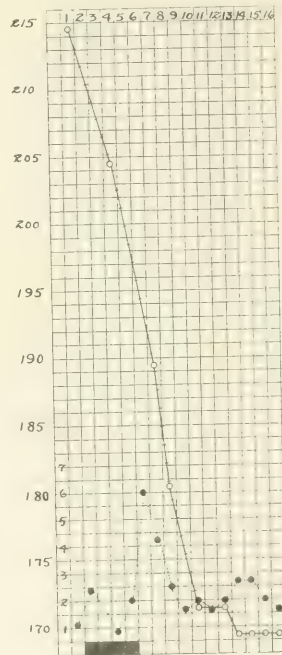


CHART 2—CASE II.

— Karelly diet (4x200 c. c. skimmed milk).
••••• Urine curve: Each square represents one half pint.
— Weight curve: Each square represents one pound.

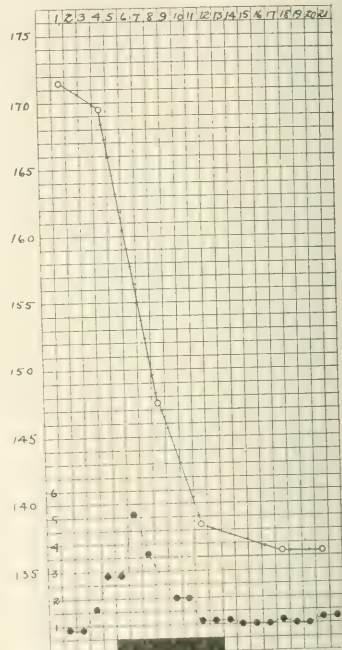


CHART 3—CASE III.

— Karelly diet (4x200 c. c. skimmed milk).
••••• Urine curve: Each square represents one half pint.
— Weight curve: Each square represents one pound.

sarcoma of legs, arms, chest, and scrotum. Almost immobile on account of enormous edema, cyanosis, restlessness, orthopnea, cough, bronchitis, emphysema, numerous rales, sticky purulent expectoration, respiration 40, rough systolic murmur over heart, especially at the base, weak, irregular pulse, thickened tortuous arteries, moderate ascites, tender liver, hand's breadth below costal margin, urine 600 c. c., specific gravity 1.002, 1.5 per cent. albumin. Within two days of the beginning of the cure, dyspnea disappeared so that patient could remain in bed. All symptoms promptly improved. No albumin in urine after the thirteenth day.

CASE III (cardiac dilatation and weakness, obesity). Aged twenty years, October 6 to November 16, 1905. Always overweight. Beer and whiskey in excess for several years. Swollen legs, abdomen, and scrotum for three weeks. Obesity extreme, anasarca over entire body, pulse 130, engorgement of liver, urine 500 c. c. Ordinary diet with fluids limited to 1,000 c. c. Digitalis—one gram in three

a restriction in fluid over so long a period. If the strict limitation of the 4x200 c. c. is disregarded and extra nutrition is allowed, he warns that there is an imperative demand for more fluid. Without denying the theoretical basis, or even in the main the practical application of this objection to most modifications of the absolutely strict cure, I have recently endeavored to study at the bedside the effect of, a, an increase in the caloric content of the diet without an appreciable increase in its bulk; and, b, an augmentation of its diuretic action. A number of considerations have stimulated me there-

Obviously such patients are not indicated in the obese or in patients who without edema are overweight.

tions as to produce alarming nocturnal orthopnea with Cheyne-Stokes respiration. His pulse was rapid, small, and irregular; blood pressure 200/150, the heart dullness reached to the midaxillary line; there was a gallop rhythm; and his urine showed a heavy cloud of albumin and a very large number of all kinds of casts. Upon two drams of the infusion of digitalis and the diet indicated on Chart No. 5, his subjective symptoms ceased within forty-eight hours, his heart contracted several centimetres, and the gallop rhythm soon disappeared. Within the limit of my personal observations his improvement and the disappearance of edema in proportion to his usual weight and height was the most rapid and satisfactory that I have witnessed, and that despite the practical impossibility of keeping him in bed or even confined to one room. In eight days he dropped thirty - one pounds or one fifth of his normal weight.

CASE VI (arteriosclerosis, dilated hypertrophied heart, chronic bronchitis and emphysema, chronic nephritis). Aged sixty-three years, at City or Bellevue Hospital from February 15th until present writing, May 15th. Dyspnea, cough, edema, frequent urination at night. Marked general arteriosclerosis, moderate gravity, edema, extreme malnutrition, liver enlarged to umbilicus, both chests full of sonorous and sibilant rales, apex outside of mammillary line, rough systolic murmur heard at apex and base, A2+++, metallic. Remained in bed and received Karell diet, augmented by one ounce lactose and no other food, liquid, or medicine. Marked subjective improvement. Gradual disappearance of edema. Decided lessening of rales and cough. Loss of weight, but without a corresponding increase in amount of urine. This lack of correspondence may have been due to a lack of care in the collection of the specimen.*

CASE VII (arteriosclerosis). Hypertrophied and dilated heart, aortic, mitral, and tricuspid insufficiency, luteic and alcoholic pronounced stasis, pulmonary edema, hydrops, considerable ascites, engorged and pulsating liver, marked and persistent edema of legs, thighs, scrotum, and trunk, emphysema, cyanosis, cough, pronounced dyspnea, at times paroxysmal. Wassermann positive. One week at Bellevue Hospital, treated there by tonics, digitalis, and potassium iodide, at City Hospital by salts and digitalis from April 9th to 26th, but without benefit. Karell diet with addition of one ounce of lactose but no medicine, other liquid or food from May 11th. Prompt and decided improvement in subjective symptoms, loss in weight, lessening of edema and ascites, but without corresponding increase in urine (perhaps same explanation as foregoing).*

*Patient was discharged in June, much improved, but his weight had gradually increased to 175 pounds. No further attempts at a Karell diet or any modification of it were made after cessation of writer's service, June 1st.

*The improvement continued for about one month after the Karell diet charted above. From then his weight gradually began to increase with corresponding evidence of augmenting anasarca and of compensation. More recently under caffeine citrate these symptoms are lessening. No further Karell diet has been administered since cessation of writer's service, June 1st.

CASE VIII. Male, aged forty-six years, luteic endocarditis, aortic and mitral insufficiency, dilated aortic arch, hypertrophied and dilated heart, decompensation, extensive gravity edema, slight ascites, moderately engorged liver, chronic nephritis. Chance fifteen years ago, treated only locally; "rheumatism" fourteen years ago; "malaria" four years ago. For about three weeks dyspnea on exertion and even in recumbent posture, swollen feet and legs, precordial pain, marked nocturnal dyspnea. Wassermann positive. In Bellevue Hospital one week; treatment daily inunctions of mercury. City Hospital, April 29th; treatment, house diet, salts, fluids limited to 1,000 c. c., salicylate of mercury grain j (intramuscular), May 6th. Preliminary improvement for three days, then symptoms exaggerated and urine decreased in amount. Mercury repeated, May 10th, further decrease in urine output and subjective symptoms decidedly worse. Karell diet plus one ounce of lactose, May 12th. Gradual subjective improvement, prompt loss of weight, disappearance of ascites and edema, slight and variable diuresis, slowing of pulse, fall of systolic pressure, and fall of pulse weight.*

CONCLUSIONS.

1. In many cases quite as prompt and efficient diuresis, loss of weight, disappearance of edema, and marvelous subjective improvement can be obtained with such modifications in the diet suggested above as in following Jacob's strict Karell cure.

2. These modifications, if carefully adjusted to the individual taste, digestion, and condition, do not disturb but rather aid the digestion. They also enable the physician to carry out, even in private practice, an excellent diet for the

purpose in hand without arousing too great opposition.

3. They permit a slower and more agreeable transition to a normal diet; as well as

4. An opportunity to continue such a diet a longer period or practically to renew it from time to time and that, too, more or less indefinitely whenever an increase of weight or of edema or a recurrence of dyspnea warns the physician of its expediency.

5. The Karell cure is probably an element of

*Following the period of Karell diet charted above, this patient's improvement increased for a brief period and then persisted until about June 20th, when he began to fail rapidly with gradually increasing anasarca and oliguria. His systolic blood pressure varied from 180 to 170 and his weight was 143½ pounds on June 20th, the day before he died. The autopsy confirmed the clinical diagnosis and also disclosed edema of the lungs, hypospastic pneumonia, atheroma of the coronary arteries, and a beginning peribulbar cirrhosis of the liver plus the congestion noted above. After the cessation of the writer's service, June 1st, none of the later attempts at prescribing diet was of assistance.

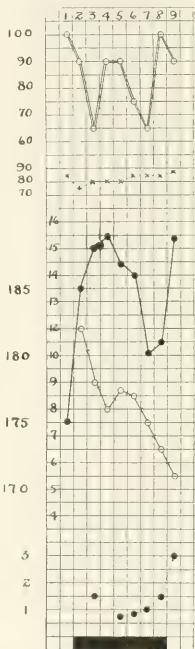


CHART 7 - CASE VII.

—●— Karell diet, 4200 cal., milk, + lactose, 1 ounce.

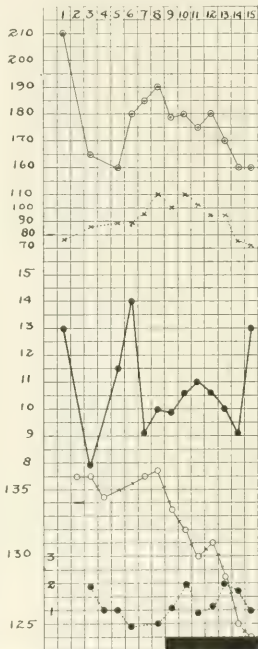


CHART 8 - CASE VIII.

—●— Karell diet, + lactose
—x— Urine
—○— Systolic pressure (not possible to estimate diastolic pressure)

safety and certainly an excellent prelude to modern vigorous antisiphilitic treatment in patients with cardiovascular disorders dependent upon a luetic basis, when decompensated and especially when accompanied by edema.

6. Finally, Doctor Ordway's careful studies of the pulse pressure and of the pulse work (by Sahli's sphygmobolometer) upon the cases observed by us upon the Karell cure or one of its modifications, show quite convincingly that one essential feature (if not the most important) is the almost invariably resulting decrease in the work of the heart as was emphasized by Lenhartz. In most instances the first addition to the diet produces an immediate increase in the cardiac work, as is well shown in the last estimation of pulse pressure and work in Charts 7 and 8 when the diet had been augmented only by one egg.

REFERENCES.

1. *Deutsche Klinik*, iv, 2, 1907, p. 376.
2. ALLBUTT: *Practical Treatment*, Musser and Kelly, ii, 1911, p. 118.
3. IDEM: *Ibidem*, p. 120.
4. *Deutsche Klinik*, iv, 2, 1907, p. 376.
5. P. KARELL: *St. Petersburger med. Zeitschr.*, viii, pp. 193, 865; *De la cure de lait*, *Archiv. gén. de méd.*, ii, p. 513, Nov., 1866.
6. WINTERNITZ: *Ueber methodische Milch- und Diät Kuren*, *Wiener med. Presse*, 1870, p. 5, 49, etc.
7. F. MIRSCHFELD: *Zur diätetischen Behandlung von Herzkrankheiten*, *Berl. klin. Woch.*, 11, March 14, 1892, p. 241.
8. IDEM: *Ueber die Ernährung des Herzkranken*, *Ibidem*, 33, 1896, p. 734.
9. W. HIS: *Therapeutische Monatschr.*, xxvi, Jan., 1912, p. 10.
10. L. JACOB: *Ueber die Bedeutung der Karell Kur*, *Mitteil. aus den Hamburger Staats Krankenhäusern*, viii, 1908.
11. HIS: *Loco citato*, April 21, 1908, 16, p. 839; 17, p. 912 (284).

591 PARK AVENUE.

DIET IN ARTERIOSCLEROSIS.

By LOUIS FAUGÈRES BISHOP, A. B., M. D.,
New York.

Below will be found an outline diet list which I hand to most of my patients with cardiovascular-renal symptoms. It is so arranged that additions may readily be made, while items may be cancelled if necessary. As the patient's condition improves, certain easily digested meats, e. g., chicken, are added cautiously, to be withdrawn if trouble ensues. The general instructions are most important; with the additions and erasures, the list becomes a strictly personal one and is under no circumstances to be used as a guide for other patients. Considerable culinary ingenuity has been brought to bear on vegetable menus within the past few years, and the arteriosclerotic patient suffers less and less from the deprivation of animal food on account of the varied and savory bill of fare in which he may still indulge.

For..... Diet to be followed
from..... to.....
(Articles not crossed off are permitted)

SOUPS

(Purées and creams) (without stock)

Barley
Rice
Pea
Bean

Potato
Tomato
Asparagus
Onions
Celery

VEGETABLES
(Starchy)

Rice
Corn
Peas
Beans
Lima beans
Lentils

Potatoes
Baked
Boiled
Mashed
Chopped
Sweet potatoes

Beets
Parsnips
Turnips
Carrots

Unskimmed
Skimmed
Buttermilk

Fresh baked
Stale
Toasted
Pulled
Zwieback
White flour
Graham

Oat meal
Corn meal
Hominy
Arrowroot
Tapioca

Kohlrabi
Artichokes
Salsify
Radishes

MILK

Cream
Boiled
Pasteurized

BREAD

Rye
Crackers
Gluten
Almond
Inulin
Soya
Aleuronat

CEREALS

Cornstarch
Farina
Sago
Macaroni
Spaghetti

CAKE

(Without eggs)
Fancy

PASTRY

(Without eggs)

ICE CREAM

(Without eggs)
Fruit flavors

FRUITS

Oranges
Lemons
Limes
Shaddock
Grapes
Bananas
Pineapples
Melons
Fresh
Dried
Stewed

Preserved
Apples
Peaches
Pears
Plums
Prunes
Apricots
Cherries
Raisins
Dates
Figs

BERRIES

Strawberries
Blackberries
Raspberries
Huckleberries

Gooseberries
Cranberries
Mulberries
Currants

NUTS

Cocoanuts
Chestnuts
Walnuts
English walnuts
Brazil nuts
Hazel nuts

Pecans
Shellbarks
Salted
Almonds
Peanuts

VEGETABLES

Tomatoes
Raw
Stewed
Baked
Egg Plant
Baked
Onions
Boiled
Baked
Leeks
Cabbage
Sauerkraut
Cole slaw
Cauliflower
Brussels sprouts
Sea kale
Olives
Pickles
Truffles
Mushrooms

String beans
Asparagus
Pumpkins
Squashes
Celery
Raw
Stewed
Rhubarb
Vegetable marrow
Spinach
Lettuce
Water cress
Beet tops
Okra
Capers
Cucumbers
Endives
Chicory
Sorrel

BUTTER
CHEESES

(Select a suitable variety and use as meat substitute.)

PREDIGESTED FOOD (Except eggs and meat)

SPECIAL

Milk toast	Irish moss
Toast water	Flaxseed tea
Barley water	Kumys
Gruel	Panada

PUDDINGS

(Without eggs)

Bread	Junket
Cornstarch	Cottage
Blanc mange	Hasty
Rice	Suet
Tapioca	Fruit

WATER ICES

Orange	Sherbet
Lemon	

JELLIES

(Made with vegetable gelatins.)

Lemon	Fruit
Wine	

SUGARS

Cane sugar	Confectionery
Grape fruit	Levulose
Honey	Saccharin
Molasses	

BEVERAGES

Coffee	Grape juice
Tea	Ginger ale
Chocolate	Soda water
Lemonade	

CONDIMENTS

Pepper	Vinegar
Mustard	Olive oil
Spices	Horseradish
Herbs	Sauces

SALADS

POULTRY

(Only when specially ordered.)

Chicken	Duck
Squab	Goose
Turkey	Guinea fowl

GENERAL INSTRUCTIONS:

The diet ordered is for you for the present time and has nothing to do with the requirements of other people, or of you under other circumstances.

Avoid all eggs (and dishes made with eggs), fish, meat and stock soups, except as specially ordered.

Eat five small meals a day; masticate thoroughly.

Take fluids very moderately at meals.

Do not partake of a great variety of dishes at any one time, nor eat large quantities of anything.

Rich dishes, fried food, pastries, sweets, stimulants and strong condiments should be used only in small amounts.

Any articles found to be habitually disagreeing are to be avoided.

If your weight, the color of your blood and your endurance remain the same you are getting enough food.

The more you were poisoned by an article of food, the more it may be missed when it is taken out of your diet.

Note.—For recipes and preparations of food, use *Meatless Cookery*, New York, E. P. Dutton & Co.

POISONOUS PROTEINS.*

A Series of Five Lectures,

BY VICTOR C. VAUGHAN, M. D.,

Dean of the Department of Medicine and Surgery, University of Michigan.

LECTURE I.

Proteins in nature are the products of life, each kind of living cell elaborating and containing its own specific protein. Some forms of life are capable of constructing their proteins out of inorganic matter, while others can utilize only that which has been built up by other cells into protein material. Plants take the ammonia, nitrates and nitrites of the air, soil, and water, and by synthetical processes convert these into the proteins found in their tissues. So far as protein metabolism is concerned the vegetable world is the synthetical or constructive laboratory, while the animal is the analytical or destructive machine. The plant takes the smallest parts and builds them up into highly complex bodies, while the animal takes the complex and splits them into pieces to be reconstructed in its own body. But there are synthetical processes going on normally in the animal body and it is demonstrable that simple proteins may be built into more complex molecules in the animal body. In man with perfect digestion practically all the nitrogen of the food is absorbed in the form of aminoacids.

There are as many kinds of proteins as there are kinds of living matter. The simplest proteins consist wholly of aminoacids; these combine with inorganic salts, lime, phosphorus, iron, etc., and with carbohydrates to form the compound proteins. All living things not only contain protein, but this is their essential constituent; the living protein molecule is in an active state, capable of trading in energy, absorbing and eliminating; dead protein is in a state of rest.

In regard to obtaining the material for bacterial proteins, fifteen years ago in researches in the chemistry of bacteriological cells, I succeeded in obtaining sufficiently large amounts of bacterial cellular protein in a specially constructed tank for massive cultures; it was ten feet long and two feet broad and consisted of two tanks, an outer and an inner. Three per cent. agar was used because it was a hard medium. The tank was also a sterilizer. There were twenty square feet of germ substance growing there. In it pneumococcus, then the typhoid bacillus, then colon bacilli were grown on the same medium, with sterilization of the medium between the plantings. The growths were freed from extraneous matter; the cellular substance was ground and passed through fine meshed sieves; the product was a fine white powder, which, when examined microscopically, showed the individual cells plainly; it was so pure that when one gram of it was incinerated there was no trace of chloride in the ash, though there was sodium chloride in the culture medium. The cellular proteins of many bacteria had been obtained by growth in the tank, though I had

*An abstract of the Christian Hunter lecture at the Carnegie Laboratory, January 10, 1906; kindly revised by the author expressly for the New York Medical Journal.

Salt in Nephritis.—Dr. Harry Lowenburg, in his recent treatise on *Infant Feeding and Allied Topics* (F. A. Davis Company), after following many cases of acute and subacute nephritis to recovery, is convinced that the researches of Martin H. Fischer with regard to sodium chloride are correct, and that they provide invaluable data in the treatment of this disease. He advocates the addition of salt to the diet of all nephritics in plentiful quantities, and administers it as well *per rectum*, hypodermically, and intravenously.

never dared to grow anthrax bacilli, which had been grown only in Roux flasks.

Regarding the chemistry, it has been generally assumed that bacteria are unicellular plants, though certain investigators hold that they have demonstrated large amounts of cellulose in bacteria, but they have not properly distinguished between cellulose and carbohydrates. There are two carbohydrates in bacterial cellular substance, one combined with nitrogen and the other combined with phosphorus. In the unbroken molecule this carbohydrate is undoubtedly contained within the nuclein group. There is nuclein in bacterial cellular substance. Bacterial cellular substance responds to all the protein reactions, but the protein bodies detached from the substance are split products. The cellular substance of bacteria contained highly complex molecules, best designated as a glyconucleoprotein. Because bacteria are simple morphologically is no proof that they are made up of simple proteins. Chemically the bacterial cell is highly complex and should not be regarded as a primitive form of life. Nuclein, nucleic acid, and their derivatives have been found in all bacterial cells submitted to chemical study. Some years ago, A. B. Macallum, by microscopical methods, showed that nuclei were free from chlorine and the writer has found no chlorine in the ash of his cellular substance, which he regards as convincing evidence that it was wholly nuclear. Phosphorus and iron in nuclear material are masked; that is, they cannot be detected without more or less marked disruption of the molecule. This is true of the cellular substance under investigation. The laborious and valuable researches of Macallum have shown that nonnucleated organisms contain nuclein, and this is probably true of every cell which is capable of reproduction. It is no longer necessary to accept the dictum that every cell must contain a morphologically recognizable part, known as a nucleus. The presence of nuclear matter, but not of nuclei, can be insisted upon.

It should be understood that the cellular substance under discussion is not identical with that which exists in the living, multiplying bacteria. The latter consist of the former with the addition of all the extractive removed by the solvent, such as water, dilute alcohol, absolute alcohol, and ether. The living bacillus has been stripped of all its surrounding food supplies, accumulated excretory products, and stores of fats, waxes, etc. There is a strong suspicion that in some of our bacterial reactions, these extractives are concerned while the cellular constituents have no direct part. The active constituents of the culture are not essential constituents of the bacterial cells, but consist of one or more proteins closely associated with the bacterial cells. It may be a protein already split off from the surrounding pabulum preparatory to absorption and assimilation, or it may be an excretory product.

In regard to the poisonous action, all the bacterial cellular proteins are found to be poisonous when injected into animals. But the only injury inflicted on the workers in the laboratory in carry-

ing out these operations was from the typhoid bacillus; although masks were worn, there was temporary inconvenience for those working with the typhoid bacillus for the first time; there was first a severe chill, then backache, and a rise in temperature, but the symptoms subsided in a few hours. But here was an important point; the dead cellular substance of bacteria to which an animal was highly immune, killed that animal on first injection. Of all the bacterial material worked with, the cellular substance of the prodigious was the most poisonous. The dead cellular substance of bacteria to which an animal was highly susceptible, did not kill that animal on first injection. The bacterial substance of prodigious killed guinea pigs when injected intraabdominally, but no amount of tuberculosis bacilli injected intraabdominally into guinea pigs killed them, and they are highly susceptible to tuberculosis. Immunity is a relative thing, and the relativity must always be borne in mind.

(To be continued.)

THE SUSCEPTIBILITY OF MAN TO FOREIGN PROTEINS.*

BY PROFESSOR WARFIELD T. LONGCOPE,

Columbia University, College of Physicians and Surgeons

During the last century medical literature has contained isolated references to the unusual reactions of certain persons to substances which are now known to have contained proteins. Of these perhaps the most striking are the observations of Blackley on grass pollens and the frequent appearance of urticaria after transfusion of sheep blood. But serious study of the effects of injection of foreign protein into man began only after the introduction of diphtheria antitoxin in 1894. Von Pirquet and Schick made the first careful investigation of this hypersusceptibility in 1905 and give it the name, anaphylaxis.

Before considering the condition in man we may briefly outline the essential features of anaphylaxis as determined in animals. The condition is of two kinds, the active and the passive. Active anaphylaxis results from the parenteral introduction of a foreign protein after an incubation period of ten to fourteen days. At the expiration of this period the intravenous or intraperitoneal injection of the same protein in a suitable dose produces the symptoms now so familiar. Passive anaphylaxis results after an interval of fifteen to eighteen hours following the injection into an animal of the blood serum from an actively sensitized animal of the same or different species. It may also appear in the offspring of female animals which have been actively sensitized. Then there is the condition of antianaphylaxis in which the actively sensitized animal becomes insensitive to the protein for a brief period following an induced anaphylactic shock. After this the animal may again become sensitive. Lastly, the repeated injection of a protein at intervals of two or three days may produce a condition in which the

*Summary of a lecture delivered before the Harvey Society, Academy of Medicine, New York, February 26, 1916.

animal is temporarily refractory to later injections of the same protein.

The process has been studied in man most extensively in connection with the use of antitoxic horse serum. There is the primary incubation period of six to ten days in which there are no symptoms, after which the introduction of the same protein may produce typical symptoms. These symptoms usually comprise a skin eruption such as urticaria, erythema, scarlatinal rashes, itching, etc., edema of the face or even of the whole body, rise in temperature, general malaise, headache, pain in the joints, and enlarged and tender lymph nodes, especially in the drainage area of the site of injection. In a small proportion of the cases there may be albuminuria. There is a primary polymorphonuclear leucocytosis with a subsequent leucopenia and lymphocytosis. The condition may last from one to twenty days or longer, and there may be as many as four relapses at intervals of about ten days.

The disease depends for its appearance, severity, and duration on several factors: On the dose of serum given, being more common with the larger doses, some seventy-five to 100 per cent. of patients acquiring the disease when over ninety c. c. are used. The source of the serum has some relation to the incidence of the disease. And, lastly, the personal factor of the patient himself is of importance. By repeated injection of serum at intervals of two or three days the onset of serum sickness may be delayed, but cannot always be prevented, and if the sickness then occurs it is likely to be severe. The reactions in man comprise, first, the immediate local reaction with urticaria, itching, edema, erythema, etc., appearing fifteen minutes after the injection and confined to the region of the injection. Second, the immediate general reaction, appearing in twelve to twenty-four hours, and showing such symptoms as asthma, cyanosis, nausea and vomiting, and suppression of urine. Third, an accelerated reaction in which the serum sickness appears in three to five days after inoculation. These reactions may appear alone or combined with one or more of the others. They are specific for the protein to which the individual is sensitive and may be anticipated by a preliminary endermic injection of minute amounts of serum which is followed by a typical local reaction in sensitive persons. This skin test becomes positive as early as five days after the initial injection and may last for years. It is absent during an attack of serum sickness, but reappears after its subsidence. The reaction is extremely delicate and appears after the injection of serum in dilutions up to one to 500.

Precipitins and other antibodies appear in the serum about the time that the skin reaction first becomes evident, but their precise relation to anaphylaxis has not been determined. Anaphylactin, or the substance capable of passively transmitting the hypersensitiveness, appears in the blood about the same time and may remain present for long periods.

The production of anaphylaxis or serum disease is believed to be due to the union of the specific antibody and the provoking protein in the circulating blood, in the tissues, or in both places. In the light of most recent evidence, the second seems to be the most probable site of the union. The union is sup-

posed to result in the liberation of toxic bodies from the rapid and incomplete destruction of the protein.

We have dealt only with artificially induced sensitization in man, and must now turn our attention to the condition existing without the known introduction of foreign proteins. The earliest observation of this type of sensitization was that toward plant pollens with the production of hay fever and asthma. Other than this form, the commonest include hypersensitiveness to various forms of foods, such as eggs, strawberries, cows' milk, shell fish, etc.; to the emanations from various animals; and to the stings of certain insects. The symptoms in these spontaneous forms of hypersensitiveness are most commonly referred to one of three systems; to the respiratory tract, the alimentary tract, or the skin, and include coryza, conjunctivitis, asthma, nausea, vomiting and diarrhea, and the various forms of skin eruption already mentioned.

Protein sensitization is now recognized as being so common that there has recently been a strong tendency on the part of many to explain almost all physiological and pathological processes as due to its occurrence. In spite of this unwarranted exaggeration, it still remains an important factor in some definite pathological conditions. In addition to the more common forms already mentioned and due to foods, etc., we have recently encountered a small group of cases in which there has suddenly developed an attack indistinguishable from typical serum sickness, but coming on without assignable cause. Such attacks have usually recurred at intervals of several months. There may or may not be nausea or vomiting; there is always general urticaria, slight fever, enlarged and tender lymph glands, pain in the joints, and usually mild albuminuria. We have applied the endermic tests to these patients, using a number of different proteins, and have found that they reacted to several different proteins, differing strikingly in this respect from the cases of artificially induced hypersensitiveness in which the reaction is specific for a given protein. In this connection the more or less frequent idiosyncrasies to certain drugs should be mentioned, though their exact relation to serum sickness is not known.

Comparison with the responses of animals and man to foreign proteins shows a close analogy, but in man the sensitiveness seems to be greater and the symptoms are far more numerous and varied than in animals. In addition to the fact that sensitiveness is usually multiple—that is, it exists to several different proteins—in the spontaneous hypersusceptibility in man, this condition differs from the artificially induced form in manifesting a far greater degree of sensitiveness than the artificial, in both its unknown origin and its greater duration.

The multiplicity of the sensitiveness is difficult to explain, but we have found that it is usually limited to certain fairly well defined groups of proteins. They include those who react to the serums of animals, to eggs and the serums of fowls, to the proteins of shell fish, and to those of certain plants. At times a person may react to proteins of two of these different classes. Even certain apparently healthy persons may react to two or more foreign proteins. The wide range of sensitiveness seems to exclude

contact with the several different proteins as a cause, and in view of recent observations it seems that we must find some other explanation. Possibly there is some inherited cellular peculiarity. Possibly the sensitiveness results from the absorption of chemically altered proteins which are known to induce a susceptibility which is not wholly specific.

We have so far dealt only with susceptibility to certain types of proteins, and before closing we wish to mention the analogous condition of allergy toward some forms of pathogenic bacteria, as observed in smallpox vaccination and the immunization to several bacterial diseases. This allergic reaction is also demonstrable by the local injection of extracts of certain organisms such as typhoid, glanders, etc. The phenomena of infectious disease processes are closely similar to those of serum sickness. A certain proportion of patients with serum sickness are known to have a mild grade of nephritis with albuminuria, and a similar condition has been observed by Doctor Rackemann and myself resulting from the use of antipneumococcus serum. Patients receiving this serum showed retention of water and chlorides during the height of their illness and albumin and casts appeared in the urine with the development of some edema, giving a picture closely similar to that of ordinary serum sickness.

Cost of Feeding the Navy.—Thomas F. Logan, writing in *Leslie's* for February 24th, states that the high cost of eating, that bugbear alike of the economist and housewife of modern times, is knocked into the proverbial cocked hat by the naval quartermasters. To feed an enlisted man of the navy costs only thirty-six cents a day. And he is well fed, too. The navy ration consists of the following daily allowances for each person: One pound hard bread (biscuits); or one and one quarter pound fresh bread; or one and one eighth pound flour. One pound tinned meat; or one and one quarter pound salt meat; or one and one quarter pound smoked meat; or one and three quarter pound of fresh meat; or one and three quarter pound fresh fish; or eight eggs; or one and three quarter pound poultry. Three fourths pound tinned vegetables; or one and three quarter pound fresh vegetables; or three gills beans or peas; or one half pound rice or other cereal. Two ounces coffee; or two ounces cocoa; or one half ounce tea. One ounce condensed or evaporated milk; or one sixteenth quart fresh milk. Three sixteenths pound dried fruit; or three eighths pound tinned fruit; or nine sixteenths pound fresh fruit (one ration of fruit is allowed with each ration of vegetables other than fresh issued). Two ounces butter; four ounces sugar. Seven pounds lard are allowed for every 100 pounds flour used as bread. The following are allowed weekly in addition to the foregoing: One fourth pound cheese, one fourth pound macaroni, one thirty-second of a pound of mustard, one thirty-second of a pound of pepper, one fourth pound pickles, one fourth pound salt, one fourth pint sirup, one one hundred and twenty-eighth pound spices, one fourth pound tomatoes (canned), and one half pint vinegar or oil. This would be ample for the average householder.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVII.—How do you treat rickets? (Closed.)

CLXVIII.—How do you treat cyclic vomiting of infants? (Answers due not later than March 15th.)

CLXIX.—How do you proceed in post partum hemorrhage? (Answers due not later than April 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the Journal. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXVI has been awarded to Dr. Howard S. Anders, of Philadelphia, whose article appears below.

PRIZE QUESTION CLXVI.

THE TREATMENT OF CONSTIPATION IN SEDENTARY MEN.

By HOWARD S. ANDERS, M. D.,
Philadelphia.

It is assumed at once that there are no associated and complicating organic diseases of the bowel or body generally, but that the constipation is purely functional, due to relative inertia because of the predominant factor of sedentary habit.

There are two rather extreme types of sedentary persons, however, in whom the regulation and prescription of remedial measures must be adapted differently; these are the slender, delicate, nervous, fine fibred men, on the one hand, and the coarser, fat, phlegmatic, or even robust looking, on the other. These types will be referred to in the recommendations to follow.

Prophylactic.—While the chosen methods of treatment are being carried on, a certain hygiene of the bowel should be practised to avoid aggravation of the constipation and antagonism to these very procedures to a neutralizing or retarding degree.

Thus, a regular time for bowel movement should rigidly be adhered to; as before or after breakfast, preferably before, so that if much effort is made digestion shall not be interfered with when the stomach is full and needs an extra amount of blood to start gastric activity. Whether successful or not, the effort should be made persistently at the regular time, with moderately strong, rhythmic abdominal contraction for five to ten minutes; sometimes the patient wins out after three months of daily perseverance, and the bowel responds readily as well as regularly to the will.

Drinking one or two glasses of cool water on retiring and immediately after rising promotes a helpful flushing tendency for the morning evacuation.

It is known that a preliminary cup of coffee, or

a smoke during the act of stool will induce bowel action in some instances. A nervous, hurried attempt at defecation often defeats itself; after the first voluntary effort, and the initiation of the peristaltic waves of expulsion, reading while on the seat relaxes the sphincter more successfully to the succeeding waves, and a more thorough emptying of the sigmoid and rectum is likely. Bending the abdomen forward and raising the thighs simultaneously for pressure against it aids in accomplishing a movement. Circular rubbing and pressure with the hands over the colon works for good also.

A cold water slap bath in the morning, patting the abdominal wall especially vigorously for a minute or two with the hands dipped in cold water at ten second intervals is advisable.

Tobacco should be interdicted absolutely in the nervous type of sedentary man.

Gymnastic or athletic.—It is not necessary but, if possible, one should exercise in a gymnasium every other evening. Walking all or part of the way to and from the working place is a prime requisite. Practising deep breathing, especially blowing out forcibly, almost explosively, with concentrated abdominal contraction, say a half dozen times every five or ten minutes while walking, is beneficial; or this may be done at night in front of an open window before retiring. At the same time, forward and backward, sidewise, and twisting body movements, the legs held tightly together meanwhile, contribute materially to increased motor power in the intestinal and belly wall musculature. Lying down flat on bed, floor, or couch, and raising the body from the hips without the aid of the hands, persisted in for months, brings reward in some measure.

Undoubtedly, such outdoor exercises as tennis, swimming, golf, horseback riding, axe wielding, gardening, medicine ball and hammer throwing, quoits, and the like, should be indulged in as much as possible to counteract the sedentary evil of constipation.

Dietetic. Eminently important, although tedious to arrange, is the food question. Meat should be at a *reducible maximum* of a liberal allowance once daily; at dinner in the evening. A moderately bulky cereal, vegetable, and fruit diet, according to the requirements, age, build, weight, digestive capacity, and appetite is to be aimed at.

It is a fact to be borne in mind constantly that not only does a three meal a day meat habit engender constipation, but in men of sedentary habit, who do not use all this protein, decomposition of the residue in the colon only adds to a vicious circle by local atony from the gaseous, putrefactive, and toxic distention and muscular degeneration, as well as general depression of neuromuscular power from the autotoxemia.

To me it has come about that an alliterative combination of C's in concord with the first letter of constipation is suggestive of the articles helpful in counteracting this defective function in sedentary men. Thus, eating proportionately freely of cabbage (including cole slaw), well cooked, sauerkraut, cauliflower, carrots, celery, chard, chicory, corn, cress, cucumber in the vegetable class is of value. Other helpful C's are cantaloupe, cherries

(cooked dried, as well as fresh), cranberries, currants, coarse cereals, as oatmeal (rolled oats) and whole wheat (rolled or ground, with cream, cornmeal (yellow, coarse) mush. Cider is good, also, for bowel stimulus.

Eating of fruit between meals, such as apples and grapes, is to be recommended in some cases, especially for the stout. Plenty of celery, cress, and lettuce, is advisable for the nervous, anorexic, flatulent, anemic sedentary man. I advise the use of good buckwheat honey (dark), orange marmalade, apple butter with whole wheat or bran bread and butter at breakfast, with or without a starter of stewed prunes (large fleshy ones, at least eight or ten), or baked or stewed apples with the skin on; at night, eating half dozen soft layer figs, dates stuffed with English walnuts, or raisins minus seeds. Dates chopped up with senna leaves and moulded into a loaf from which a plug can be cut and chewed on retiring have been found to be a fine aid to the morning stool. Coffee is good only in the morning. Tea is not advised; neither is alcohol. Codliver oil, olive oil, and a light mineral oil may be given two or three times daily to thin, constipated persons.

Psychical.—It is always desirable and usually imperative to convince the sedentary patient that his constipation can be cured by regulation and co-operation along the lines indicated; and that he can most probably be cured by or mainly by hygienic and dietetic means. And yet, persistent encouragement and engendering of hopefulness is often more substantially initiated if some medicinal aid of a harmless or mild but effectual nature is prescribed.

Medicinal.—For its tonic effect upon both liver and bowel perhaps nothing is superior to a good fluid extract of cascara, minims xv to xxx, with an equal quantity of glycerin taken before each meal according to results. Or, a tablet or two on retiring, containing grains i to ii of the solid extract, with grains one eighth each of extracts of belladonna and podophyllin. Sedentary men often need for a time, a course of calomel and salines once or twice a month.

One half grain doses of phenolphthalein two or three times daily for a while, given in pill with licorice extract, is a good aid in some cases, especially in stout people. The a. b. c. and s. pill is too well known to need more than mention.

Agar agar helps in some of the cases with sticky, scanty stools. Powdered washed sulphur may be added in thirty to sixty grain doses.

Electric.—This mode of treatment is to be used only when other means fail, especially in the nervous cases, where the psychical effect is equally beneficial with the local. A strong but comfortable faradic current may be tried systematically, with central spinal galvanism, as well as cathodal galvanism over the abdomen.

Dr. W. D. Runyon, of Oakdale, Iowa, writes

Whether it is due to sedentary occupation or enjoin rest without organic change in the intestinal tract, careful inquiry reveals the fact that in the majority of cases constipation is usually the result of several factors, principally indiscreet diet and irregular habits. Consequently our first thought is

a correction of these. We shall most often find a heavy proteid diet of too great bulk without the proper balance or proportions of carbohydrates and fats, inasmuch as the latter are found in great variety. This offers no difficulty, and any change of diet in this manner is within the reach of all our patients regardless of their station in life. The tendency to eat too much must be avoided. Next we look to the habits, and it is well to note here that it is necessary to give complete and explicit directions in regard to any change of habits we may advise. Usually we find a dearth of physical exercise, especially walking, in the daily program, consequently a brisk walk all or a portion of the way to office or shop in the morning of at least fifteen minutes' duration will be indicated. Assign a regular hour for meals, enjoin careful mastication of food, and insist upon a regular time for the patient to retire to the toilet, there to remain until the act of defecation is complete. This time is preferably immediately before or after the morning meal. It will be necessary to aid in the establishing of this habit by the use of laxatives, preferably some preparation of cascara sagrada or the pill of aloin, belladonna, and strychnine with cascara, taken upon retiring, and followed by a glass of water before breakfast next morning. If, as is often needed, it is necessary to continue the occasional use of laxatives, alternating either of the foregoing preparations with a small dose of mineral oil will give gratifying results. It is rarely necessary to resort to prepared foods, drastic purges and other means, if the foregoing simple measures are carefully carried out.

Dr. P. C. Lavadia, of Ithaca, N. Y., writes:

Sedentary life and living are undoubtedly favorable to if not a cause of constipation, the malady of civilization. Itself a form of inertia, the inertia of peristalsis, constipation is therefore more prevalent among the passive than with strenuous workers. Its prevention, therefore, should be simple, once its etiology is known. Its cure involves three phases: the psychical, physical, and therapeutical side. Thus to attack this condition we should approach it from three directions.

The psychical factor consists in keeping the mind of the patient constantly away from all frets and cares. Recreation of some kind is essential, for recreation's sake, if for no other reason. It should procure an amusement or activity entirely detached from and wholly foreign to one's routine job. Social functions, the theatre and opera, etc., are in point.

The physical phase consists of exertion of some sort for at least an hour daily. It may be tennis, boxing, fencing, swimming, skating, dancing, or even walking, if briskly enough done.

The therapeutics of the case, the medicine factor, should include diet, drugs, and general hygiene. Rather than too frequently, food should be taken at long intervals, at least seven hours; not sparingly but a balanced ration and plenty of it. Graham, in stubborn cases bran bread, graham crackers, weak stimulants such as coffee, tea, or chocolate, soft cooked eggs, cereals and pure cream, etc., should figure side by side with fruits and vegetables in

plenty in the menu of the sedentary and a *fortiori* of the constipated. Olive oil taken with salads, and nuts served sparingly, and fresh fruits or vegetables once a day at least, should overcome the most stubborn case. Purgatives of Epsom salts, or castor oil, when not nauseating, may be resorted to once a week in certain cases. Warm and cold baths, if frequent enough and followed by vigorous rubbing, promote circulation. In short, closely observe personal hygiene internal and external. Heed Nature's call always, anywhere.

If these measures fail, either the etiology of the individual case has not been carefully studied with a view to prevention, or the constipation itself is a symptom, cause, or complication of some other illness.

Contemporary Notes.

A Tribute to Kenneth William Millican.—"For he is dead and we must yearn therefore." No formal obituary notice or eulogium will now be attempted respecting the late Doctor Millican, remarks editorially the *Journal of the Missouri State Medical Association* for February, 1916, in discussing the former associate editor of the *NEW YORK MEDICAL JOURNAL*, for that has been well done elsewhere and otherwise; therefore, only a brief estimate of personal worth and professional character and work will be offered as opportunity revealed these to his fellows during his sojourn in this part of the country as a scientific writer, medical journalist, and personal acquaintance and friend.

It is told of one of the earlier English men of letters that while walking the streets of London with a friend he paused and, pointing across the way to a passing individual, said with emphasis: "I don't know that man, but I hate him." The friend asked why he should hate a man whom he did not know and the answer was: "That is just the reason; I hate him because I don't know him." Many sons of Britain, consciously or unconsciously, exhibit personal traits, mannerisms, or peculiarities which tend to create prejudices or dislikes among other people, and which may be overcome with no little difficulty, but no criticism of this kind could be directed in any particular toward the character or conduct of the subject of this sketch. Doctor Millican was truly cosmopolitan in every respect, quite free from the too common insular prejudices of his countrymen, but with no yielding of proper national feeling or patriotic instinct.

His grasp of principles and subjects that were of importance to mankind and the medical profession was catholic in compass and convincing in expression, and the State of Missouri and city of St. Louis are enjoying the fruits of changed conditions and bettered services toward the realization of which some of his best editorial work when here was directed.

During the years prior to 1907, when the *St. Louis Weekly Medical Review* was conducted by him, some of the subjects of vital concern in which the local profession was deeply interested were: 1. The medical inspection of public school children by official authority; 2, the establishment by State and

city of sanatoriums for tuberculous persons; and, 3, a fundamental reform of the public hospitals system in St. Louis to meet modern needs and conditions; and some of the most forceful arguments and telling appeals in advocacy of these several causes came, week by week, from the pen of Doctor Millican. The finely united front shown at that time by the medical profession in support of these proposals was measurably due to his effective work, and this in turn was reflected by the public demand for the legislation necessary to accomplish the ends proposed.

The good seed thus ably sown was not lost, but has borne an abundant harvest, for all of these leading reforms have been achieved; and, although his name may not always be mentioned in connection with these invaluable public services, his work will live and approve itself in benefits to generations yet unborn, and he will thus have achieved immortal life in the sense of multiplying continuing blessings to his fellowmen.

It would appear almost irrational to hold that the course of such a life has been halted by bodily dissolution, for the example and power of his work were such that its influence must ever abide, and this thought must prove a source of comfort to those who cannot but feel the loss to the world of one who seemed still so rich in every gift and quality that could give added value to lengthened services and fullness of years. High in mind, choice in spirit, serene in strength, his works declare his worth; even here on the banks of the Father of Waters he has left a record that will be gratefully remembered of one who served his fellowmen with faithful zeal, and whose merit won and held the esteem and affection of all who truly knew him; and this was fully testified to by the local profession on the occasion of his public leave taking when departing for another field of usefulness.

There is no death—what seems so is transition!

This life of mortal breath,

Doth but foreshadow the fields Elysian

Whose gateway men call death.

—George Homan.

Medical Inspection of Schools Should Be under the Department of Health.—Doctor Goldwater, formerly commissioner of health for New York city and now superintendent of Mt. Sinai Hospital, a year ago said:

In New York city, Chicago, Philadelphia, Boston, Baltimore, Cincinnati, Pittsburgh, Buffalo, and Detroit, medical inspection of schools is under the control of departments of public health. In only two cities of the first class, that is, Cleveland and St. Louis, have the health authorities neglected to appreciate fully the enormous field for public health betterment that lies in reaching the children.

Where boards of health are well organized and efficient, the great majority have the system of school inspection under their control. In small cities the lack of comprehensive public health program, or meagre equipment of health problems, has resulted in school authorities taking the initiative.

In many communities in the United States, school boards are more permanently organized and more efficient in their methods than are boards of health. It is in such communities that the latter have neglected what is undoubtedly one of the most important factors in preventive public health work.

Sir George Newman, chief medical officer of

schools, for London, England, when in Toronto four years ago, stated that medical inspection of schools was essentially a part of the duty of boards of health and it could be more efficiently and more economically administered by them. With these views we heartily agree, remarks the *Canadian Journal of Medicine and Surgery* for February, 1916. Some years ago this journal took occasion to criticize sharply, and in our criticism we received unanimous support, some features of the system of medical inspection then in vogue, the result being that there was considerable improvement, as far, at least, as the medical profession in Toronto was concerned, whose treatment, up to that time, at the hands of the chief inspector was open to the severest censure. We always entertained the view that the medical inspection department should be placed under the health board, and feel that way even more strongly now. The expense incurred under the present system is nothing short of disgraceful, not to speak of the unnecessary and uncalled for duplication of work. Medical inspection *properly conducted* has the support of the medical profession as a body. . . . We are glad the 1916 board of control have taken action to check this extravagance by recommending that the city health officer have charge of Toronto's system of school inspection, thus saving a sum approaching \$40,000 per annum.

The Orphans of New York.—Why, asks *Leslie's* for February 10, 1916, are the orphan wards of New York city compelled to live in filthy, unsanitary private institutions where they are overworked and underfed, and where no vocational training is given to fit them for life? Why does the State Board of Charities still give its certificate of approval to such institutions after Commissioner of Public Charities John A. Kingsbury has investigated them and reported that they fail to maintain a minimum standard of care and decency? The answer is "politics," which continues to be the enemy of efficient government. Mr. Kingsbury asserts that a year ago eighteen private institutions caring for 5,100 city wards at a monthly cost of \$61,000 were in an unfit condition. By refusing to send more children to such institutions, he has been able to restore eight of these to the approved list. The first institution to which the department refused to send any more children sheltered 350 boys and girls, 220 of whom were city charges. Not a room, hall or closet was clean, the plumbing was old, dirty, and foul smelling, all beds were infested with bugs, and without pillows or springs, with mattresses torn and dirty. The law forbids the commissioner of charities to pay any public moneys or commit children to any institution which has not the certificate of approval from the State board. At the same time he is prohibited from withholding funds from institutions which have this certificate, or transferring children from them, however unfit they may be. Because of political pressure the State Board of Charities continues to give its approval to ten unfit institutions caring for 2,300 babies and growing boys and girls at a cost to the city of \$26,000 a month. And the hands of an honest commissioner of public charities are tied. Shameful!

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 4, 1916.

THE IMPORTANCE OF DIETETICS.

In no field of preventive medicine is there greater recent advance than in the study of nutrition. For ages men have dug early graves with their teeth, not caring to know the principles which underlie the sustaining of life. *God zendt hem wel de spizen, maar de duivel kooft ze*; though God sends meat, the devil sends cooks, and in truth if the menace of middle age arteriosclerosis and organic insufficiency is to be overcome, the domestic devil of kitchen ignorance must be exorcised by the family physician, the specialist, and the research man. Medicine, awakening from its empiricism in this era of experiment, turns with interest to means for preventing suffering and ill health. Every physician shares the impulse to know more of the art of living as he realizes that the prevention of disease is his most important privilege and function.

Dietetics and alimentation are the basic factors of the science of nutrition. The one deals with the study of food and combinations of foods in relation to health and disease; and the other with modes of rendering food assimilable prior or subsequent to ingestion, and with the process of metabolism. Within the last decade much intensive work has been done upon the chemistry of protein changes and the part taken by the aminoacids, enzymes, vitamins, and mineral constituents of food in the

promotion or inhibition of digestion and tissue metabolism. The public also is ready to profit, as never before, by improvement in food sanitation, as evidenced by its interest first in pure milk and latterly in the State regulation of the manufacture, preparation, and purveying of foods.

It is the belief of the NEW YORK MEDICAL JOURNAL that it can do no greater public service than to place before its readers from month to month the results of the research of devoted students of nutrition, and as far as possible make effective the difficult transfer of knowledge from theory to practice. For this reason a department of Dietetics and Alimentation is begun in this issue. For a long period we have emphasized the importance of the new science of hemadenology, realizing the essential part played by the glandular secretions in all functional cell activity. If these relieve abnormal and diseased conditions, how important it becomes to know more of the stimulating effect of properly cooked and seasoned food in evoking normal glandular secretion. Recent progress in organic analysis can and should be put to practical application in the commercial and domestic preparation of food. But "cooks are not to be taught in their own kitchen" and it is mainly through the trained knowledge of the physician that added impulse must be given to the efforts of lay dietitians and teachers of home economics to keep the culinary poisons of the home, the restaurant, and the hotel from reaching insidiously their unconscious victims.

A NEW AND USEFUL FAMILY ALMANAC.

There appeared during January of this year a useful and suggestive almanac issued by the New York State Department of Health. It takes the place of the January *Health News* and is perhaps the most purposeful publication of any issued by this department since its reorganization. It should hang beside the fireplace in every home in the Empire State.

The *New York Health Almanac*, while modelled to some extent on previous attempts in this same field by other health departments, differs radically from the orthodox almanac. Needless to say, it has no patent medicine advertisements. It is edited with an enthusiasm and forward social vision which must greatly astonish readers of medieval outlook who still think that the health officer of today has a political sinecure. One characteristic sentence is as follows:

The school physician who detects these physical defects—and the school nurse who follows the child to its home and explains what is needed and secures the following out of the physician's suggestions—are doing on the physical

side somewhat as the teacher is doing on the intellectual side. They are removing the obstacles to normal development, giving the boy and girl a chance for health and happiness and efficiency.

The well chosen subject for January, the month of pneumonia and grippe, is fresh air. February deals with hygiene and diet and contains a rule for the purchasing of a balanced dietary, the result of studies in food costs by Professor Henry C. Sherman, of Columbia University. The rule, although not clearly or accurately stated in the almanac, makes it possible for the ordinary family, without knowledge of dietetics or chemistry, to secure a well balanced diet by properly apportioning their food expenditures. As Professor Sherman states it, it is recommended that the same amount be spent for milk and cheese as for fruit and vegetables, or as for meat, fish, and eggs—that is, the amount should be the same for each of the three groups. If this is done, even approximately, the rest of the diet will balance itself. It is, in reality, a simple method for transforming complicated calorific and chemical values into a simple monetary principle which any one can understand.

This work of Professor Sherman, as well as the study regarding the relation of the house fly to diarrheal disease among infants, which is mentioned on the July page of the almanac under Fighting the Fly, were carried out as a part of the program of the Department of Social Welfare of the New York Association for Improving the Condition of the Poor. Regarding the fly experiment, it was found, as the almanac states, that "the babies carefully guarded against flies had only half as much summer complaint as those not so protected." July is perhaps a late month to devote to fighting the fly; April would have been better.

The almanac concludes with a whimsical and suggestive note on the application of solvents to social nuisances, signed by Cressy L. Wilbur, S. C. (Social Chemist). Altogether, it is an almanac that should be treasured and not discarded at the end of the calendar year.

THE ETIOLOGY OF MALIGNANT NEOPLASMS OF THE GALLBLADDER.

When the gallbladder is opened and the biliary tract is explored in cases of malignant or nonmalignant growths of the former viscus, biliary calculi are found. In sixteen nonmalignant neoplasms out of a total of twenty-seven, Bravet (Lyons thesis, 1913) found them, in other words in about fifty-three per cent., while Zenker notes that carcinoma of the gallbladder is complicated by calculi in ninety-five per cent. of cases. It may be logically assumed

that the lithiasis met with in all growths of the gallbladder is the chief etiological factor of the process. It is probable also that a nonmalignant growth is an early stage of a cancerous lesion, the result of chronic irritation from calculi.

The malignant transformation of an adenoma of the gallbladder seems to be relatively frequent, and Wenetries has given a detailed description of the evolutionary stages in two instances; he points out that beside the areas in which the mucosa has remained structurally normal, others in contact with the calculi have taken on the characters of adenomatous hyperplasia. The culs-de-sac of the glands are increased in size, send off secondary ramifications, and are lined with a regular cylindrical epithelium. A degree further and malignant evolution appears, because we see, mixed with the newly formed glandular tubules, masses composed of cylindrical cells, but with less regular shapes, with a more highly stained protoplasm, having lost the appearance of mucosa, but not arranged in a regular lining. In the underlying muscular stratum dilated lymphatic vessels are to be seen, filled with epithelial cells irregularly placed.

Thus, in spite of the purely hyperplastic and adenomatous appearance of the greater part of the lesion, carcinomatous evolution is proved by the lymphatic involvement. This evolution arises in the glandular hyperplasia, by proliferation of the epithelium, at the same time losing its characters of differentiation, infiltrating the connective tissue, and invading the submucous and intramuscular lymphatics. It certainly appears to be the continuation of the hyperplastic process which occurs first as adenomatous formations and afterward undergoes an evolution toward malignancy from the continued action of calculi; this is unaccompanied by inflammatory phenomena of any kind in the connective tissue placed between the hypertrophied glandular tubules.

Thus, by the coexistence of gallbladder cancer and biliary calculi, may be explained the fundamental part played by the lithiasis in the genesis of the neoplasm through the intermediary of adenomatous growths. Pels-Lensden has studied the lesions of the gallbladder arising from calculi and their local consequences, nonmalignant processes undoubtedly, but quite ready to become cancerous. After reviewing the known facts relative to vegetating growths of the gallbladder, he comes to the conclusion that although there may be no characters of malignant neoplasm, these epithelial neoformations, having a glandular aspect, nevertheless represent a transitional stage, and continue to proliferate even if all irritation, either mechanical or inflammatory, has been eliminated. They give testimony to a kind of

vital autonomy quite fitted ultimately to produce cancer.

Orth has given an excellent description of the histological structure of the so called adenoma of the gallbladder, and points out that it is probable that an essentially superficial growth, that is to say a nonmalignant papilloma, may become cancerous. Wormer has recorded recovery from an adenocarcinoma in the gallbladder, around which were two small polypoid growths. Zenker is also of opinion that certain cases of papillomata or primary adenomata may be transformed into adenocarcinoma. Clearly this is not a peculiarity of nonmalignant growths of the biliary tract, for it is true of the majority of benign neoplasms, but there is no organ where it can be more easily recognized than in the gallbladder, simply on account of the slow evolution of the process, which allows us to discover microscopically the transitional point of transformation from benign to malignant.

WHY NOT THE TRUTH?

In writings on medical subjects, especially those dealing with sexual matters, we frequently come upon the idea, expressed directly or indirectly, that the matter in hand should not be openly revealed to the laity. This notion is a survival of the mysticism with which in time gone by the medicine man surrounded himself, and was, in turn, surrounded by his clientele. It savors of priestcraft, with which medicine has, in past ages, been most sadly mixed, and implies that the physician is some one above the common herd, that he is intrusted with secrets with which the ordinary man is not to be trusted, lest he be defiled in soul and body.

What is the physician that he should thus arrogate to himself the truths of physiology and anatomy, normal or abnormal? Before taking up the study of medicine he is made up of the same earth as are his fellows, he is ruled by the same instincts and swayed by the same passions. After his studies he is often much better in body and mind for the knowledge of the physical man and the experience of life in general which he has acquired. Without effort, without making any vows, he is, we can truthfully say, above the average in his conduct, notwithstanding his delicate relationship to those who come to consult him. Even in sexual matters he is not one whit worse than his fellows, notwithstanding there is no special supernatural power shaping his thoughts and guiding his footsteps. It is true that he has been privileged to lift more of the curtain of the temple of truth than many of his fellows, but he is none the worse for it, although there is no partial, physician-protecting goddess behind that

veil. After spending a few months in observing intimately and handling the human body in health and in disease, this ordinary young man or woman emerges from the portal of the medical school not a whit less refined, and not a whit more dangerous to society than his untutored fellows.

If the medical student is unsullied by intimate acquaintance with truth about the body, why must such truth be dealt out cautiously to others? The nonmedical student is no worse and no better than the medical student. He has the same instincts and desires. Moreover, he has the same kind of a body, with which he is ignorantly, if he cannot be wisely acquainted. In what way can any truth about himself make him the worse? It is the mysticism, which we foster by our cautiousness, that lends fuel to the fire of the passions and makes men the worse for their ignorance.

But young people! Who are young people? Are not medical students young people? But children! We must shield them from the truth! Fortunately children cannot be contaminated by truth presented in a truthful way. They can read, before puberty, the most erotic books without any effect whatever. There is nothing in their nature to respond to such things, and they skim such passages, being impressed only with what does appeal to them. After puberty? After puberty children are full grown, and demand and get the nearest approach to truth they can command. Shall we veil that truth, or disguise it, or tell only a part of it? Is truth fit for physicians, but not for others? Is there any reason why we should, in this present day, still masquerade in the hideous garb of the medicine man of the past?

CONSTIPATION IN SEDENTARY MEN.

Our prize discussion for this week on the treatment of constipation in sedentary men reflects the general interest in this important subject, both in the number of essays and the fact that they are evident results of common experience. It is perhaps fair to note that comparatively little emphasis seems to be laid on the matter of insufficient sleep and of nocturnal noise as affecting the fatigue factor of constipation in the nervous type of brain workers. It is often found that a tendency to intestinal stasis is met by attention to early sleep, and, in our cities, by moving to localities comparatively free from street noises and other night disturbances. In line with this is the part played by fresh air. Many a man who conscientiously pumps along a gymnasium running track is unconsciously harming himself to no slight degree by inhaling the rebreathed basement air or air almost kiln-dried by over efficient steam radiators. Constipation is

so often due to faulty oxygenation that emphasis should be laid, not so much on exercise, as upon exercise in the open air. We note also that abdominal massage is properly recommended to overcome the inertia of the intestinal wall, but it is the consensus of the authorities on massage that in order to produce the best results, manipulation of the large intestines should begin at the lower portion of the descending colon, proceed to the transverse colon, and finally to the ascending colon. In this manner the fecal masses in the lower bowel are aided first in their progress, thus leaving a clearer passage for the scybala in the transverse and ascending colon.

SUCCESSFUL TREATMENT OF ERYSIPELAS.

Helen Sexton, M. B., Ch. B., physician in chief of the Hôpital australien, Paris, writes to the *British Medical Journal* for February 5, of a man who had a large suppurating wound on the inner side of the arm, with some redness and swelling around the wound. The temperature rose next day to 104° and then to 105° F. The usual signs of erysipelas were present, the redness and swelling extending below the elbow. She ordered the arm to be painted every twelve hours with ichthyol and glycerin equal parts, and covered with oilsilk, and gave him a mixture containing large doses (two drams every four hours) of liquor hydrargyri perchloridi. In forty-eight hours the temperature was normal, and all the local symptoms of erysipelas had disappeared; the wound was then dressed with ordinary hypertonic saline solution. In another case, of a man sent from the trenches with both arms covered with boils, local treatment by ichthyol and glycerin had equally good results.

Liquor hydrargyri perchloridi, B. P., contains one sixteenth grain of mercury bichloride to the dram; Doctor Sexton's doses amounted, therefore, to one eighth grain of corrosive sublimate every four hours.

News Items.

The Harvey Lectures.—The next lecture in the course will be given Saturday evening, March 11th, by Professor Henry A. Christian, of Harvard University, on Some Phases of the Nephritis Problem.

Care of the Newborn Infant.—On Tuesday evening, March 28th, there will be a joint meeting of the Sections in Pediatrics and Obstetrics of the New York Academy of Medicine. The program will consist of a symposium on the care of the newborn infant.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, March 6th, Academy of Surgery, Philadelphia Clinical Association, Blockley Medical Society; Tuesday, March 7th, Wills Hospital Ophthalmic Society, Laryngological Society, Medical Examiners' Association; Wednesday, March 8th, County Medical Society; Thursday, March 9th, Polyclinic Ophthalmic Society, Pathological Society; Friday, March 10th, Northern Medical Association, Psychiatric Society.

Tuberculosis Hospital in Buffalo.—The city of Buffalo has appropriated \$600,000 for the establishment of tuberculosis pavilions for advanced cases of tuberculosis in connection with the new Municipal General Hospital. About three hundred beds will be provided.

Philadelphia Pediatric Society.—Dr. John F. Sinclair was elected president of this society, at the annual meeting held in January, and other officers were elected as follows: Dr. William Duffield Robinson, vice-president; Dr. A. Graeme Mitchell, secretary-recorder; Dr. Frederick Fraley, treasurer.

The American Institute of Criminal Law and Criminology will meet in Philadelphia during the third week in March. On Wednesday evening, March 15th, the meeting will be held at the City Club, and the program will include an address by Dr. Alfred Gordon on Mental Deficiency and its Medicolegal Aspects.

The Hospital for Deformities and Joint Diseases held a regular clinical meeting on Tuesday evening, February 29th. The paper of the evening was read by Dr. Samuel A. Jahss, his subject being Differential Diagnosis of Knee Joint Conditions with Description of the Sayre, Frauenthal, and Other Knee Splints.

Sending Specimens to the Diagnosis Laboratory.—The attention of physicians is called to the fact that many specimens of sputum are sent to the Diagnosis Laboratory of the Department of Health improperly corked and with the sputum leaking out. Blood sent in for Wassermann tests, is often received with blank labels. Inasmuch as the slips are liable to become detached, or mixed with others, the identity of such specimens is lost.

The Bronx County Medical Society held a special meeting under the auspices of the Bronx County Pharmaceutical Association, Wednesday evening, March 1st. The program included the following papers: Cooperation Between the Medical and Pharmaceutical Professions, by M. Soskin, Ph. G.; Health Insurance from the Standpoint of the Physician and the Druggist, by Dr. J. H. Leiner. Among those who took part in the discussion were Dr. S. Wachsmann, Dr. N. B. Van Etten, Dr. W. G. Eynon, and others. Dr. Herman T. Radin is secretary of the society.

Health Insurance Bill Disapproved by the County Medical Society.—At a meeting of the Medical Society of the County of New York, held at the New York Academy of Medicine on Monday evening, February 28th, Dr. Samuel J. Kopetzky, chairman of the committee on legislation, presented a report on the bill introduced in the State Legislature by Senator Mills "to establish a system of insurance to provide benefits for employees in cases of death, sickness, and accident not covered by the workmen's compensation act." The report, which expressed disapproval of the bill, was unanimously adopted by the society after a brief discussion.

American Medico-pharmaceutical League.—Preparations are being made for the nineteenth annual meeting of this organization of physicians and pharmacists, which will be held at the Hotel Astor, New York, on May 22d. Seventeen papers have been promised, and it is expected that the meeting will be of unusual interest. At a regular monthly meeting of the executive committee of the league, held on February 28th, seventy-four new members were elected, and the secretary reported that during the past thirty-four months a total of 866 new members had joined. The next meeting of the committee will be held on March 27th at 451 Forty-seventh Street, Brooklyn. Dr. Samuel F. Brothers, 60 New Jersey Avenue, Brooklyn, is corresponding secretary.

Tristate Medical Society of Virginia and the Carolinas.—At the eighteenth annual meeting of this society, held in Richmond, Va., February 16th, 17th, and 18th, Dr. J. Allison Hodges, of Richmond, was elected president, and other officers were elected as follows: Dr. C. O. Laughinghouse, of Greenville, vice-president for North Carolina; Dr. H. E. McConnell, of Chester, vice-president for South Carolina; Dr. W. F. Drewry, of Petersburg, vice-president for Virginia. New members of the executive committee were: Dr. J. N. Upshur, of Richmond; Dr. J. Howell Way, of Waynesville, N. C., and Dr. J. H. Taylor, of Columbia, S. C. Dr. John R. Gildersleeve, of Richmond, was elected an honorary Fellow of the society. Dr. Ralph E. Hughes, of Laurens, S. C., was reelected secretary and treasurer. Next year's meeting will be held in Durham, N. C.

New Buildings at the Inebriety Farm.—The Board of Estimate and Apportionment of New York has appropriated \$100,000 for the construction and equipment of buildings, including sewage and water system, for the Hospital and Industrial Colony for Inebriates at Warwick, N. Y. Before these funds are finally made available, however, the Board of Inebriety must submit the general scheme and plan of development of the hospital, as well as the name of any architect engineer, or expert employed in the work and his fees, for the approval of the Board of Estimate and Apportionment. In support of the Board of Inebriety's request for this appropriation, the Committee on Hospitals prepared and submitted to the Board of Estimate and Apportionment an extended memorandum setting forth the imperative need of increasing the facilities at the Hospital and Industrial Colony before the purpose for which the hospital was established could be fully realized.

Gifts and Bequests to Hospitals.—By the will of the late Mrs. Julia H. Copeland, of Middleboro, Mass., the Boston Floating Hospital will receive \$5,000.

The Clarence Barker Memorial Hospital, of Asheville, N. C., will receive \$5,000 under the terms of the will of the late Miss Frances M. Wright, to be used either for the establishment of a maternity ward or to endow a free bed, as is deemed advisable by the board of control.

Among the public bequests contained in the will of the late Thomas A. McElmell, were \$5,000 each to St. Agnes and St. Joseph's Hospitals and a contingent bequest of \$50,000 and upward to St. Mary's, St. Joseph's, and St. Agnes Hospitals, Philadelphia.

The New York Eye and Ear Infirmary will receive \$10,000 under the terms of the will of Miss Serena Rhineland.

The will of the late Mary E. Flaherty includes the following bequests to institutions in Atlantic City, N. J.: To the Maternity Hospital, \$2,000; to St. Agnes's, St. Joseph's, and St. Mary's Hospitals, \$5,000 each.

A Harvard Medical Corps.—If plans which have been completed at the Harvard Medical School are carried out, the university regiment will have a large surgical unit drilling with the companies during this semester. More than one hundred medical students have already enrolled in the organization, which is backed by Captain Cordier, of the Harvard Regiment, and Major General Wood. Major Hall, U. S. A., retired, will take charge of the division after its organization, but until that time the men will be under the supervision of Captain Cordier. The attendance of every member will also be required at the lectures to be given on Friday afternoons. The subjects will deal with recruiting, field and camp sanitation, medical administration, sanitary tactics and first aid, and discipline. A second course of lectures will probably be given in July and other branches of the work will be taken up after October 1st. If this organization proves to be a success an ambulance corps will very likely be formed this year. All men who join the medical unit will be required to attend a summer military camp, and plans are now being made for a sanitary division at Plattsburg this summer.

Sanitary Condition of Bottled Waters.—The Bureau of Chemistry of the United States Department of Agriculture for several years has been investigating the sanitary conditions in the production and distribution of bottled mineral and table waters, which are offered for sale in interstate commerce and therefore subject to the Food and Drugs Act. It is recognized that the sale of bottled waters is dependent largely upon public belief in the purity of the product. The bureau has recently conferred with a large number of sanitary experts and bacteriologists regarding a desirable standard for judging the sanitary character of bottled waters. As a result of the investigational work and the above mentioned conferences, the bureau believes that the tolerances established by the Public Health Service of the Treasury Department for waters served on interstate carriers is none too rigid for application to bottled waters sold in interstate commerce or imported from foreign countries. The Treasury Department standards are as follows:

The total number of bacteria developing on standard agar plates, incubated twenty-four hours at 37° C., shall not exceed 100 per c. c.; provided, that the estimate shall be made from not less than two plates, showing such numbers and distribution of colonies as to indicate that the estimate is reliable and accurate.

Not more than one out of five to c. c. portions of any sample examined shall show (by the method of the Public Health Service) the presence of organisms of the bacillus coli group.

Medical Alumni of the University of Buffalo.—The Alumni Association of the Medical Department of the University of Buffalo has issued a *Medical Alumni Catalogue*, which contains a list of names of students graduated since the university was founded in 1846, together with the graduates of the Niagara University from its foundation in 1886 until 1898, when it became amalgamated with the University of Buffalo. In addition, the catalogue contains the revised constitution and bylaws of the association, a list of the association's officers, as well as the district branch alumni officers, and an alphabetical and geographical index.

Since its foundation, the university graduated 2,737 physicians, while Niagara University graduated 137, making a total of 2,874 graduates, 847 of whom have died and 207 cannot be located, making a total of 1,054 dead and unknown. The association's active membership is 1,820. The geographical index shows the University of Buffalo medical graduates in all parts of the country, Canada, and abroad. Of the 800 physicians in Buffalo nearly 600 are University of Buffalo men. In Rochester there are 115 Buffalo graduates. In Batavia, Lockport, Niagara Falls, Olean, Jamestown—in fact, in western New York—the Buffalo graduates predominate. In New York city and vicinity there are upward of 70 Buffalo graduates. Chicago has about 20, and Detroit about 10.

Health of New York Last Week.—Figures compiled by the department of health show that during the week just closed 1,628 persons died in the city of New York, compared with 1,518 during the corresponding week of 1915, the respective rates being 15.20 and 14.52 per 1,000 population. The difference is equivalent to an increase of seventy-two deaths. By an odd coincidence the number of deaths is exactly the same during the past week as during the previous week. Fewer persons died of contagious diseases last week than during the corresponding week of last year, or during the previous week of this year. The deaths, however, from influenza and the respiratory diseases, were slightly more numerous during the past week than during the week ending February 27, 1915. Four hundred and seven deaths were reported as due to organic heart disease and nephritis compared with 356 deaths reported as having been due to the same causes during the corresponding week of last year. Eleven more deaths were reported as due to pulmonary tuberculosis than during the week ending February 27th of last year; this increase is due solely to the larger population of this year. Considered from the viewpoint of age distribution, the deaths of children under one year and under five years of age, were fewer than during the corresponding period of last year, while the deaths of the higher age groupings were more numerous. During the first nine weeks of 1916, the death rate was 16.03 compared with 14.77 for the corresponding period of 1915.

Personal.—Dr. Charles F. Mitchell, former secretary of the Philadelphia Academy of Surgery, is now in Paris on duty at the American Ambulance Hospital.

Dr. C. Winfield Perkins, of 234 Central Park West, New York, announces that his röntgenological laboratory is at the disposal of the medical and dental profession for radiographic and fluoroscopic work of every character. Cases are taken for research work.

Dr. John C. Hemminger, of Baltimore, professor of physiology and clinical medicine at the University of Maryland, has been elected to membership in the Royal Society of Arts of England. King George is honorary president of this society and the Duke of Connaught acting president.

Dr. Charles S. Sanborn, who was formerly superintendent of the Cincinnati Hospital, has severed his connection with Greenpoint Hospital, Brooklyn.

Dr. V. L. Kellogg, professor of entomology at Stanford University, who has been serving as a director of the Belgium Relief Commission in Brussels during the past eight months, has returned home, and his position in Belgium has been filled by Dr. Frank Angell, professor of psychology in the same institution.

Dr. William J. Ryan has been appointed an assistant ophthalmologist to the Philadelphia General Hospital.

Dr. George M. Coates, of Philadelphia, has been appointed an assistant editor to *Progressive Medicine*, having charge of the department of diseases of the nose, throat, and ear.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

PITUITARY PREPARATIONS AND THEIR THERAPEUTIC USE.

By LOUIS T. DE M. SAJOURS, B. S., M. D.,

Associate Professor of Experimental Therapeutics, Temple University, Philadelphia.

The physiological and therapeutic effects of pituitary extracts are evidently due to one or more contained active substances, but the nature of these, notwithstanding numerous experimental researches, has not yet been clearly determined. Experimental work has demonstrated that extracts of the anterior lobe, in spite of Herring's view that this lobe produces an internal secretion, exert little or no action either upon the circulatory system or any other of the systems or organs commonly investigated in pharmacology. Considerable evidence attests the fact, however, that a blood pressure raising principle exists in the pars intermedia. Herring, indeed, believes that the supposed pressor principle of the pituitary is elaborated in this part of the organ and merely passes into the posterior or nervous lobe, to which it imparts a pressure raising property the posterior lobe otherwise would not possess. Nevertheless the chief pressor effects from pituitary administration are obtained with the posterior lobe, and it is chiefly with respect to this lobe that attempts have been made to isolate a specific active agent.

Houssay, in 1911, isolated from the posterior pituitary lobe a crystalline substance which he found to be diuretic, mydriatic, and an excitant to contractions of the smooth muscle of the intestine, uterus, bladder, and other hollow organs. Fühner soon after isolated from the pituitary, by precipitation of liquid extracts with phosphotungstic acid, eight different substances, four of which proved physiologically active and now form the basis of the preparation, known as hypophysin, which is asserted to be a one in 1,000 solution of the sulphates of these four substances. These principles are manifestly basic, like epinephrine and the alkaloids, and are often regarded as amines allied to histamine and tyramine, two of the active substances in ergot. Although some, a number of years ago, had surmised that epinephrine itself might be present in the pituitary, this view was long held untenable owing to the differences in action between the two drugs and the apparent absence of the color reactions for epinephrine in the pituitary. Recently, however, Watanabe and Crawford have reported investigations which lead them to ascribe the differences in action between pituitary and epinephrine, not to the absence of epinephrine in pituitary extracts, but to the presence, in addition to epinephrine, of two or more active compounds in these extracts, along with colloids, etc., which modify, and in some respects even annul the action of the contained epinephrine. They found, moreover, that pituitary extracts prepared in certain ways yield color reactions similar to those

given by suprarenal extracts, and believe that these reactions suggest the presence of epinephrine or an epinephrine like compound in pituitary extract. This would tend to confirm the opinion of C. E. de M. Sajours, who, in 1903, attributed the effects of extracts of the posterior pituitary lobe to the presence of adrenal cells therein.

The pituitary preparations available for therapeutic purposes to the practitioner include not only a series of liquid extracts from the posterior pituitary of sheep, cattle, or horses, usually put up in sterile form in ampoules, but also solid extracts of the whole pituitary and of each of its constituent lobes, as well as the solution of active principles termed hypophysin by Fühner. In the remainder of this brief paper it is proposed to refer to some of the uses of pituitary preparations other than those belonging to the domains of obstetrics and gynecology, discussion of which, as well as of certain other uses not herein taken up, is reserved for future contributions.

Wiggers, several years ago, found, in experimental work, that an extract of the posterior lobe of the pituitary diminished blood pressure in the pulmonary artery and tended to arrest pulmonary hemorrhage induced in animals. Rist and others, though believing Wiggers's explanation as to pulmonary blood pressure insufficient to account for the effects observed clinically, employed pituitary extracts in a number of cases of tuberculous hemoptysis, with favorable results. In the majority of instances, hemorrhage ceased within a short time after an intramuscular injection of 0.5 to one c. c. of one of the liquid pituitary preparations on the market. Although recurrence of hemorrhage on the next day or later sometimes took place, renewed use of the drug again brought about its cessation, in most cases permanently. Among the most recent reports of favorable results in hemoptysis is that of Konikow, of Boston, who records a case in which three hemorrhages occurring at intervals of a week and ten days, respectively, were promptly controlled by one c. c. injections of a pituitary liquid. Instances of favorable results in cases of hemoptysis due to cancer and to infarction of the lung have also been reported.

According to some the effect of pituitary extract in hemoptysis is due in part to acceleration of blood coagulation. This agrees with the observations of Kahn and Gordon, who found the coagulation time markedly reduced by hypodermic administration of pituitary extract. In their cases the injection was made fifteen or more minutes before the induction of anesthesia for operations on the nose and throat, chiefly in children. The coagulation period, estimated in some instances with the Brodie and Russell coagulometer and in others by the "drop on the slide" method, showed a reduction by one third to one half, or even more. The dose given to children was twelve minims and to adults fifteen minims.

Hemorrhage in operations, especially those on the turbinates, was markedly reduced by the pituitary extract. In spite of these apparently constant local results, the concomitant effects on general blood pressure were variable, the pressure being increased in the majority of patients, but decreased in a large minority. Likewise of interest in this connection, though less convincing because based only on a single case, is the observation of Lukins that pituitary extract may act favorably on hemorrhage in typhoid fever, even where the usual measures have failed to revive; in his patient, however, the effects of each of two successive injections lasted but half an hour, and the effects of a third injection were much less striking.

In spite of the known tendency of pituitary extract to cause contraction of involuntary muscle tissue, the drug has been reported by several observers to be of marked value in bronchial asthma. Although Borchardt seems to have found subcutaneous injections of one c. c. of the liquid extract efficient in checking acute paroxysms—the desired effect being, however, obtained more slowly than with epinephrine—the drug appears to be of greatest value when used continuously in these cases. Crookshank gave to twenty severely asthmatic adults two grain tablets of pituitary substance, to be taken morning and evening, with marked reduction in the frequency and severity of the paroxysms and usually a considerable improvement in general health. Warfel gave six patients suffering from bronchial asthma two and a half grain tablets of desiccated *anterior* pituitary substance, likewise with good results, the patients always being relieved of dyspnea after a short period of treatment. Dryness of the mouth and throat was complained of as a by effect in this series of cases. The benefit from pituitary extract in asthma may be due in part to improved intestinal action and to diuresis, but additional, more obscure favorable actions are doubtless also exerted.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Ninth Communication.

COCAINE.

Cocaine is a drug which, like many other cerebral depressants, has brought to humanity both a curse and a blessing. Used under the control of a discreet administrator, it has often supplied grateful relief to the suffering and distraught patient; yet, when seized upon by the weak willed to bring ease of conscience and mind, it has caused also a frightful deterioration of body and soul.

The chief use of cocaine and allied drugs is to produce local anesthesia. This result it effects by blocking more or less completely the transference along nerve paths of all the sensory impulses felt as pain. This desirable end may be obtained by applying the drug either at or near the nerve terminations or at any convenient point along the course of the nerve which supplies the area needing analgesia. This latter method, which for many years has been used in spinal anesthesia, has re-

cently been adopted advantageously for operative procedures about the genitourinary outlet. Circumcision is now more satisfactorily performed under local anesthesia, by injecting a one per cent. solution of a cocaine product (preferably one of the less toxic preparations) into the dorsal area of the root of the penis so as to block nerve impulses from the preputial area. A similar method for plastic and other operations about the introitus consists in blocking sensations up the perineal nerves by injecting the anesthetizing solution just mesial to the anteroinferior border of the ischial tuberosities. Some obstetricians are using similar injections in order to render less painful the passage of the head through the introitus. A noteworthy advantage of these blocking methods of anesthesia is the complete absence of the postoperative edema so common a sequence of cocaine infiltration at the operative site.

Cocaine produces on the central nervous system a brief, primary descending stimulation, rapidly succeeded, often accompanied, by a marked descending depression. The pathophysics of the drug have not been determined, but that there is some profound disturbance of normal neurometabolism is manifested by the distressing mental disorganization induced by the cocaine habit. The stimulant action is first manifested by excitement, restlessness, and garrulity. Then, as the secondary depression smotheres the higher and less stable centres of evolutionary development, those attributes of adaptation to the demands of civilization, the lower and more primitive impulses, now released from normal control and temporarily stimulated by the drug, drive the poor victim to inordinate exercise of that most ancient of natural impulses which governs the continuation of the species. The demands of the ego are imperative and compress into minutes the substance of hours. Then the medulla undergoes a similar irritation, upsetting the coordination of the vital centres. All this is soon followed by an equally profound reaction, the whole system falling far below normal; and many days may elapse before a healthy condition is reestablished. This depression the habitué seeks to offset by another dose, resulting in such an accumulation of depression that soon the accustomed dose barely suffices to bring the sufferer up to the average euphoria. The whole system is disordered; there are digestive disturbances, emaciation, sleeplessness, tremors, hallucinations, disturbances of sensation and motion, delirium, and insanity; a somatic degeneration following a fundamental psychopathy. How much better if early segregation had prevented the presumptive sequence, while turning into channels of utility what little constructive genius such unfortunate persons may possess.

Emetine Hydrochloride in Amebic Abscess of the Liver.—F. Paraiso Cavalcanti, in *Annaes Paulistas de Medicina e Cirurgia* for November, 1915, after successful trial, recommends the hypodermic administration of emetine hydrochloride, in the deltoid or gluteal region in doses up to 0.08 gram in twenty-four hours repeated daily until symptoms are relieved.

Treatment of Intracranial Hemorrhage.—

Lucian H. Landry, in the *Southern Medical Journal*, February, says that when there is compression of the brain from any cause, the cause must be removed; if from depressed bone, the bone must be elevated; if from epidural hemorrhage, the artery must be tied and the clots evacuated; if from subdural hemorrhage, decompression and drainage is indicated. Spinal puncture is not necessary to make a positive diagnosis and should be discouraged, for, if the hemorrhage is very profuse and active, there is danger of the medulla and posterior lips of the cerebellum being forced or wedged into the foramen magnum by intracranial pressure when the support of the cerebrospinal fluid is removed. In any serious cranial injury in which unconsciousness has been present from the first, subdural bleeding is taking place. Decompression should be immediate in all doubtful cases; it adds no more risk to life and often changes a fatal to a happy termination.

Treatment of Ophthalmia neonatorum.—Treat-

ment, according to Lee Masten Francis (*Buffalo Medical Journal*, February), resolves itself roughly into mechanical and germicidal. Mechanical treatment consists of flushing out the conjunctival sac to remove the pus, and is imperative. The irrigations must be frequent and thorough enough to keep the sac free from secretion, ranging from every fifteen minutes to every half hour or hour as the case may demand. Of almost secondary importance is the use of some germicidal application other than the irrigation. Silver nitrate in solutions ranging from 0.5 to four per cent. in strength, protargol, nargol, collargium, silver acetate, sophol, zinc chloride, alphozone, silver iodide, and a host of others in varying strengths and in varying frequency, all have enthusiastic supporters. Silver nitrate is safe and well seasoned, and with some of the newer silver salts as adjuncts the physician is well armed. When argyrol is not effective some other salt may be tried. The cornea must be watched and the appearance of the slightest grayish haze or abrasion is a danger flag of most vivid hue. Then cold is contraindicated, heat is most desired, and the most delicate and intelligent management is needed. This is why it is better that cases of this disease should be under the care of an ophthalmologist. Careful nursing is as important as, if not more so than medication. Under no circumstances must the cornea be touched by dropper, retractor, or sponge. Wet cotton should be used to wipe away secretion, as shreds of dry cotton may abrade the cornea. While these local measures are important the general health of the child must be attended to, for corneal resistance bears a direct relation to the vigor of the child. There have been instances where the frequent treatments that seemed so necessary have disturbed the little patient's rest, so that the general health has suffered and, along with the lowered vitality, the corneas have melted away. Important points to be remembered are that not all ophthalmias of the newborn are gonorrheal; thirty per cent. are due to other organisms. In cases of unilateral infection protect the sound eye. Bacteriological examinations are most important and smears should be taken early. Early diagnosis is

imperative, and all cases of conjunctivitis in the newborn must be regarded with suspicion until proved to be benign. Infection does not always occur during birth, but frequently comes from extravaginal sources. Careful and intelligent nursing is as important as medical advice. Because of the cornea, gonorrheal ophthalmia should be under the management of an ophthalmologist.

Treatment of Contagious Syphilis.—The

routine treatment employed by William C. Gill (*Cleveland Med. Jour.*, December, 1915) is the injection into the muscles daily or every other day of one quarter to one half grain of mercury biniodide and the administration of two to four or more intravenous injections of salvarsan at intervals of one week. The dose of salvarsan averaged 0.4 gram, larger doses having been found to give more or less severe reaction. The reactions following the salvarsan injections have been greatly diminished by allowing the patient only a light supper the evening before and light meals on the day of injection. If there was nausea, no food was given on the day of injection. The evening before, a cathartic is to be given. The patient is kept in bed on the day of administration of salvarsan. The mouth receives scrupulous care, a saturated solution of potassium chlorate is ordered as a routine mouth wash, and mucous patches are touched with a ten per cent. solution of silver nitrate. It is believed that by this intensive treatment of early syphilis the later manifestations can be reduced or largely prevented.

Treatment of Dysmenorrhea.—F. B. Block, in

the *American Journal of Obstetrics* for December, 1915, divides cases of dysmenorrhea, for purposes of therapeutics, into three groups, the obstructive, the secretory or ovarian, and the vagotonic. In the first group, characterized by premenstrual pain for one or two days, with scanty flow during the first day of menstruation, followed by a more abundant flow and, usually, disappearance of the cramps, relief is frequently obtained by instrumental dilatation of the cervix, followed by the insertion of a stem pessary, or by any other method indicated for removing the obstruction. In ovarian or secretory dysmenorrhea the patient suffers from premenstrual headache, nausea, and cramplike pains in both ovarian regions at the beginning of the period, and occasionally over the uterus after the flow has begun; premenstrual pain is absent. In this form, associated with unduly congested ovaries and, secondarily, increased swelling of the uterine mucosa, causing uterine colic, treatment should consist in reducing the secretion of the ovary or bringing about its neutralization when it reaches the blood stream. In inhibiting ovarian hyperactivity, Block has had success with a modified Fliess intranasal treatment, substituting for trichloroacetic acid or cocaine the use of a one in 1,000 epinephrine hydrochloride solution, which is kept in contact with the intranasal genital spots until they are thoroughly blanched—usually for about three minutes. To neutralize ovarian secretion in the blood he would favor hypodermic injection of 0.0001 to 0.0005 gram of epinephrine hypodermically, as advised by Klein.

The third, or vagotonic group of dysmenorrhea cases is characterized by colicky pains in the central part of the hypogastric region, sometimes radiating to the sacrum, sometimes beginning in the back and radiating forward. The cramps begin a day or two before the period and continue until the flow is well established—usually to the second or third day. The pain is usually severe and the patient is more or less of a mental and physical wreck while it lasts, though examination shows the pelvic organs to be anatomically normal. In this variety of case Lynch has had satisfactory results from the administration of 1/100 grain of atropine sulphate two or three times a day for two days before the expected period. The drug is continued after the flow appears until there is relief from symptoms. Attention is also paid to the lower intestinal tract and to general personal hygiene.

Treatment and Prevention of Pellagra.—Extensive, painstaking, and carefully controlled observations, made in three institutions harboring many pellagrins and showing the endemic development of new cases, were carried out by Joseph Goldberger (*Journal A. M. A.*, February 12, 1916). These studies showed that a diet containing a liberal amount of fresh animal and leguminous protein foods, without other alteration in the care of the patients, successfully prevented the annual recurrence of the disease in practically 100 per cent. of the cases. Further, no inmates fed on this type of diet acquired pellagra, although a considerable number would have done so on the more restricted regular diet of the institutions, as has been shown by controls and previous records. The role of diet in the production or prevention of pellagra was further proved by a study on eleven convicts, who were fed on a diet from which fresh animal and leguminous proteins were largely excluded. Six of these patients showed definite symptoms of the disease after several months of such diet. The studies seem to show that pellagra is a "deficiency disease" and is controllable by proper diet.

Treatment of Drug Addiction.—Comparisons of several methods of treatment were made in a series of 147 carefully controlled cases of addiction by Joseph McIver and George E. Price (*Journal A. M. A.*, February 12, 1916). It was found that the original Lambert method was preferable to the customary gradual withdrawal of the drug; that the Lambert method without its free purgation was extremely unsatisfactory; that the use of belladonna was the least important part of the Lambert treatment, other sedatives such as aspirin, and the coaltar products giving equally good results with less tendency to delirium; that the adoption of a fixed dose for all patients was a very undesirable feature. The most satisfactory plan proved to be the gradual withdrawal of the drug, combined with free purgation and the use of sedatives of the coaltar group, and of stimulants as required for the individual patient. The larger the quantity of the drug used, the greater was the need for gradual withdrawal and the longer the time required for treatment. In the vast majority of the cases no form of treatment

gave permanent results, the patients returning to the use of their drug more or less promptly after discharge. In no case should the patient be discharged in less than three months and many should be kept under medical treatment for a year or more. Upon discharge the patient should seek a complete change of scene and of occupation and associates.

Treatment of Syphilis.—This being the age of preventive medicine, prophylaxis can be applied to the treatment of syphilis in three ways, according to C. Morton Smith (*Boston Med. and Surg. Jour.*, February 10, 1916): 1. By training young people to lead clean, proper lives. Fear of contagion may act as a restraint to a certain degree, but personal optimism or overconfidence is responsible for a greater number of syphilitic infections than is ignorance of the disease. Most people know that syphilis exists, but the friends they have selected are always considered above suspicion. 2. By prompt, intensive, intelligent treatment of every infected patient, begun during the primary stage if possible, and continued until the patient is released by a clinical opinion supplemented by serological findings. 3. By the enforcement of our present health laws, *a*, requiring cities and towns to care for all indigent persons afflicted with syphilis; *b*, allowing no hospital supported in whole or part by taxation to discriminate against the care of syphilitic patients, unless a hospital is provided therefor; *c*, restraining as a menace to the community, infectious, irresponsible patients who consider neither their own welfare nor the safety of their associates.

Treatment of Digestive Disturbances in Infancy.—Restricting himself to the treatment of simple indigestion John Lovett Morse (*New York State Journal of Medicine*, February, 1916) says that where the disturbance is due to an excess of food or of a single food constituent, the first step should be the restriction of the offending component or of the whole dietary. In the case of a single food component the best results will be secured by elimination of this for a time, or its reduction to a level lower than that suitable for a normal child of the corresponding age. When the symptoms have subsided the food can be rapidly restored to the limit of tolerance. Where casein of cow's milk is the offender it is better to prevent the formation of large curds than to reduce the amount. This can be accomplished by boiling the milk, by the addition of alkalis or sodium citrate, by using precipitated casein or buttermilk, or by pancreatization. Drugs are of little or no value in simple indigestion, except castor oil or calomel as an initial purge. In severe cases it is well to wash out the bowel at the start. Where the disturbance is chronic the initial cathartic is better omitted. Where there is vomiting all food should be withheld for a period and the stomach washed with water or water containing sodium bicarbonate in the proportion of a dram to the pint. Inunctions of oils as foods in chronic disturbances are useless as there is very little absorption through the skin. Where there is fermentation the intestinal tract should be cleaned out at once and all food denied for twelve to twenty-four hours, allowing plen-

ty of water only. If, however, the fermentation is of the proteolytic type starvation must never be prolonged for over twenty-four hours. In other types the starvation may be continued longer. No effective intestinal antiseptics can be safely secured by drugs, and bowel irrigation is of little avail as the small intestine is not reached by it. The administration of lactic acid bacilli is often of great value in beneficially altering the intestinal flora, and the offending organisms can also be reduced by restriction of the food which they chiefly attack. Hyperpyrexia should be treated by cold externally, never by antipyretics, and restlessness can be controlled by doses of five to ten grains of sodium bromide, with or without one or two grains of chloral hydrate. Strychnine is the best of the general stimulants.

The Simpson Light in Venereal Lesions.—E. G. French reports most satisfactory experiences with this new light in the promotion of healing in various types of syphilitic lesions (*Lancet*, January 29, 1916). Brief exposures, usually for two minutes, varying between the open light and the focal rays should be given three times weekly, care being taken at the inception of treatment not to overexpose the tissues, since a severe reaction may delay healing. Ordinary general antisymphilitic measures should be employed in conjunction with the light, except that no other form of local treatment should be given. The wound should be lightly covered with gauze over a wire frame in the intervals between exposures. Many refractory cases were cured promptly with the aid of the light, and the most characteristic feature of its use, other than the prompt healing, was the absence of marked scarring.

Decapitation of the Astragalus for Equine Deformity.—De Fortunet, in *Presse médicale* for January 6, 1916, recommends this procedure, consisting of excision of the head of the astragalus, in cases of equine deformity in which, as a result of local suppurative, the bones forming the tibiotarsal joint are ankylosed, tenotomy of the tendo Achillis thus becoming insufficient to relieve the condition. Under these circumstances the entire astragalus cannot be removed. De Fortunet, in two cases, therefore removed that portion of the astragalus which is not concerned in the joint, thus permitting restoration of the anterior portion of the foot to a position in which it forms a right angle with the leg. Both patients were able to discard their crutches in a month or six weeks and walk with the plantar surface in contact with the ground with the help of a cane alone.

Treatment of Syphilis of Central Nervous System.—According to J. Chandler Walker (*Boston Med. and Surg. Jour.*, February 10, 1916), cases of syphilis of the central nervous system with only a positive blood test, react well to salvarsan; those with a positive blood and spinal fluid test may react well to salvarsan alone, but they do much better when intraspinal serum is used in conjunction with salvarsan, and some patients who do not react to salvarsan alone, do react well to the combined method. We may get improvement in general paresis from the combined treatment. Cases of syphilitic meningitis may clear up with salvarsan alone, but

the combined treatment is the quickest. Cases of central nervous system syphilis with negative blood and positive spinal fluid findings, react readily to salvarsanized serum intraspinally alone, even when salvarsan has failed.

The Soy Bean in Infant Feeding.—John F. Sinclair (*New York State Journal of Medicine*, February, 1916) has used this food with much success to replace barley water, tea, and other fluids in gastrointestinal disorders of infancy, largely on account of its high protein and fat content. A gruel containing one ounce of the bean to the quart of water was usually employed, either as a food or as a diluent of other foods. A large proportion of the cases were much improved by this method of treatment, and soy bean flour also proved valuable when mixed with cereals, in broths, and when condensed milk was being taken.

Lumbar Puncture in Traumatic Submeningeal Hemorrhage.—Two severe cases of submeningeal hemorrhage of the cord are reported by Baron Tibor v. Podmaniczky (*Berl. klin. Wschr.*, August 30, 1915), in which the resort to lumbar puncture not only led to the correct diagnosis, but caused a prompt and permanent recovery after other forms of treatment had failed after weeks of trial. In one case several repeated punctures were required, in the other only a single tapping was needed. In both hydrotherapy and massage with active and passive movements were used to aid in the full recovery of muscular powers.

Wire Nails in Joint Fractures.—Ernest F. Robinson, in the *Journal of the Missouri State Medical Association* for February, 1916, advocates ordinary wire nails to retain the fragments in fractures in and around joints. Nails are preferred to the Lane plate because it is difficult to get a level surface for the application of a plate and the screws are liable to loosen in the soft, spongy fragments, while bone pegs, transplants, and inlays are never firm or secure in the spongy bone. The nails may be withdrawn in from five to six weeks, especially in children, to prevent interference with bone growth, though in adults it is not absolutely necessary to remove them.

Paraffin Dressings and Drains.—A. D. Soresi, in *Gazzetta degli ospedali e delle cliniche* for December 26, 1915, urges the widespread use of paraffined gauze, both for dressings and drainage of wounds and ulcers. The drainage strips immersed in paraffin are absolutely nonabsorbent, and in addition to their perfect drainage qualities do not need to be changed daily, but may remain in place for days and then come away with ease and without pain, as nothing can adhere to them. This method renders painless the dressing of even the most extensive wound, and since its introduction into the Italian army, wounded men no longer try to avoid dressings, but come voluntarily and the healing period has been greatly shortened. For dressing ulcers, the gauze after immersion in the melted paraffin is drained of the excess, and after drying is cut to the size and shape of the ulcer. For drainage, the gauze treated in the same way is used either in strips or rolled into tubular shape.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

September 6, 1915.

The Influence of Inoculation on Typhoid Fever, by Goldscheider and K. Kroner.—The authors came to the following conclusions: The duration of the febrile period was frequently shortened. A fastigium of the fever period was absent twice as frequently in the inoculated as in uninoculated patients. When a fastigium was evident among the inoculated, it was of shorter duration than in normal subjects, and this shortening of the fastigium was more frequent after two inoculations than after three. On the average the maximum reached by the temperature during the fastigium was lower among the inoculated than among the uninoculated. The period of wide temperature fluctuations was seldom present among the inoculated but throughout there was a marked tendency to a remittent febrile reaction. The general form of the fever curve among the inoculated was that of mild typhoid and in many cases the curve was so altered, lowered, or shortened as not to be approached by the curves from uninoculated cases.

Influence of Diseases on Growth and Nutrition of School Children, by Thiele.—Parallel observations on the height and weight of normal and diseased school children were made to determine the influence, if any, of disease on these two growth factors. It was found that anemia had little influence on either factor, although there was some slight reduction in height observed from this affection among girls. On the other hand, the presence of tuberculosis exerted a marked reduction in the average weights and heights for both boys and girls. This effect was pronounced for boys throughout the entire elementary school course, while among the girls it lasted only to the middle of the school period, after which there was considerable gain, but not to normal. This difference was believed to be due to the influence of puberty, which occurs earlier in girls than in boys.

MEDIZINISCHE KLINIK.

January 9, 1916.

The Danger of Poisoning from Lead Shot, by L. Lewin.—Metallic lead lying in the tissues can be dissolved in several ways: 1. By conversion into the hydroxide through the action of moisture and tissue oxygen. This can then be dissolved through the aid of the carbonates. 2. Through their salt content the tissue fluids may attack the lead and convert it into the chloride which is fairly soluble. 3. Fats, lipoids, and pus dissolve appreciable amounts of lead. 4. The actions of living cells may in some unknown way aid in the solution of the lead. That poisoning by lead does actually result from the retention in the tissues of shot or lead fragments is proved by the author by many citations of cases. The intoxication may be severe, but is more often of a chronic nature and of insidious development. In suspected cases it is often possible to find traces of lead in the urine, and x ray photographs not infrequently show the passage of lead into the tissues

for some distance about the imbedded fragment. In view of the fact that chronic lead poisoning does occur from lead absorption from metallic fragments imbedded in the tissues, contrary to the general belief, such fragments should be removed as soon as possible in every case in which their removal is surgically possible without too great risk.

PRESSE MÉDICALE.

January 6, 1916.

Gas Gangrene and Gangrenous Infections, by J. Gatellier.—A distinction is made between cases of primary gangrene, always requiring excision of the tissues involved, and secondary gangrenous infections, which are readily curable under relatively conservative treatment. In the first group the patients are in a toxic condition from the start; in the second, the gangrene is a more or less delayed consequence of a septicemic condition. In the former subjects the pulse is small and frequent, though the temperature hardly exceeds normal, while in the septicemic patients the pulse, though frequent, is fuller and the temperature—often 40° C.—rises with it. In gas gangrene the tissues involved are livid, marbled, and cool, whereas in the septicemic form of gangrene they are never livid from the outset, but may present a yellowish or bronzed appearance, or the red color of inflammatory hyperemia. Of the author's twenty-nine patients with true gas gangrene nine succumbed. These are the cases in which early circular amputation alone affords a chance of saving life. Among the cases of secondary gangrenous infection treated by the author there were no deaths. The treatment consisted of opening up all recesses in the wounds, large partial myotomies to facilitate drainage in a downward direction, and numerous incisions and counterincisions for the purpose of loosening the superficial tissues, beneath which gauze wicks wet with hydrogen dioxide were introduced. The importance of the prophylaxis of gas gangrene is emphasized. Ether appeared to be the most efficient antiseptic for this purpose.

REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

January 7, 1916.

Dermatological Therapeutics, by V. Gimeno y Rodriguez Jaen.—Success in dermatology depends on correct formulae, their adaptability to the disease or stage of disease and careful prophylaxis. Sufficiently clear and concise directions should be given as to the amount of local remedy to be applied, how often it should be used, how long it should be continued, etc. In treating skin diseases attention must be paid to the patient's station in life, habits, and working conditions.

January 11, 1916.

Gluck's Laryngectomy in Cancer, by Ricardo Botey.—From results obtained in eleven cases Botey favors the Gluck operation of total extirpation of the larynx for intrinsic cancer in that region. He considers that thirty per cent. of such cases show no recurrence after two years, which is a better showing than is obtained by radical surgery in the uterus, breast, or tongue. He prefers to do his own intercrucoid puncture at the time of operation rather than a tracheotomy days or weeks beforehand.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

February 10, 1916.

Cancer of the Breast, by Joseph C. Bloodgood.—An analysis of extensive annual cancer statistics made by the author shows that cancer of the breast has materially changed during the past five years, there now being a much larger proportion of benign lesions than formerly. From 1889 to 1900 there were thirty-two per cent. of benign breast tumors; from 1900 to 1910, forty-one per cent.; from 1910 to 1913, forty-seven; and from 1913 to 1915, fifty-nine per cent. That is, the proportion of benign tumors of the breast has increased thirteen per cent. in the last six years compared with the previous ten. The actual increase in the proportion of benign lesions is probably even greater, for only those absolutely proved benign have been included in the figures. The type frequency of cancers of the breast has also altered; adenocarcinoma and cancer with areas of adenocarcinoma are decidedly more common than formerly. But this includes only the more acutely developing types of the latter group, the chronic ones having declined. The occurrence of cancer in cystic adenoma has greatly decreased, owing apparently to women seeking medical advice much earlier. Malignant papillomatous cysts and colloid cancer are on the decrease, while duct cell adenocarcinoma, adenocystic carcinoma, chronic mastitis, and chronic cystic mastitis are all on the increase. Studied with regard to the duration of the disease, the evidence shows that patients with breast tumors are seeking advice decidedly earlier than formerly, which probably accounts for the increase in the proportion of benign lesions and the decrease in the malignant ones. The educational propaganda in regard to cancer of the breast seems to be bearing fruit.

Bacteriology of Chronic Prostatitis and Spermatocystitis, by Harry B. Culver.—Culver recovered organisms from seventy per cent. of his cases. Repeated examinations were often required before a positive culture could be obtained. The gonococcus was relatively infrequently found, staphylococci and streptococci, alone or with other organisms, being the commonest by far. In four cases anaerobic cocci were isolated, the occurrence of which has been largely overlooked. In sixty per cent. of the patients, the organisms seemed to be specific as determined by the various methods of testing, including the production of focal reactions, agglutination, and opsonic readings. In a large proportion of the cases the chronic prostatitis or spermatocystitis seemed to be the cause of an arthritis. The elevation of the antibody content of the patient's blood, combined with drainage of the prostate and vesicles by massage or otherwise, gave favorable results in many cases.

The Kiutsi-Malone Urinary Test for Pregnancy, by Irving S. Cutter and Max Morse.—Application of the test with the most painstaking precautions gave sixty-six per cent. of acceptable results, but left many cases with much uncertainty. Positive reactions were obtained in several women known not to be pregnant. These were probably due to one of the ever present sources of error. As conducted at present, the test cannot be regarded as trustworthy.

The Lymphatics in Ascending Renal Infection, by Daniel N. Eisendrath and Jacob V. Kahn.—Anatomical studies and a series of animal experiments just completed by the authors have proved that infection ascends from the bladder to the kidneys by way of the lymphatics in the ureteral wall and not along the lumen of the ureter. It also seemed probable from these investigations that infection could travel by the same route from the female genitalia and other abdominal viscera which lie in close relation to the ureters.

Peritonitis Following Acute Oophoritis of An-ginal Origin, by Russell M. Wilder.—A study of the literature revealed three cases in which an apparently idiopathic acute peritonitis was traceable to a hemic infection of the ovaries arising from acute tonsillar infection. To these the author has added one case of his own. He believes that this is the source of infection in such cases of peritonitis more often than is supposed.

JOURNAL OF EXPERIMENTAL MEDICINE.

January, 1916.

A Pathological Study of Syphilitic Aortitis and Its Serology.—Larkin and Levy undertake to correlate the pathological findings at autopsy with the results of the serologist's examinations. They selected the aorta for their particular line of investigation and made complete histological studies of forty-two aortas. Of these eighteen presented the microscopic appearance that has long been considered as syphilitic in origin. Seventeen of these had given a positive Wassermann during life. The authors hold that it is fair to assume from their results that ninety-nine per cent. of patients suffering from luetic aortitis would give a positive reaction in the serum. They explain the large discrepancy in the percentage of positive reactions obtained by different observers on the ground that the clinicians fail to differentiate between the various types of aortitis. These latter frequently include cases that represent an atherosclerotic process which is only occasionally specific. In performing the Wassermann reaction, Larkin and Levy think that they got better results with an alcoholic extract of guinea pig heart as antigen.

February, 1916.

Experimental Syphilis in the Rabbit Produced by the Brain Substance of the Living Paretic.—Wile reports the results obtained by using brain material taken from six living paretics. In five of the six cases spirochetes were demonstrable under the dark field microscope. In one case they were extremely numerous, and in four others were demonstrable in small numbers. The greater part of the material obtained was at once injected into the testes of a large rabbit. Two weeks after inoculation, small, hard nodules could be felt, and aspiration of the nodules showed large numbers of active motile spirochetes. Inoculation of other rabbits from the lesions of the first reproduced the changes. These experiments show conclusively, not only that syphilis is a cause of paresis, but that there are still present active virulent spirochetes.

Gastric Ulcers Following Removal of the Adrenals. Mann found that acute ulcers of the gastric mucosa are found in large percentage of dogs

and cats dying after removal of the adrenals. They resemble true peptic ulcers, they develop apparently only in an acid medium, and in a series of ten experiments in which sodium bicarbonate was given after removing the second adrenal, ulcers were found in one animal only.

JOURNAL OF MEDICAL RESEARCH.

January, 1916.

Old Age in Relation to Cell Overgrowth and Cancer.—Goodpasture and Wislocki, as a result of finding multiple tumor formation in many of the organs and tissues of old dogs, believe that there is a decided tendency of the cells of senescent organs to take on new growth which may result in malignant tumor. They examined closely fifteen old dogs and found from five to thirteen tumors of various sorts in different portions of the body. The process is apparently instituted by a gradual loss of function with a subsequent increase in the power of growth. In but one instance, that of tumor of the adrenal medulla, was there any extension; the other growths apparently were benign.

AMERICAN JOURNAL OF TROPICAL DISEASES AND PREVENTIVE MEDICINE.

October, 1915.

Endamebiasis of the Mouth, by Kenneth M. Lynch.—In the course of an examination for the presence of *Endameba gingivalis* in some 400 charity hospital patients, pyorrhea alveolaris in some stage was found in no less than ninety-eight per cent. of all the subjects. Regular examination for the amebas by all those attempting to treat pyorrhea is recommended. The author divides the condition into a number of varieties and stages. The first is that in which the ameba is found in the mouths of persons presenting no evidence of any oral trouble other than uncleanness. In the next stage belong subjects whose gums appear normal, but in whom close examination shows beneath the margins small amounts of white, granular material containing the ameba. At this stage we are justified in expecting a cure from hypodermic use of one half grain of emetine hydrochloride daily until no ameba can be found or, for safety, a day or two longer; even in these cases reinfection is probable, and if it occurs, should be similarly treated. In early chronic pyorrhea with atrophy of the gum margins and granular pus around and beneath the edges, a cure may reasonably be expected under hypodermic emetine treatment and careful removal by the dentist of the foreign material beneath the gums, provided that no irretrievable stripping of the cementum of the tooth has yet occurred. In the fourth stage, however, that of late pyorrhea, with infection along the root of the tooth and the alveolar periosteum, producing pus pockets, Lynch feels that, unless combined medical and dental care solves the problem, we may expect little more than to hold the disease in check by intermittent treatment, especially where deep sinuses exist. As regards prophylaxis, he has little faith in ipecac mouth washes and relies chiefly on the proper use of a toothbrush, not hard enough to injure nor soft enough to be inefficient. *In vitro*, ipecac preparations, to kill the ameba, must remain in contact a few minutes at least, and this can hardly be the case in their practical employment.

Proceedings of Societies.

BRONX COUNTY MEDICAL SOCIETY.

Regular Meeting, Held January 12, 1916.

The President, Dr. JOHN E. VIRDEN, of New York, in the Chair.

Dr. W. G. EYNON, of New York, the retiring president, reviewed the history of the society during the first year of its existence.

Dr. JOHN E. VIRDEN, of New York, recently elected president, outlined the coming year's work in a brief inaugural address.

Gallbladder Diseases.—Dr. CHARLES H. MAYO, of Rochester, Minn., read this paper, which appears on page 433 of this issue of the JOURNAL.

Dr. CHARLES H. PECK, of Roosevelt Hospital, said it was not easy to discuss a paper having a basis of 6,000 cases. Doctor Mayo's address interested him extremely as emphasizing the important part played by infection in diseases of the gallbladder. These diseases seemed to be due in general to systemic infection rather than to infection ascending from the gastrointestinal tract. In his own practice he had met with a number of cases of gallbladder disease in which no stones or mechanical factors were present, but which were evidently the result of general toxemia caused by affections of the general circulation. Removal of the gallbladder was necessary in chronic inflammation of that organ. During the past year at Roosevelt there had been, in a series of eighty-two operations on the biliary tract, nine cholecystostomies and fifty-two primary cholecystectomies. Primary cholecystostomies were limited in general to cases in which the gallbladder was essentially normal after the removal of stones, and to cases with acute infection with septic symptoms, especially in old people, cases where the tissue was edematous, or where the gallbladder was deeply imbedded. Such cases might properly be followed later by a secondary operation of cholecystectomy. As a general practice other cases were better treated by the total removal of the gallbladder. This was especially true of cases involving stenosis of the duct and chronic infection.

Dr. CHARLES A. ELSBERG, of Mount Sinai Hospital, stated that during the past year there had been 167 operations upon the gallbladder and ducts. Of these 139, or eighty-four per cent., were cholecystectomies, and twenty-eight, or sixteen per cent., were cholecystostomies. Five of the latter had been followed by a secondary operation for cholecystectomy. The operation of choice in gallbladder infection was undoubtedly cholecystectomy. He regarded cholecystostomy as a palliative operation, somewhat like an enterostomy, which should lead on to the more radical operation just as a suprapubic lithotomy might be regarded as a first stage of a prostatectomy. He desired to utter a word of warning regarding the need of being on guard for cases of spinal disorder simulating gallbladder disease. In his own practice during the past year he had met two such cases; one was that of a young woman operated on for gallstones. The stones and gallbladder were removed, but without permanent relief. This operation was followed by an appendicectomy. A few months later, the masked symptoms

developed into the frank expression of spinal cord tumor, but for months the symptoms closely simulated those of cholelithiasis. For this reason the knee jerks and other nervous symptoms indicative of spinal disease or pressure on the spinal roots should not be neglected.

Dr. FRANZ J. A. TOREK considered that the general favor of the profession had been won by cholecystectomy. The prominence of this operation recalled the fact that it was first performed by Langenbuch, the father of gallbladder surgery, in 1882. He was followed by Courvoisier, of Basle, and by Thiriar, of Brussels. Lawson Tait, the English surgeon, was a bitter opponent, and held that the statement of Langenbuch, that stones in the gallbladder were formed through the inflammatory conditions of that organ, was untrue. Tait stated that even in the hands of Langenbuch himself fifty per cent. of the cases ended fatally. This statement prejudiced the profession against operation for many years. Inasmuch as Langenbuch at that time had operated only on six patients, of whom only one had died as a direct result of the operation, there must have been some error in Tait's arithmetic. Many former opponents, such as Hans Kehr, had now become advocates of the radical operation.

Dr. JOHN ROGERS, of St. Francis Hospital, considered that Doctor Mayo had standardized the art of gallbladder surgery. Few had had so large an experience, and Doctor Mayo had demonstrated what procedures were of choice. At their hospital, in 1914, thirty-six cases of gallbladder disease had been operated in, with one death; in 1915, twenty-nine cases, with four deaths. The conditions in general were mainly of acute spreading cholecystitis and cholangitis, violent and severe in nature. Consequently the cholecystectomies were not abundant, eight in 1914 and six in 1915. He considered that cholecystectomy required large prior experience in gallbladder surgery, as it involved more difficulty in the technic of operation, nevertheless, it was the operation of choice if the operator felt that he could carry it through with success. The diagnosis of gallstone disease was as easy in acute cases as the diagnosis of appendicitis. In chronic cases it was more difficult. The x ray was useful in showing distortions of stomach and intestine if not in locating stones. The value of cholecystectomy was doubtful in cases where chronic nephritis was present. In such cases the probability of recovery was far more doubtful. They had to have a living patient, not a perfect operation.

Dr. IRVING S. HAYNES, of Harlem Hospital, agreed with Doctor Mayo regarding the etiology of gallstones. He wished to call attention to the part which a high cholesteremia might play in their formation, it being held that a cholesterol calculus might be formed without the presence of bacteria. Among the etiological factors, then, of gallstones should be considered a diet rich in cholesterol. Incidentally he wondered if the prevalence of appendicitis in the youth was not due to tonsillar infections, whether the prevalence of gallstones and gastric and duodenal ulcers about middle life might not be due to infection from the teeth, while the loss of the teeth and the imperfect mastication at a later period in life might not have some bearing upon the causa-

tion of gastric cancer. The gastric symptoms of gallbladder disease were due to pyloric spasm, but many other conditions in and about the stomach and even at a distance, such as chronic appendicitis, caused pyloric spasm. They had to bear this in mind in making a diagnosis.

He would emphasize the importance of a careful study of the clinical history and would use laboratory methods, especially the x ray, only as corroborative measures in making a diagnosis. Regarding the complications, perforation of the gallbladder was a very serious one; while it occurred usually with stones, perforation could take place without the presence of gallstones. Acute pancreatitis was a serious complication, and to this more than to the gallbladder disease itself were due the severe pain, high fever, and great prostration frequently seen in the acute cases. In reference to the operative treatment, in acute septic conditions of the gallbladder with adhesions and edema, cholecystectomy was certainly a dangerous operation and ought not to be undertaken by beginners.

Dr. WILLIAM P. HEALY, of Fordham University Medical School, was especially pleased with the emphasis which Doctor Mayo had placed upon infection as the important etiological factor in the production of all types of gallbladder disease. Of course, the presence of infection as the immediate exciting factor in cases of acute suppurative cholecystitis, or of gangrene of the gallbladder, was evident to all, but he doubted if the majority of physicians appreciated the importance of infection in the chronic cases. Any persistent pus focus, such as pyorrhœa alveolaris or a small intestinal ulcer or a chronic pyosalpinx, might be the source of infection. The clinical history of many cases showed frequently that the infection was insidious in its onset and course, and might at no time have interfered with the individual's daily occupation, and yet at operation evidence of considerable disturbance would be found in the form of many and extensive adhesions between the gallbladder, the cystic duct, and the neighboring viscera. In the chronic cases it was difficult, and at times impossible, to make an accurate diagnosis before operation, and as the treatment of the lesion in practically all cases was surgical, exploratory celiotomy should be resorted to freely in clearing up doubtful cases. Prophylactic measures in the more prompt and persistent treatment of chronic pus foci might be of considerable value in diminishing the number of cases.

Dr. BENJAMIN T. TILTON, of St. Mark's Hospital, doubted the actual value of surgery in all cases of gallbladder disease. The medical man was justified in doubting the universal value of gallbladder surgery, inasmuch as from twenty to thirty per cent. of cases were not cured by operation. Many patients returned after operation with symptoms remaining, and in fact were incurable by operation because of anatomical changes which had involved other organs. He therefore advised very strongly early operation rather than to wait for deep lesions to develop and complicate the case. If done early, the results were as good as in appendicectomies. Gallstone surgery should be in the hands of men specially trained for the work.

In New York city were found many acute cases

of a fulminating type. When these were complicated with nephritis or myocarditis, simple drainage was often sufficient where cholecystectomy was contraindicated on account of the added risk. Cases should come to the surgeon before complications occurred. The mortality of gallstone surgery would be correspondingly lowered.

Dr. PARKER SYMS, of Lebanon Hospital, regarded gallstone disease as an end process. Such cases should always be operated in, except where operation was clearly contraindicated. He considered that the pendulum was swinging a little too far toward cholecystectomy. The gallbladder, if not important biologically, was important surgically. In cholecystostomy, prolonged drainage was of the utmost importance.

Dr. J. LEWIS AMSTER laid emphasis upon the value of hexamethylenamine. The use of this drug after operations had been his practice for the past six years, and its physiological effects were demonstrated by its action on certain organs. He thought that infection should be considered one of the prime factors in the production of cholecystitis. He considered the formation of gallstones one of the end results of gallbladder infection, and the mere removal of stones with drainage did not necessarily remove the underlying cause of the condition. The postoperative treatment should therefore be considered as important as the operation. Experimental study with hexamethylenamine had convinced him that this drug had a specific germicidal action on the gallbladder and intestines, and therefore acted as a powerful intestinal antiseptic and antifermentative. Up to one year ago, he made it a routine measure to give his postoperative cases half an ounce of the following solution every half hour:

Hexamethylenamine, gr. viiiss;
Aque, ʒviij.

This treatment had proved especially valuable after abdominal operations, and their patients never required catheterization, thirst was greatly relieved, abdominal distention rarely occurred, shock was lessened to a considerable degree, and it acted as a prophylactic to postoperative intestinal stasis. The only disadvantage of the method was that the solution could not be administered by mouth in cases of persistent vomiting and where there was unconsciousness. He now gave the solution by proctoclysis instead, using the same principle practised in giving the Murphy drip. An acid medium might be added to the hexamethylenamine on account of the alkaline intestinal secretions.

Dr. C. GOLDENTHAL remarked that he had learned in his practice in Vienna of the value of sodium oleate and of phenolphthalein in the treatment of gallstones. He had treated many cases where the utmost relief had been given by these drugs, to which he was therefore partial.

Dr. WILLIAM H. STEWART, of New York, considered the Röntgen diagnosis of gallbladder disease of great value. It would be unwise to rely upon the findings alone; they must support and confirm the clinical picture, especially where surgical procedure was contemplated. The Röntgen evidence was divided into two great classes, first, those which gave direct evidence of gallbladder disease as the actual

demonstration of gallstones, and those where the thickened or dilated gallbladder was actually seen; although the presence of gallstones might not be observed, he believed that whenever the shadow of the gallbladder was detected in the röntgenogram, it was pathological; second, where they obtained indirect evidence of gallbladder disease, e. g., from the adhesions accompanying pericholecystitis, this was readily made out on the screen when the barium meal was administered. Unfortunately, they had to deal with a large number of borderline cases, which did not present the classical symptoms, and in which the diagnosis was very difficult. In these they could positively exclude any lesion in the stomach, first portion of the duodenum, or the appendix. In a small percentage of cases, they might not be able actually to demonstrate gallbladder disease or gallstones. Still in these they could exclude duodenal ulcer or chronic appendicitis and thus aid the surgeon in clearing up the case.

Dr. HENRY ROTH, of Lebanon Hospital, speaking as a member of the Bronx Society, said that surgeons often learned more from failures than from successes. The speaker recently analyzed his last one hundred consecutive operations upon the gallbladder and biliary tract, particularly to learn the cause of death following these operations. In the one hundred cases, there were eight deaths.

CASE I. A woman of thirty-five years had cholecystectomy in 1911. There were recurrent attacks after six months with jaundice. These were frequent and severe during the past six months. No stones were found, obstruction being caused by angulation due to adhesions. Choledochotomy with drainage was performed. Calcium lactate administered prior to operation failed to prevent hemorrhage. Horse serum was injected, but the patient failed progressively, refused transfusion, and left hospital twenty-three days after operation. She died from loss of strength due to chronic cholemia and anemia.

CASE II. A woman, forty-five years old, with several typical attacks of colic during two years, jaundice, clay colored stools, and purpuric spots. Cholecystostomy and choledochotomy were performed, two stones being found in the gallbladder and one in the common duct. The gallbladder was not removed, but drained, as well as the common duct. She died six days after operation, from cholemia and progressive anemia.

CASE III. Woman, forty-nine years old, very stout, who after an illness of three days was operated upon for acute empyema of the gallbladder. After the removal of three large stones, she manifested symptoms of acute acidosis with five per cent. sugar, acetone, and diacetic acid in the urine and casts. She died in diabetic coma.

CASE IV. Unmarried woman, forty-three years old, with stomach trouble of fourteen years' standing. At operation, the walls of the gallbladder were found thickened, with calcareous deposits on the mucosa. The gallbladder contained several stones. Cholecystectomy was performed. Later, she showed signs of pneumonia, and died seven days later. Prolonged disease had depleted her vitality.

CASE V. Woman, thirty-seven years old, who had been ill for three weeks, with pain in the upper

right quadrant, vomiting, and repeated chills and jaundice. The gallbladder was quickly drained of stones and pus. After operation, she had repeated chills, high temperature, and a poor and rapid pulse. She died from septic cholangitis.

CASE VI. Man, forty years old, with acute calculeous cholecystitis, had cholecystectomy done. He took the anesthetic poorly, and died several days after, from pneumonia.

CASE VII. Woman, fifty-five years old, after an attack of acute cholecystitis, declined operation. Two months later, she presented a distinct mass in the region of the gallbladder, and three months later consented to be operated upon. They found extensive pericholecystic suppurative, with necrosis of the tissues, a perforated gallbladder and fecal fistula. She died from prolonged sepsis and inanition.

CASE VIII. Woman past fifty years, first seen six weeks after the onset of an acute cholecystitis with jaundice. A mass filled the greater part of the right half of the abdomen. The gallbladder contained three large stones. Blood escaped as a result of an erosion of the cystic artery, during the perforation of the gallbladder by the stones. A duodenal fistula developed, and death ensued from cholera, anemia, and exhaustion.

A review of the history of these eight cases shows that in more than half of them there was a period when an operation performed would have been followed by a favorable outcome.

Letters to the Editors.

THE ABORTIVE TREATMENT OF GONORRHEA.

NEW YORK, February 23, 1916.

To the Editors:

May I trespass again, on your valuable space, to answer Dr. G. A. Wyeth's reply to my communication concerning his article, in your issue for February 5th?

Doctor Wyeth is correct in his assertion that the modern scientific treatment is a composite of the experience of many physicians. I have never asserted otherwise, and have always, in my writings, been glad to give credit where it was due.

I am glad to see that Doctor Wyeth states that he does not state that the abortive method, described by him, is his own. I was led to believe that he had so stated, by the absence of references concerning the source or sources of his information.

I repeat that the method described by Doctor Wyeth is the one taught to him and to my other assistants by myself. If he says that he learned it elsewhere, I shall be indebted to him for a statement of what publications contain it, since I have never had any desire to claim as my own the work of others. If I am in error, in this instance, I shall gladly amend it. He will find, in my publications on The Abortive Treatment of Gonorrhea in the Male (*Medical News*, March 12, 1904, and *Dermatologisches Centralblatt*, 11, 1905), that I have placed the credit for the parent method where it belonged. When he reads the description of the method taught by Frank and Lewin, and compares it with the one in his article, he will, perhaps, understand what I meant by the word "elaborated."

And, finally, I would say that it is good that the files of our medical periodicals, and the pages of our monographs, are more retentive of facts than Doctor Wyeth's memory appears to be, for—even though Doctor Wyeth seems to have forgotten the fact that he asked for, and received reprints of my writings, during his time as my assistant—in

those (among them Finger's *Blennorrhoe der Sexualorgane*, 1905) he will find references to contributions at least concerning protargol. How original these may be, I prefer to leave to others. They have, at least, been honest.

F. BIERHOFF, M.D.

PHYSICIANS, SURGEONS, AND DENTISTS' FUND.

NEW YORK, March 1, 1916.

To the Physicians, Surgeons, and Dentists of the United States:

We, the undersigned, having devoted our energies for various lengths of time in helping our colleagues, the surgeons, physicians, and dentists of France;

Realizing that they are working under terrific stress and strain, under improvised conditions, and often with an insufficiency of instruments and material;

And feeling that many of our colleagues here would gladly contribute a sum of money monthly for the purchase of instruments and materials here or abroad as wisdom and need indicate;

Propose that such a brotherly manifestation of solicitude be made, and we call upon our professional brethren throughout this land in sympathy with the cause of Liberty and Justice, so dear to these two Democracies, to pledge themselves to contribute to this fund two dollars a month for the year 1916, from January 1st, to be paid monthly or in one sum. This sum is to be placed at the disposal of the American Relief Clearing House, in Paris, the official bureau of all American charities, and in constant touch with all necessities over there. These sums are to be expended in such a way as they may see fit, advised by a representative of the French Academy of Medicine, and a representative of the Minister of War, in order that the wisest possible use may be made of the funds thus furnished.

Further, we solicit donations of instruments in first rate condition, and hospital equipment of all kinds; bearing in mind that in the present crisis everything is needed.

May we even ask our colleagues to economize in all wisdom, and not to waste in this land of plenty, but to contribute to the cause that which is saved? Also that they may endeavor to interest their various clients to aid us in our work.

We pledge ourselves to our utmost to see that every contribution arrives where there is need for it and feel that this friendly aid of one country to another through our professional channel, will be received with a gratitude most touching and bear fruit in the relations between our two countries in the future.

What the architects, artists, and sculptors of our country have done for their confrères, who are in the ranks across the ocean, we may well do also.

Approved by: William M. Polk, M.D., Dean, Cornell University Medical College; John Finney, Professor Surgery, Johns Hopkins University; Thomas P. Hinman, D.D.S., President, National Dental Association of America; E. C. Kirk, D.D.S., Dean, Dental Department University of Pennsylvania; W. S. Thayer, M.D., Professor Clinical Medicine, Johns Hopkins University; H. Holbrook Curtis, M.D., New York; John B. Walker, M.D., New York; H. C. Moffit, M.D., San Francisco; John A. Hartwell, M.D., New York; Hugh Auchincloss, M.D., New York.

Executive committee: C. N. B. Camac, M.D., chairman. Foster Kennedy, M.D., William H. Ordway, Jr., M.D.; and Whitney Warren, secretaries, 16 East Forty-seventh Street, New York. All moneys subscribed to go to the fund without deduction for administration expenses. Checks should be made payable to J. P. Morgan & Co. for the Physicians, Surgeons, and Dentists' Fund, and addressed to the Physicians, Surgeons, and Dentists' Fund, 16 East Forty-seventh Street, New York. All contributions in material should be sent prepaid to Physicians, Surgeons, and Dentists' Fund, War Relief Clearing House, 133 Charlton Street, New York.

(Signed) George E. Brewer, M.D.; G. W. Crile, M.D.; Harvey Cushing, M.D.; Joseph Flint, M.D.; Walton Martin, M.D.; William H. Potter, D.D.S.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Gas Poisoning in Mining and Other Industries. By JOHN GLAISTER, M.D. (Glas.), D. P. H. (Camb.), F. R. S. E., etc., Professor of Forensic Medicine and Public Health in the University of Glasgow; Senior Medicolegal Examiner in Crown Cases for Glasgow and Lanarkshire, etc., and DAVID DALE LOGAN, M.D. (Glas.), D. P. H., Surgeon to the Coltness Ironworks, Newmains, etc. With Plans, Colored Plates, and Thirty-six Other Illustrations. New York: William Wood & Co., 1914. Pp. xi-471. (Price, \$3.50.)

In this new work the authors have given a fairly comprehensive account of what is known on the subject of poisoning by carbon monoxide and other gases arising in mining and other industrial pursuits. Up to the present time, much work has been done on this topic; but the accounts of this work are so scattered, that those interested in the matter have been compelled to spend a great deal of time in finding what they were in quest of. The present volume contains much original work on the part of the authors, also references to all the available literature; so the book may be considered authoritative as well as complete. An important feature is the discussion of the *remote effects* of poisoning by carbon monoxide, both acute and chronic, a subject of no inconsiderable value in these days of compensation for accidents. Both lawyers and physicians interested in these cases will find this a very useful volume.

Hospitals and the Law. By EDWIN VALENTINE MITCHELL, LL.B., of the Faculty of the College of Law, University of South Dakota. Author of *The Doctor in Court*. New York: Rebman Company, 1915. Pp. v-178. (Price, \$1.75.)

The number of hospitals in America is now so large, their size, scope, and other characteristics are so diverse, the tendency is so pronounced to establish more, that this little manual of the legal principles involved will find a considerable domain of usefulness. A multitudinous variety of reasons for their establishment complicates the matter. There are the State hospitals, the county, the town, the local, the hospital for special conditions, mental and physical. These may be called public hospitals in that they are built, equipped, and supported by the commonwealth, wholly or in part, and the patients are in the main the wards of the State or community, paying nothing or only a nominal sum for their keep or treatment. Then again some of these have also accommodations for private cases, of various degrees of expensiveness, even special cottages for individuals, etc. A considerable number are established by and in the interests of religious sects which may also have points of contact with the State or community.

Then there is a new combination of a regularly established hospital, a form of partly religious belief, of private and State government and yet they become paying business enterprises. There are at least two in the middle west on this somewhat questionable basis which have become stupendous in scope, reputation, and earning powers.

There is the partnership group now making itself felt, where "modern business methods" are carried to their highest efficiency, without so far, having awakened apprehension or the condemnation of the community. What the future of this luxuriant blossoming of hospital enterprises, with their diverse and sundry aims, purposes, methods, their privacy and publicity, their effects upon the legitimate and the illegitimate aims, ethics, methods, on the individual practitioner, is likely to become we can only guess at. Obviously there is need, urgent need, of getting some idea "where we are at" and to what we are tending. Already there are many laws enacted to cover necessary and exigent procedures, many others are capable of modification and adaptation, yet more will be needed to act as precedents in the growing complexity. Hence the domain of usefulness of this little book on hospitals and the law is plainly large and destined to become still larger.

American Sewerage Practice. Volume III, Disposal of Sewage. By LEONARD METCALF and HARRISON P. EDDY. First Edition. New York: McGraw-Hill Book Company, Inc., 1915. Pp. xiii-851. (Price, \$6.)

One of the most important problems of the day is the proper disposal of sewage. With the increase in population and an increasing demand for the purification of the waterways, there has come to some extent a conflict between the sanitary engineer and the municipal economist. The difficulty lies in preserving the health of the community and at the same time avoiding too great expense.

In this present volume the two ways are carefully considered. The first six chapters are devoted to the nature of sewage and the changes that take place in it under certain conditions. A very interesting review of the relation between contaminated water and typhoid fever is given in Chapter III. The remaining fourteen chapters describe the methods by which these changes may be obtained.

The authors have collected a great amount of valuable information, which they have arranged very conveniently, and have provided a book that is invaluable to anyone dealing with sewage problems whether he is engineer, economist, or physician.

Interclinical Notes.

"The legibility of our copy, writes F. P. A. in the *New York Tribune* for February 24th, may be at fault for whatever type errors occur in its publication. 'If you wish'—the quotation is from the *London Monthly Mirror*, June, 1810—to have your works printed without errors, never write the MS. well; for, if you do, it is given to apprentices, who make a thousand blunders; whereas, if it is difficult to read, the best workmen are put upon it." Perhaps the notorious illegibility of the handwriting of physicians was originally intended to fix the attention of the prescriber clerk; at all events, no other plausible explanation of medical cacography has been advanced.

* * *

Here is a sort of signed editorial from *Leslie's* for January 13, 1916, which it will do our medical friends no harm to read. To them it may prove an argument for safe investment of their money, and against placing it in wildcat mines or queer real estate ventures:

THE SPECTRE OF PAUPERISM.

By S. W. Strauss, of Chicago,
President, American Society for Thrift.

Do you know that in the United States sixty-six out of every 100 people that die leave no estate whatever? Do you know that out of the remaining thirty-four only nine leave estates larger than \$5,000, and that the average of the remainder of twenty-five is a little less than \$1,300? Do you know that at the age of sixty-five years ninety-seven out of every 100 in America are partly or wholly dependent upon relatives, friends, or the public for their daily bread, for their clothing, and a roof under which to sleep? We all know that the one safeguard against pauperism by the countries of Europe has been thrift. France, Germany, Belgium, Holland, and Switzerland have been the leaders in thrift. Do you realize that according to recent Government statistics, ninety-eight per cent. of the American people are living from day to day on their wages and that a loss of employment would mean pauperism for all but two per cent. of us?

* * *

Current Opinion for February attributes to H. G. Wells the statement, that a bookless world is a mindless world. He could not live in a bookless world; it would be like living among animals. A bookless man is, indeed, little better than a beast. What can you do with him?

* * *

Commerce and Finance for February 2d moralizes on the shortage of castor oil, which has raised the price about 200 per cent. The plant is indigenous to this country, so why should we continue to try to get it from India?

Meetings of Local Medical Societies.

MONDAY, March 6th.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, March 7th.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital; Syracuse Academy of Medicine; Buffalo Academy of Medicine (Section in Surgery); Ogdensburgh Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Medical Society of the County of Yates; Medical Society of the County of Tioga.

WEDNESDAY, March 8th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine.

THURSDAY, March 9th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua.

FRIDAY, March 10th.—New York Academy of Medicine (Section in Otolaryngology); Society of Ex-Internes of the German Hospital in Brooklyn; Flatbush Medical Society, Brooklyn; Eastern Medical Society of the City of New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending February 23, 1916:

Bahrenburg, L. P. H., Surgeon. Reassigned to duty at Galveston, Texas, effective March 11, 1916. **Clark, T.,** Surgeon. Detailed to attend the meeting of the Department of Superintendence at Detroit, Mich., February 21-25, 1916, at which public health subjects will be discussed. **De Saussure, R. L.,** Assistant Surgeon. Granted fourteen days' leave of absence, from February 21, 1916. **Ebersole, R. E.,** Surgeon. Reassigned to duty at the immigration station, Ellis Island, N. Y., effective March 6, 1916. **Francis, Edward,** Surgeon. Granted six days' leave of absence from February 7, 1916. **Guiteras, G. M.,** Surgeon. Granted four days' leave of absence from February 16, 1916, under paragraph 193, Service Regulations. **Leake, J. P.,** Passed Assistant Surgeon. Reassigned to duty at the Hygienic Laboratory, Washington, D. C., effective February 21, 1916. **Schereschewsky, J. W.,** Surgeon. Directed to proceed to Washington, D. C., at such time as will be most convenient, to inspect apparatus now being constructed by the Bureau of Standards, for use in investigation of industrial sanitation. **Sprague, E. K.,** Surgeon. Reassigned to duty at the immigration station, Ellis Island, N. Y., effective February 13, 1916. **Thompson, L. R.,** Passed Assistant Surgeon. Granted one day's leave of absence on account of sickness, February 15, 1916. **Wilbert, M. I.,** Technical Assistant. Authorized to attend a meeting of the Council on Pharmacy and Chemistry of the American Medical Association at Chicago, Ill., February 19, 1916.

United States Army Intelligence:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the week ending February 26, 1916:

Coburn, H. C., Jr., Captain, Medical Corps. Reports departure from West Point, N. Y., on two months' leave of absence, under provision of paragraph 187, Regulations, United States Military Academy. **Craft, E. W.,** Captain, Medical Corps. Granted two months' leave of absence on or about April 1, 1916, from Presidio of Monterey, Cal. **Stuckey, H. W.,** First Lieutenant, Medical Reserve Corps. Granted two months' leave of absence under exceptional circumstances, from Fort Winfield Scott, California.

Births, Marriages, and Deaths.

Married.

Faber—Kehoe.—In Omaha, Neb., on Thursday, February 3d, Dr. Harold K. Faber, of San Francisco, Cal., and Miss Mary Eleanor Kehoe. **Fifield—Brewster.**—In New York, on Wednesday, February 9th, Dr. Harry Leland Fifield, of Southington, Conn., and Miss Louise Brewster.

Died.

Adair.—In New York, on Thursday, February 24th, Dr. Leonard Adair, aged forty-five years. **Baxter.**—In Jersey City, N. J., on Tuesday, February 22d, Dr. Milton Edward Baxter, aged thirty-four years. **Blood.**—In Lake Sunapee, N. H., on Monday, February 21st, Dr. Robert Allen Blood, aged seventy-six years. **Brice.**—At sea, on Thursday, February 17th, Dr. Eugene H. Brice, of Atlanta, Ga., aged twenty-six years. **Bumstead.**—In West Dundee, Ill., on Tuesday, February 15th, Dr. James E. Bumstead, aged sixty-eight years. **Carpenter.**—In St. Joseph, Mo., on Tuesday, February 15th, Dr. Stephen F. Carpenter, aged seventy years. **Debra.**—In Dayton, Ohio, on Monday, February 14th, Dr. John F. Debra, aged seventy-eight years. **Dekle.**—In Thomasville, Ga., on Saturday, February 12th, Dr. Thomas S. Dekle, aged seventy-three years. **Dresser.**—In New York, on Wednesday, February 23d, Dr. George D. Dresser. **Engler.**—In Allentown, Pa., on Friday, February 11th, Dr. George S. Engler, aged eighty-one years. **Favill.**—In Springfield, Mass., on Sunday, February 20th, Dr. Henry Baird Favill, of Chicago, Ill., aged fifty-six years. **French.**—In Bentleyville, Pa., on Friday, February 11th, Dr. Edward E. French, aged fifty-one years. **Gorton.**—In Brooklyn, N. Y., on Tuesday, February 22d, Dr. David Allyn Gorton, aged eighty-three years. **Grimes.**—In Lincoln, Neb., on Monday, February 14th, Dr. Richard Grimes, aged sixty-three years. **Houghton.**—In Brookline, Mass., on Sunday, February 6th, Dr. Silas A. Houghton, aged fifty-two years. **Keim.**—In Bethlehem, Pa., on Monday, February 14th, Dr. Ambrose M. Keim, aged sixty-two years. **Kemp.**—In Baltimore, Md., on Friday, February 18th, Dr. J. McKendra Kemp, aged eighty years. **Miller.**—In Huntingdon, Pa., on Wednesday, February 16th, Dr. David P. Miller, aged eighty years. **Morris.**—In Lisbon, Ohio, on Friday, February 18th, Dr. William E. Morris, aged fifty-six years. **Morse.**—In Salem, Mass., on Monday, February 14th, Dr. Charles W. Morse, aged forty-nine years. **Reynolds.**—In Farmington, Me., on Friday, February 17th, Dr. Austin Reynolds, aged eighty-six years. **Richardson.**—In Lynn, Mass., on Tuesday, February 15th, Dr. Benjamin F. Richardson, aged fifty-three years. **Rider.**—In Denver, Colo., on Saturday, February 12th, Dr. George P. Rider, formerly of Wilmette, Ill. **Schindel.**—In Spokane, Wash., on Friday, February 11th, Dr. Charles M. Schindel, aged fifty-two years. **Shearer.**—In Baltimore, Md., on Friday, February 18th, Dr. Thomas Shearer, aged ninety-one years. **Singleton.**—In Fort Valley, Ga., on Friday, February 11th, Dr. Oscar G. Singleton, aged fifty-nine years. **Smith.**—In Seattle, Wash., on Saturday, February 12th, Dr. Rufus H. Smith, aged sixty-five years. **Squier.**—In Frankfort, Ind., on Tuesday, February 15th, Dr. Ellis A. Squier, aged sixty-seven years. **Wilson.**—In Hebron, Ind., on Saturday, February 12th, Dr. Joseph R. Wilson, aged fifty years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. II.

NEW YORK, MARCH 11, 1916.

WHOLE No. 1945.

Original Communications.

THE PSYCHOLOGY OF THE PHYSICIAN AS A WAGE EARNER.*

BY CHARLES W. BURR, M. D.,

Philadelphia,

Professor of Mental Diseases, University of Pennsylvania.

I was somewhat astonished the other day to learn (rather at being told, for I am still quite unconvinced) that I am a wage earner. In the simplicity of my innocence I had previously believed, or to use more accurate verbiage, subconsciously assumed, because I had never really seriously thought about the matter, that physicians were superior people belonging to a somewhat high social and intellectual class, and that we were not paid wages but deigned to accept fees. I had fancied that we ranked in sociological classification a little above the artist and the school master, about on the same level as the clergyman and the lawyer, quite a little below those terribly important people who write what the vulgar call, in admiration of their business acumen, "best sellers" and of course far below the ever free, untrammelled, clear seeing, wise, but most talkative and nebulous intellectuals, the college professors, before whom even trustees ought to bend the knee and kiss the ground. I knew we had not attained to such great heights as theirs, but I did not know we were mere laborers who, having been paid our wage, were settled with and there an end. I imagined we daily did things that are not paid for, cannot be paid for, save in a coin that has a different ring from gold, in currency that has a different rustle from a greenback. I had no delusions about medicine as a money making business, but I did have a delusion, that the chief end of man is not making money, and another that the practice of medicine is not a business. To add to my astonishment, I was told that not only is medicine a business, but that doctors never know how to carry on their affairs and that things have come to such a pass, that saviors of physicians all over the country have combined or are combining in one great uplifting movement to establish medical, financial, traveling kindergartens, the purpose of which is to teach the poor, childish, simple minded physicians how to become prosperous—how to rival those very wicked people who do not need to be told how to grow rich because they know already. To cap the climax of my astonishment, I was told that there must be some psychological reason for the physician's inability in a business way, some mental defect, some

lack of virility, and that I was expected to solve the psychiatric riddle. I have not yet recovered from my astonishment.

My purpose, therefore, is to endeavor to explain to practitioners of medicine what their mental defects are, why they all die poor, why they know neither how to get nor how to keep money, nor how to make it increase when by any chance they do get their hands on some. Remember, please, that these opinions are not mine, but I am compelled to pretend for the time being that they are, because otherwise there would not be anything to discuss, and being Americans or at least dwellers in America, the two things are not the same, we must discuss, because the country is infected with a gas bacillus which makes all accept the delusion, and act under its influence, that the tongue is mightier than a mind.

The question is then, How does the physician as a wage earner differ psychologically from other wage earners? What is the defect in his mentality which compels him to continue poor but honest, instead, as our advisers would like us to be, rich and wicked? Of course, according to "the new morality" if you are rich you must be wicked. Success means sin, and the only good people are those who have failed in the battle of life or have made a fortune by talk, by telling people how good they are, how wise, and how they can reform everything by making twice two five.

In studying the mental state of an ordinary man, the alienist investigates his conduct and behavior, studies how he carries himself, how he passes his time, what he does, and what he omits to do. He pays little attention to what the man says, save when his speech is manifestly compelled by some force independent of will, assuming that there is a will, or when, unknown to himself, it reveals his mental attitude. The investigator searches to find the man's point of view toward life, and if it agrees with his own gives the man a clean bill of mental health; if it disagrees, then there is no doubt the man is mentally defective, because of course the investigator's view of life is always correct and normal.

Allow me, therefore, to present what seems to me to be the average medical man's point of view of life. If it differs from that of other men, then the medical man either is abnormal, has a peculiar pathological psychology, and needs the help of the self appointed saviors of society, or he should be sent to jail as a criminal, or to an asylum as an imbecile, or he is superior to the commonalty and requires quite a different yardstick for his mental and moral measuring.

In any psychological study, the factors compelling and controlling conduct are of first importance.

*Read at the meeting of the Philadelphia County Medical Society, January 12, 1916.

Let us see, therefore, what influences lead men to become physicians, because if they are of the kind which do not influence men in general, then physicians have a peculiar psychological makeup—are abnormal or superior.

Three things make physicians—chance, choice, and destiny. Sometimes only one acts, sometimes all three, sometimes any two. Taking physicians in the mass and remembering that, as is only fair, for so the public judges us, I am including under the title physician all men who have a legal right to practise medicine, chance alone influences a respectable minority, if not indeed a majority. In those who make deliberate choice, the motives are numerous and varied. I shall disregard the small number of men who go into medicine from purely altruistic motives, because they are not primarily physicians; I refer to medical missionaries and men of that type. To them medicine is simply a tool which they use to accomplish what to them seem nobler and greater ends. Excluding these there are five classes: 1. Men who do not want to work with their hands because they imagine it is easier to work with the mind and much more respectable. They are often honest, but as a rule not very intelligent. 2. Men who think that medicine is a gentlemanly occupation, which sometimes enables one to marry a rich wife. 3. The men who deliberately go into medicine because they believe they can thereby make money by criminal practices without getting caught. These are very few in number. 4. Men who think they can make money in practice, notwithstanding the general opinion to the contrary. The members of this class are business men and wage earners and continue to be such. 5. Men who have intellectual hunger, are drunk with scientific inquisitiveness, and curious to learn the secrets of that mysterious machine, the living animal. These men do not think much about money making, or social position, or rich wives, but strongly desire and vigorously purpose to get all out of life that intellect can take. They are not as a rule altruistic, in the present day meaning of this much overused word, and would be puzzled to understand why any one should praise them as being charitable, though really the wise recognize them by their good works. When destiny combines with choice, when the chooser has not made a mistake, when he has, to use the language of theology, a call, there is created the highest type of physician. These are the men who, when students, attract the favorable attention, more than that, the real friendship of their teachers. I mean, of course, in high class schools; the less said about teachers in low class schools, their reasons for teaching, and their usefulness to the student, the better. The boy who is a student by choice plus destiny, and by destiny I mean that combination of forces which acting on the human protoplasm makes the man and in the physician to be, creates the necessary moral, mental, and physical qualities, becomes the great physician. I do not mean in the popular sense, that often is the result of chance, but in the reality of things, and it matters to him very little whether he gets union wages or not. As a rule he gets much more. He alone is the student who is worth bothering about, he alone should be encouraged; he is quite numerous enough to fill the country, need of physicians. In the wise time that will

come, not by talk, or by uplifting, or by holding meetings, but by unseen and unsuspected and unknown processes of Nature, aided by Nature's tools, the men of genius unhindered by the mob, these physicians by choice and destiny alone will survive, and then there will be no need for meetings to discuss, What shall we do to be saved?—not from eternal damnation, but from being poor.

In conclusion, I can only say that after the profoundest thought, the deepest investigation, extending over a period of four hours, mimicking the methods of the great experts on sociological matters, who graduate from schools of economy and social science, and often do not even do that, and then give to the humbly waiting world their entirely useless but absolutely sure remedies for all evils of the universe in ungrammatical English, in worthless newspapers and more worthless magazines; I say, after all this investigation, I am compelled to make an absolutely negative report. I do not find anything in the physician which marks him off from his fellow men, save that as a class he is gentler toward the erring, kinder toward the unfortunate. His wisdom is that of knowledge, not the false wisdom of untrained and unrestrained emotion. I do not find anything in him as a wage earner that differentiates him in any way from the rest of humanity. I am compelled to traverse the statement that he is not just as successful in a worldly view as other men, excluding those whose sole business in life is to make money. According to the income tax reports, 35,000 citizens paid taxes last year on incomes between \$10,000 and \$15,000. The amateur sociologists who write for the newspapers say that \$10,000 a year means success. I think about as many physicians proportionately are earning this income as business men. About the same percentage of physicians and business men fail financially. I do not find the physician more careless in business matters than other people. I have as much trouble in getting a bill out of my shoemaker as ever a patient did in getting one from his physician, but my shoemaker is a craftsman too, and loves his work, and is just as fond and as proud of his handiwork as any surgeon is of his. The opinion that doctors keep no accounts is somewhat exaggerated. Those who do not, do not because they are of that type of man, and no preaching will lead them to habits of business order. The man who uses x's and y's and curious hieroglyphs in his account book, does not do so because he is a physician, but because he is careless or secretive. That physicians are prone to speculate, if they have the money, goes without saying, but gambling is a universal habit and not a psychological quality peculiar to medical men.

There is an answer, however, not only to the wage question among physicians, but to all professional ills—a real panacea. It is to permit only those in whom choice and destiny combine to study medicine. This is not so impracticable, so much a dream, as it looks. Its fulfillment is difficult in a democracy, the very soul of which is that the unfit must be permitted to do that for which they are unfit, if childishly and fatuously they wish to, because everyone must be allowed to do what he wishes, at no matter what cost to the community. But the spirit of democracy is passing, it never really existed (man is inherently feudalistic), and there are a few signs

—not many but a few—that a wiser rule is coming. Even under present conditions, the few schools of the better class in this country have already made not a few steps forward. One or two schools have limited the size of their entering class on the ground that they cannot teach large numbers, and reserve the right to reject any prospective student who they think is temperamentally unfit to study medicine, and this entirely independently of whether he may have fulfilled the official requirements for admission or not. At least one other school is closely and sympathetically studying the question. The trouble is, however, that today rejected men simply go elsewhere. The time will come when elsewhere will be nowhere, for elsewhere will cease to be. The same schools of the better class today weed out the unfit in the middle, or at the end of the first year. When low class medical schools cease to exist, the general tone of the profession will be raised and the wage question will take care of itself.

Trade unionism, of which we hear so much, not under its own name, but craftily disguised, as the cure-all for professional ills, will not help us. It would hurt because it would not lift up the incompetent, but pull down the competent. When and if trade unionism ever plays its little transient part in American medicine, the physicians of mental ability who join the union (the best men will not) will not practise, but will be walking delegates for the very low reason that there will be more money and power in being trade union office holders than practitioners. The simple minded and the idealists among the doctors will pay their money tribute to the gentlemen who have the gift of gab, and slave that they may live, but when our time of national stress and struggle comes, and being too proud to fight and too trusting to prepare, and so hypnotized by government rhetoricians that we have lost the power of will to act, your medical trades unionists will behave just as union labor men are behaving today in another democracy, which seemed for a little while to be suffering almost as much as we from fatty degeneration of the emotions. In that country men and women of all classes, save official organized labor, are doing their bit as best they can with all the strength their God has given them. Is the medical profession in this country to accept the doctrines of English trade unionism? If so, the profession does need a sermon on the text, "Sirs, what must I do to be saved?"—not from poverty, but from degeneration.

1918 SPRUCE STREET.

THE CONSERVATIVE TREATMENT OF THE TONSILS.*

By G. HUDSON-MAKUEN, M. D.,
Philadelphia.

I think I belong to the so called radical class in respect to operative work upon the tonsils. When a tonsil should be removed, I think it should be removed root and branch, but in the operation I do protest against the removal of all or any of the structures adjacent to the tonsil. I should like to

be known, therefore, as a conservative radical, or as one who believes in the exercise of great care, and in the acquirement of great skill, in the performance of this exceedingly difficult and important operation.

On the other hand, I plead guilty to being a conservative when it comes to a question of diagnosis and the necessity for the removal of tonsils. When there are good reasons for believing that conservative treatment will free the tonsils from the suspicion of being a source of local or general systemic infection, and when they are not so obstructive as to interfere with respiration, phonation, and articulation, I see no reason why conservative treatment should not be practised, at least as a preliminary measure. I must say, also, that I think the removal of any structure of the body, even though it be a mere so called tonsil, is a more or less serious matter, and it should be advised only when we have good and sufficient reasons for believing that no less radical measures will suffice to bring about satisfactory results.

Having oriented myself, as it were, with reference to this matter, I may now proceed to my subject.

The question naturally arises, What is a conservative treatment of the tonsils? I suppose it may be regarded as including any medical or surgical treatment that falls short of their complete enucleation.

Local or topical applications to the tonsils, in my experience, have very little value except in instances where such treatment is indicated for the relief of an acute inflammatory condition of the entire pharyngeal wall, and internal medication is always indicated of course when the tonsillar and pharyngeal disease is of systemic rather than of local origin; and, by the way, it frequently happens that an acute tonsillitis and an acute pharyngitis are expressions of a systemic condition which calls for internal medication rather than for operative measures.

We all recognize the fact that, while the removal of the tonsils renders attacks of tonsillitis and pharyngitis less severe, it does not insure the patient against recurrence. A tonsillitis, in the majority of instances, is not a local disease, but merely an expression of a systemic condition, and for all we know the tonsillitis may be an expression of nature's method of combating an untoward systemic condition, and to remove the tonsil may be like killing the goose that lays the golden egg.

A mere tonsillitis, therefore, or even recurring attacks of tonsillitis, may not be and are not an absolute indication for the removal of the tonsils. And to regard it as such would be something like advising the removal of the entire pharyngeal walls to insure against a recurrent pharyngitis.

Among the most valuable and important of the conservative measures for the treatment of diseased tonsils are those employed to improve the drainage of the tonsillar region, and this is done by opening up retention pockets, whether they are found in the crypts of the tonsils themselves or between the tonsils and the adjacent faucial pillars. It frequently happens that certain of the tonsillar crypts drain into one of these cicatricial

*Read, by invitation, before the Philadelphia Laryngological Society, January 4, 1916.

pockets, and thus is formed a veritable cesspool of infection.

Sometimes a very slight operation will serve to open the pocket, give the desired drainage, and thus remove a serious and constant source of infection. I may say that the most satisfactory work that I have done with the tonsils is along this very line. It is scientific, because it carries out one of the great principles of surgery, namely, drainage.

The details of the work or the technic I have described elsewhere, and it consists, briefly, in laying freely open the retention pockets, or cysts they may be, with suitable knives such as I devised for this work twenty years ago and such similar ones as have been devised by many others before and after my own were made.

One trouble about the operation is the fact that the cut edges tend to unite after a few days, and thus a new pocket may be formed, but I have obviated this by freely burning the edges with the actual cautery or with some chemical cautery, such as a saturated solution of chromic acid applied with an applicator carrying a bit of absorbent cotton. Cutting or punch forceps have been recommended for the opening of these retention pockets and retention crypts, very good ones being devised by Doctor Freeman, of this city. These instruments remove a small section of the wall of the pocket or crypt, and thus render less liable a reunion of the parts.

It is my earnest conviction that the faucial tonsils rarely become foci of serious general infection, and in the great majority of instances, where the radical operation is done, complete and permanent relief may be obtained for the patient by the conservative measures such as I have described. I am well aware, however, that this complete and permanent drainage cannot be secured in all cases, chiefly because of the depth to which some tonsils are buried in their fossæ and the constriction with which they are surrounded and held by the palatal pillars and a large and obstructive plica triangularis.

In these "phimosed tonsils," as Dr. J. A. Stucky appropriately calls them, I have found it practically impossible to secure adequate drainage by the methods which I have described, and when in such instances the tonsillar tissue is actually diseased, I see no recourse but to remove it root and branch, as I have said, or in the completest possible way.

Now, a word as to the operation itself, in which we should be conservative radicals, by which I mean that the tonsil should be removed with as little as possible of the surrounding tissue and with as little as possible even of the so called capsule itself.

When I first suggested the possibility of splitting the so called capsule of the tonsil at a meeting of specialists in Cincinnati, some of my best friends and most ardent admirers actually seemed to think that I had lost my reason and was approaching second childhood, but when after three or four months I presented my paper upon the subject before the American Laryngological Association, in Niagara Falls, one of the scoffers or doubting Thomases, who in the meantime had undergone a change of heart, actually proceeded to demonstrate during the discussion of my paper, not only the

possibility, but the practicability of the procedure. In other words, he produced about a pint of tonsils which had been removed together with their so called capsules, or by means of the so called radical operation, upon many of which he demonstrated at least two layers of capsule, which layers had been separated the one from the other much the same as we may separate the capsular coverings of certain fruits, such as the orange.

While I admit that there is much histological work to be done during the different stages of the development of the tonsil before we can speak with absolute authority on the subject, yet I think that a careful study of some specimens of tonsils which have been removed extracapsularly clearly shows that our conception of the capsule of the tonsil has been faulty, and that unwittingly we have been removing too many layers.

If I am right in my supposition that the so called capsule of the tonsil is merely a portion of the intrapharyngeal aponeurosis to which the tonsil happens to attach itself during its development, and if it is a fact that this aponeurosis is composed of several layers of fibrous tissue, the inner layer of which becomes inseparably connected with the tonsil and is easily separated from the outer layers which belong in the tonsillar fossa, then obviously I am right in supposing that there must be a splitting of what has hitherto been regarded as the capsule of the tonsil, in order that we may leave the intrapharyngeal aponeurosis intact, or in other words avoid making a window resection of it and thus open up the deeper structures of the neck and render them liable to infection.

The particular technic of the operation by which this may be done, I have described before. Obviously the operation cannot well be done by dissection with sharp instruments, but it must be done by peeling the gland out as we should peel out the sections of the fruit of the orange from its outer coverings or as we should peel an egg out of its shell.

This fact gave rise to the so called finger dissection method so much in vogue several years ago, the chief objection to which proved to be the difficulty of once getting the dissection properly started.

SUMMARY AND CONCLUSIONS.

In its normal state the tonsil is not a menace, but a probable protection, and its presence is helpful in both phonation and articulation.

The fact that we do not know the systemic and mechanical functions of the tonsil is an argument in favor of conservatism rather than radicalism in our treatment.

The enucleation of the tonsil is the simplest and most expeditious way of dealing with it, but that it is the best way is always a matter of opinion and a question for careful consideration in each case. It is easier to remove a tonsil than it is to know whether or not it should be removed, and the very simplicity of the operation and its apparent freedom from untoward results make the temptation all the greater to do it rather than resort to the more difficult but less radical and probably better methods.

In our clinics the temptation to remove tonsils in a somewhat wholesale manner is almost irresistible,

but the practice is none the less reprehensible. It is obvious that dispensary cases should have the same careful treatment and the same consideration that are given to the most deserving private cases, and lack of time in our dispensary work is not a good excuse for ill advised and careless operations. The man who tonsillectomizes a dozen or fifteen patients in a single afternoon had better spend his afternoons in the abattoir.

I recall that upon one occasion before doing a tonsillectomy, I found it necessary summarily to dismiss the father of the patient from the operating room, and when afterward by way of apology, I explained that there was often some bleeding in connection with this operation, he said: "Oh, I wouldn't have minded because I am a butcher myself."

However, after all is said and done against radicalism in tonsillar surgery, the fact remains that in certain selected cases there is nothing we can do that gives such brilliant results as the removal of the tonsils and adenoids, and in well selected cases there can be no objection to the operation, provided always that it is carefully performed. The very brilliancy of these results, however, has an element of danger in that it leads us to make the radical operation the rule, rather than the exception which I think it ought to be, and, as I have said in a previous communication, the tendency of the future will be to find out, not how to operate, but how not to operate, or at least how to operate in the most conservative manner.

1627 WALNUT STREET.

THE REMOVAL OF THE TROUBLESOME USELESS UTERUS.*

By A. ERNEST GALLANT, M. D.,
New York,

Consulting Surgeon, Jamaica Hospital and Eastern Long Island Hospital, Greenport.

Sublata causa, tollitur effectus.

From the earliest days of the barber surgeon and for always, this principle, remove the cause, and the effect ceases, has been and forever must be the solid foundation whereon the surgeon takes his stand. On reviewing my records of cases in which the uterus has been removed, the determining factors and considerations for radical operation have been:

1. Because the uterus was the seat of a *life destroying disease*—cancer.
2. Because there was present a condition *detrimental to health or dangerous to life*—fibroids, septicemia, pus tubes, perforation, syphilis, hereditary cancer, etc., or

3. Because of conditions the source and cause of *health destroying discomfort*, so intractable to other measures for relief that a radical operation was deemed the only means of attaining the end in view, viz., permanent relief from suffering.

As to the wisdom and necessity of removal of the uterus in those cases included in classes 1 and 2 most gynecologists would be in hearty accord.

My purpose now, however, is to offer for consideration the *indications* for operation in the thirty

cases coming under class 3, which have been grouped under the title, The Troublesome Useless Uterus; "troublesome" because they were the cause of *intractable* suffering; "useless" because they were either absolutely, relatively or practically incapable of performing the one sole function of the uterus—reproduction. Thus naturally they fall into three subdivisions, viz.:

Group A. Twelve women, between the ages of fifty and seventy-three years, who had of course passed the menopause; from whom the senile uteri were removed because of a prolapsed bladder with or without rectocele or descent of the uterus or intestines in seven cases; uterosacral ligament retrofixation, four cases; chronic pyometra and ovarian sarcoma (?), one case. The operative methods employed were vaginal hysterectomy and total excision of the vagina, four cases; vaginal hysterectomy and partial excision of the vagina, four cases; vaginal hysterectomy, three cases; and vaginal hysterectomy, plus resection of the sigmoid, one case.

In view of the serious nature of their discomforts, so ill borne by women who have passed the half century mark, we have always felt that these operations on truly troublesome, useless uteri, radical as they might have been, were fully justified, even though two women (Cases B-113¹ and H-209) paid the penalty with their lives.

In a previous paper we enumerated the indications for hysterocolpectomy:

In a woman suffering from cystocele, with or without prolapse of the uterus and rectum, either before or after hysterectomy, especially when other operations have failed to secure a permanent cure, provided that she has passed the childbearing period or is otherwise debarred from childbearing, who has passed the menopause, whose husband is willing to forego marital relations, or in one who is "frigid"; the Edebohls-Martin operation, viz., complete excision of the vaginal mucous membrane, with the uterus if present, and columnization of the vaginal tube, is a safe and sane operation which will insure an absolute and permanent cure of the prolapse, at a minimum of danger and loss of time, with a maximum of security against recurrence.

Practically the only contraindications are the question of childbearing and in married women, at least, the loss of sexual relations. (Panhyserocolpectomy, *American Journal of Surgery*, June, 1911.)

On January 28, 1911, I presented a report to the obstetric section of the New York Academy of Medicine, on Case B-48, of prolapsed bladder and vaginal wall, following hysterectomy in a widow, fifty-four years old, from whose vagina I removed the whole mucous membrane and by columnization closed that canal forever.

At the same meeting I related the history of Case B-49, a married woman in her sixty-eighth year; with external protrusion of the bladder and uterus. July 21, 1910, the uterus was removed, the vagina completely denuded, and the canal closed by columnization. At that time but thirteen cases of this operation had been recorded (*vide supra*).

KRAUROSIS VULVÆ—CYSTOCELE—RETROVERSION—PRURITUS—HYSTEROCOLPECTOMY—SUPPURATION—DEATH.

CASE I (B-113). A physician's mother, aged seventy-three years, whose life was made wretched by prolapse of the bladder and uterus between the thighs, associated with intolerable itching, apparently caused by a disagreeable, foul smelling, acid discharge, was treated for fourteen months locally and the uterus lifted by a pessary, but this

*Read before the Medical Association of the Greater City of New York, December 20, 1915.

¹Alphabetical index number.

so increased the discomfort that her general health was rapidly running down. Operation, as the last resort, was done March 18, 1912. The uterus and vaginal mucus membrane were totally removed and the vaginal tube was closed completely. During the second week suppuration developed, the canal was reopened, but in spite of good drainage, she died on the twenty-eighth day after operation. The certificate read "hypostatic pneumonia" (?) (*loc. cit.*).

CASE II (H-209). Unsuspected cancer of the sigmoid, led to resection—and death. When removing the uterus through the vagina, an immovable mass was felt above and to the left of the pelvis, too high to drag down through that canal. On opening the abdomen the mass was found to involve the sigmoidorectal junction. Five inches of the colon were removed and the ends approximated. On the fifth day after operation, in an effort to prevent the escape of gas and feces into the bed, she experienced a severe pain in the region of the resected gut; her bowels moved four times freely; she suddenly became cold and cyanotic and died within six hours after the abdominal pain first began. No autopsy permitted.

CASE III (K-62). Owing to the uterine immobility from thickened broad ligaments, removal was undertaken through the abdominal route. While dragging upward, what seemed to be a fibroid suddenly burst, and tore into an abscess in the uterine wall. After a difficult separation from the bladder, the uterus, tubes, and ovaries were removed in toto. For several days there was considerable oozing of bloody serum and the wound showed no tendency to heal, until liberal doses of mixed treatment were administered. Sixteen days after operation, when she left for home, she was directed to continue to take ninety grains potassium iodide daily.

FEAR OF CANCER—PUS IN UTERUS—SARCOMA (?) OF OVARY—FIBROIDS.

CASE IV (H-212). Woman, aged fifty years, menopause four years ago following typhoid fever. For some years had been troubled with an abscesslike feeling in the left groin, confined to an area of about three inches, which came on suddenly, with tremors, and feverish feeling; and in place of the menstrual blood, a discharge of a large quantity of foul smelling pus mingled with blood. She suffered from extreme nervousness, intensified by the fact that her husband drank too much. Worried a great deal as her sister died from cancer of the breast and brother of cancer of the back. November 25, 1913, the three inch deep uterus was explored and a three inch, fenestrated drain inserted. On December 6th, there was a free discharge of sanguineopurulent matter, which continued until the 14th. Her phobia was so distressing, and on account of the nature of the discharge and the presence of a pedunculated tumor on the left side of the uterus, a vaginal opening was made and the uterus and the tumor were removed. The uterine walls were permeated with small fibroids; the tumor, larger than a goose egg, on microscopic examination proved to be a fibroid ovary. When last seen, some five months after operation, she had lost her fear of cancer, but owing to domestic troubles was still much depressed and extremely excitable.

CASE V (J-204). Woman, married, aged sixty years, for six years had been greatly annoyed by "the womb coming down outside, the size of a baseball." July 21, 1912, at the Greenport, N. Y., Hospital, the retroflexed, prolapsed uterus was removed and a V stripped from the anterior vaginal wall, to lift up the floor of the bladder. Dr. A. C. Loper reported that the result had been all that could be wished for as to comfort and well being.

Partial colectomy. When not otherwise contraindicated, especially in senile women, complete colectomy is the operation of choice; but in those who wish to preserve their copulative canal, partial colectomy, denudation of the upper half of the vagina following hysterectomy, with columnization of the denuded portion, will leave a vaginal canal about three inches deep and lift the prolapsed bladder high enough to do away with vesical irritation, etc., as in the following instances:

CASE VI (Y-201). Woman, aged fifty-six years, complained that for years the "womb came down between her legs and made her very sore." The excoriated bladder

and cervix protruded through the vulva. May 19, 1915, vaginal hysterectomy and denudation of the upper third of the vagina with columnization, was done. When she returned home, twenty days later, there was a little discharge from the apex of the vagina.

CASE VII (Q-203). Hysterectomy and partial colectomy for cystoretocolle removed the "trouble" and a useless uterus. Woman, aged fifty-five years, mother of six children, for two years had suffered from dragging in her back and pelvis, discomfort, and bearing down in the rectum, vagina, and bladder to such a degree that she could not walk or do anything; urinated every two or three hours; and altogether was very nervous and miserable. Second degree perineal laceration; fundus uteri forward, cervix at the vulva; bladder and rectovaginal wall protruded on exertion or walking. January 11, 1913, vaginal hysterectomy, partial colectomy, and perineorrhaphy. April, 1915, while taking dinner with this patient I had ample opportunity to realize the great change in her whole attitude toward life, she now being able to ride, walk, and enjoy living as a woman should.

CASE VIII (B-211). Woman, aged sixty-four years. For ten years the "womb had come down between her legs which were raw from chafing." Dr. H. S. Bartholomew had tried a ring pessary, but this she could not tolerate. The bladder, uterus, and rectum protruded through the vulva, excoriated and bleeding. As she refused complete hysterocolpomy, January 18, 1915, the uterus and upper third of the vagina were excised and the vault closed. Some three months later she stated that "since February it felt as if the womb was coming down again" and as a matter of fact, though the rectum and bladder were well up in position, the apex of the vagina had stretched open and the small intestines, covered only by the translucent peritoneum, had been forced through the vaginal canal—a true vaginal, intestinal hernia. May 12, 1915, the remaining vaginal wall was completely denuded, the vaginal canal columnized and permanently obliterated.

During both operations it was difficult to keep her under ether to the surgical degree, and she gave us considerable annoyance by her copulative activity and convulsive movements of the constrictors vagina.

CASE IX (B-209). The youngest victim of hernia vaginae (third degree (bladder, uterus, and rectum), prolapse was in a woman, aged thirty-nine years, whose last child was eight years old, and the prolapse of seven years' standing. January 24, 1913, at the Jamaica Hospital, Doctor Kittell and Doctor Keets assisting, vaginal hysterectomy, partial colectomy, and perineorrhaphy, lifted up the bladder and contracted the vaginal outlet to its pristine calibre.

Group B includes eleven women, whose ages ranged from thirty-seven to forty-seven years, and who at the time of operation were still menstruating.

In 1910, in a paper entitled *Delayed Menopause*, I called attention to the menstruation law of Kirsch, viz., "that the earlier the menstruation first makes its appearance . . . the later will the menopause appear," and showed a table based on that "law" whereby we can determine approximately the age when the menses in normal women should cease. It was published in the *Year Book*, 1910, Medical Association of the Greater City of New York, page 212, also in *NEW YORK MEDICAL JOURNAL* for June 18, 1910, but I reproduce it here:

Approximate Year of the Menopause.

(Applies to women wholly free from pelvic troubles.)

Menses began at the	should cease between
10th	50th and 52nd year.
11th	48th and 50th.
12th	46th and 48th.
13th	44th and 46th.
14th	42nd and 44th.
15th	40th and 42nd.
16th	38th and 40th.
17th	36th and 38th.
18th	34th and 36th.
19th	32nd and 34th.
20th	30th and 32nd.

These figures are intended to represent the age limit in women free from any pelvic disease, displacement, deformity, or disorder, and vary quite widely from the averages of E. Krieger (quoted by Stark, *Surgery, Gynecology, and Obstetrics*, January, 1910, p. 38).

Applying this test to the eleven cases of Group B, we find there were four who had passed the "approximate age" limit:

Case.	Menses began.	Present age.	Menopause due.	Years of delayed menopause.
S-129	10	39	32/34	6
S-139	17	41	30/38	4
C-213	14	45	42/44	2
J-17	18	40	34/36	11

while the other seven had in prospect, a few more years (one to five) of menstrual activity:

Case No.	Menses began.	Present age.	Menopause due.	Years to flow.
L-50	?	37	?	?
B-47	14	38	42/44	5
C-17	14	38	42/44	5
B-209	14	39	42/44	4
V-202	15	40	40/42	1
L-208	13	41	44/46	4
F-66	12	47	40/48	1

All but two of these eighteen women were married and had had from one to seven children, the average in Group B, 2.4 children, and in Group C, four children; the extreme range of individual fertility seven children.

The most recent birth was seven months previous to operation; the average length of sterility was eight years in Group B, and about six years in Group C; showing a higher average fecundity than in most present day families.

SYMPTOMATOLOGY.

In a paper of this brevity it would be impossible to individualize the several cases, their symptoms, and all the conditions at the root of which lay a troublesome uterus.

On applying the "illuminating parallel," it is very interesting to note the striking similarity in the percentage and composite of symptoms and conditions manifest in Group C (women under thirty-five years of age) with those of Group B (women thirty-seven to forty-seven years old).

Symptoms.	B %	C %	Symptoms.	B %	C %
Headache	54	57	Dysuria	45	43
Iliac abdominal pain	27	29	Dyspareunia	27	14
Dysmenorrhea	63	90	Excessively		
Backache	63	42	nervous	100	86

Arranged in this way, it is forcibly brought to mind that when deciding to operate or not to operate, we have been influenced very largely by, *a*, the severity of the symptoms; *b*, effect on the general health; and, *c*, the environment.

Excessive nervousness was the one predominating complaint in all but one instance, spoken of as "bad tempered, very irritable"; despondent, melancholic, wished she were dead, "no use for" or affection for her husband (quite common nowadays), but the more serious as showing mental unbalance, when a mother "hates her own children and cannot bear to live where they are."

Dysmenorrhea comes next in order of frequency; usually of a severe type, lasting throughout the flow, and compelling the sufferer to lie down for a few hours or go to bed for one, two, or even three days of each period. In Case J-201 the pain was

followed by tremors, convulsive movements, and unconsciousness.

Backache is a common symptom, located by placing the hands over the sacral region, variously described as "come and go pain," dragging, tearing, bearing down, falling; and present all the time, during the monthlies, not so bad between, etc., but to each one very trying, and very real.

Headache. Every one, professional man or layman, having to deal with women when tortured with headache of uterine origin has seen the time when they "wished them farther," or unwisely resorting to some sort of "dope" in order to alleviate or stupefy the victim and render her unconscious of her suffering. As most of these headaches are associated with pelvic congestion, cerebral anemia, and uneven circulation, it would be wiser to order a twenty minute mustard foot bath, and a capsule containing nitroglycerin 1/100 grain, and Tully's powder one grain, every hour until relieved.

Iliac abdominal pain, when not of appendicular origin, was of a dragging, tearing, burning character, and referable to tension on the round ligaments, or enlargements or adhesions of the tubes and ovaries. In some instances the only way definitely to determine the seat of the difficulty was by actual palpation of the appendix.

Dyspareunia. Pain during congress was due either to the rawness of vaginitis or tender, thickened, uterosacral ligaments holding the uterus immobile in the pelvic hollow.

Dysuria. Frequent, painful urination was nearly always associated with a demonstrable trigonitis, an acid vaginitis, acid urine of high specific gravity.

CASES X (F-66) and XI (L-208). Combined panhysterectomy was made necessary by uterine immobility, due to thickened broad ligaments and fibroids in Case x, and also in Case xi in order to release the uterus from the pedicle of an abdominal fixation of some years before.

CASE XII (C-14). Supravaginal hysterectomy proved a rather dubious expedient after amputating a fibroid uterus and both tubes and ovaries; there was an accumulation of pus above the cervix, which had to be drained through the dilated cervix and abdominal opening, and left a sinus which took several months to close; two years passed before the patient regained a modicum of her health and strength. (If I ever have the misfortune to see another case of this sort, prompt removal of the cervical stump would be adopted as the sure means of securing free drainage.)

CASE XIII (T-204). Retrofixation of the uterus by thickened, inelastic, uterosacral ligaments, immobilizing the uterus and resisting all efforts to draw it down made the vaginal removal impossible in Case XIII, but supravaginal amputation also afforded the opportunity for removing a very troublesome colicky appendix and enlarged cystic left ovary and tube.

CASES XIV (H-11), XV (M-92), XVI (J-17), XVII (S-129), XVIII (C-213), XIX (O-17), and XX (C-70). Uterosacral or lateral fixation by adhesions or thickening, especially of a retroverted uterus (seventeen of these thirty cases) was the source of the backache, headache, dragging, etc., of which these women complained and in Case xiv made bisection of the uterus necessary for removal per vaginam; and a few sutures in the pinched small intestine were necessary in Case xv. Much the same difficulty was experienced in Cases xvi, xvii, xviii, xix, and xx, the last requiring anterior colporrhaphy to lift up the prolapsed bladder.

CASE XXI (L-208). Stomach elevation instead of multiple fixation might have led to a more favorable result in this woman, aged forty-one years, with four living children; menstruated every twenty-eight days, flowing eight to ten days, naturally (?). Twelve years ago, appendix and right ovary were removed; right kidney and uterus fixed; cervix

and perineum sewed. Food ferments and sour water came up and burned throat. The cervixless, ventroflexed uterus caused such painful dragging that on October 10, 1914, it was removed by the combined method. The prolapsed stomach (greater curvature dipped into the pelvic brim) explained why the several operations had failed to relieve her gastric trouble, and malnutrition. A special corset was worn, which could, and did support that organ. She gained in weight, health, and strength.

CASE XXII (B-47). As an interesting example of prolonged temporizing we relate this case. When first seen, the patient was thirty years old, suffering intensely with headache, backache, dysmenorrhea, dyspareunia, and dysuria, from thickened uterosacral ligament fixation, ante-flexion, and laceration of the cervix, and lacerated perineum. Brandt's massage, tamponade, pessary and local medication were consistently and persistently carried out for eight years in the hope of impregnation, and operation was delayed until near the menopause. Finally she insisted on operation, and on February 5, 1909, the uterus was removed per vaginam, and she was freed from pain, headache, etc. Some time later she had movable kidney and Dietl's crises, which were controlled by a special corset. During the following four years, whenever her corset wore out, the Dietl's crises would recur (this was repeated three times) and she was compelled to stay in bed until she could be fitted with a new corset.

CASE XXII (L-50). Fibroids simulating enlarged tube and ovary led to removal in this case of a spinster, aged thirty-seven years, who for two years had suffered almost constantly such severe bearing down pain in the back that she had to give up working. Rectal examination disclosed a somewhat movable mass on the right side, the size of one's fist, which was believed to be an enlarged tube or ovary or both. September 19, 1904, after curettage, through an abdominal opening, the enlarged uterus was found studded with small fibroids and on the right, low in the pelvis, a cluster of fibroids of assorted sizes. The uterus was amputated supravaginally, and removed with the left tube and the right tube and ovary. A few days later, the cervical stump was dilated and a drain inserted to let out an accumulation of serosanguineous fluid above the vaginal vault.

CASE XXIV (S-139). Impalpable fibroids causing metrorrhagia was the incentive to operation in this case. Woman, aged thirty-nine years, with baby nine months old. Menstruated first at nineteen years, flowed regularly every twenty-four to twenty-eight days, for five days, moderately. For the past three months had flowed almost without cessation. Cervix large, eroded; interior of uterus nodular, cavity ballooned, fundus retroverted to second degree; uterosacral ligaments thickened; right tube prolapsed posteriorly. Attributing the metrorrhagia to submucous fibroids, the uterus was removed per vaginam, and found covered and riddled with small fibroids. The thickened uterosacral ligaments prevented downward traction and rendered removal very difficult. Doctor Prudden reported that she made a smooth recovery and built up rapidly.

CASE XXV (V-202). Ectopic vs. fibroid led to operation in this case. Woman, aged forty years, last child twenty-one years old, last miscarriage three years ago. Had been flowing out of the regular order for two weeks; colicky pains at McBurney point; sacral backache; morning headache (vertex). Vagina, congested; hourglass shaped; uterus in the hollow, enlarged, also right tube, with pulsating uterine artery; appendix tender on palpation; right kidney prolapsed five inches; temperature, 99° F., pulse 66. Celiotomy, November 3, 1914. Appendicular arteries dilated, peritoneum inflamed, removed. Uterus studded with small fibroids, bound down with the tubes by old adhesions and thick bands, freed, and removed supravaginally. On the ninth day after operation she walked to her motor car and was taken home. Later a corset was fitted to support the prolapsed kidney.

Group C includes seven suffering young women, between thirty and thirty-four years of age, in the full tide of reproductive activity, and for that reason the question of removal of the uterus has given me greater concern. It was in order the more definitely to fix in my own mind the pro and con of this phase of the subject, that a study of these cases was

undertaken and the presentation of this communication deemed worth while. I can only hope that the rehearsal, in brief, of a few of these cases may make clear my viewpoint and meet with general approval.

The earliest case in Group C, of which I have record, and made me do the hardest thinking, was:

CASE XXVI (M-52). Mrs. M., aged twenty-seven years, three children living, youngest eighteen months old. Labors instrumental. Torn perineum "sewed one year ago, and piles operated on." Menstruated every twenty-five to twenty-eight days, flowing a great deal for five to eight days accompanied by severe headache. Was suffering with



FIG.—Condition and position of the uterus in Case xxvi (M-52), Group C, before first operations, amputation of cervix and perineorrhaphy in 1897; June 12, 1900, supravaginal amputation uterus.

the adherent frenum. The pessary was not replaced. Labor, April 12, 1898; high forceps due to delayed second stage. Mother unable to supply breast milk. In order to prevent a recurrence of the retroversion, a few days after labor, a pessary was inserted, and changed from time to time.

During the following August (1898) the left side of her face became immobile, lips swollen, and she complained of dizziness and congestion of the head on stooping. A few days later, the left eye twitched in a very annoying way. For four months the acid vaginal discharge caused severe external excoriation and the pessary could no longer be worn. In the hope of getting rid of it altogether, on November 14, 1898, high amputation of the cervix and perineorrhaphy were done. Eight weeks later, the perineum presented a firm, thick body, but the uterus had again fallen backward into the pelvic hollow. As she feared pregnancy, an obturator was introduced into the cervix. During the following four months, she suffered from dysuria with frequency, the urine being acid; alkalies and fluid extract of pichi were given internally, pure ichthyol applied to the urethra once or twice weekly. Since the birth of the child her menses have been regular, flowing freely for three or four days.

May 7, 1900, the patient returned, complaining that her menses lasted six days; painful; dysuria, stubborn constipation, backache, not so bad of late; with a raw feeling in the bladder on sitting down. Her condition, mental and physical, was so wretched, that she had developed a deep dislike toward her children and she could not bear them in the house. Her husband begged me to do anything which offered any hope for relief. Having lost the cervix as a fulcrum we could neither support the uterus with a pessary nor hope that any form of suspension of the uterus would be of value, and on June 12, 1900 (after three years of "conservative" treatment) the cervixless retroverted, hypertrophied, four inch deep uterus was lifted through an abdominal incision and amputated supravaginally.

After a smooth postoperative convalescence she gradually improved, regained her health and strength, and resumed her natural relations with her children and husband.

Was the child she secured worth the suffering she endured during that horrible three years? Only a mother can answer!

CASE XXVII (D-11). Woman, aged thirty years, three children alive. After the birth of the last child, two years ago, she suffered severely with backache (sacral) and headache (vertex); dysuria, dyspareunia, and extreme nervousness. Menses scanty. The lacerations of the cervix extended deeply into both broad ligaments; the perineum had been torn to the second degree; the fundus lay in the sacral hollow, but could be lifted toward the symphysis. May 13, 1899, trachelorrhaphy and perineorrhaphy. There was very decided enlargement of both lobes of the thyroid with well marked exophthalmos, but she refused to have the thyroids removed.

October 16, 1900, Dr. F. D. Peterson reported that the fundus was again on the pelvic floor; and could not be lifted up manually. All her symptoms had returned, only worse than ever (April 3, 1901). Last month, after a miscarriage, the uterus was curetted; and she had been in bed ever since. The large, heavy, retroverted uterus was removed per vaginam.

April 17, 1911, she wrote me, "I have just passed the tenth year since my last operation and am real well except the disagreeable discharge I have always had. I have had missionaries, ministers, architects, children, and one or two nervous wrecks. I take them as guests and give them rest. Last year I had a noted painter for six weeks, and I enjoyed the paintings as much as she did the rest and change; so you see I keep busy and am so thankful for the health to do the work."

CASE XXVIII (G-33). Kraurosis vulvæ with pruritus. Woman, aged twenty-five years, two children living. Since her menses began, at fifteen years, she has had a very annoying pruritus with vaginal discharge, which interfered with sleep, and caused her to scratch herself day and night, until the whole vulva and anal region was thickened and ulcerated; this interfered with stools, and rendered coitus painful. Would "go mad" if not relieved. After five months' unsuccessful trial of various applications and internal remedies, on May 13, 1901, the whole vestibular mucous membrane with the hypertrophied clitoris was removed, and the edges brought in apposition. October 17, 1900, Dr. H. S. Bartholomew reported that there had been no return of the pruritus, and a gain of twenty pounds. June 17, 1904, she gave birth to a baby at term. May 25, 1910, varicosities of the vulva and back of the left leg pained and burned. After the baby was born, she had backache, headache, could not work or walk without dreadful feeling of weight and things falling out below, relieved only when tamponed. Colicky pain over the appendicular region before menstruation. The large (four inch) heavy uterus seemed nodular, resting on the bladder, the uterosacral ligaments thick and tender; the left ovary or tube was enlarged. Her condition was truly deplorable, and at the urgent solicitation of her husband and doctor, the uterus, left tube, and ovary with the appendix were removed through an abdominal opening. Her response to this treatment and return to health were most gratifying.

From these three cases, especially, (as Goodell so aptly put it) I "learned to unlearn some things in gynecology" and the first lesson was that by lifting up and replacing a heavy, hypertrophied uterus and supporting it by a pessary, the menorrhagia, metrorrhagia, dysmenorrhea, dysuria, dyspareunia, could be stopped and the "uterine" headache relieved; the second lesson was that chiefly on account of the weight of the uterus and the hyperacidity of the vaginal secretion, some of these patients could not tolerate the continuous wearing of a pessary.

My third lesson was that high amputation of the cervix was an unwise procedure, in that having removed the lower end of the fulcrum, the uterus could no longer be supported by an Albert Smith pessary, nor could any other type of pessary large enough be introduced through the narrowed vaginal opening after having repaired the perineum; which, however thick and firm, would not prevent the now

cervixless uterus from again falling backward into the pelvic hollow, with a return of all the disagreeable symptoms.

The fourth lesson was that without the cervix to rest its weight upon the perineum, any method of suspension depending on the round ligaments would be sure to fail, and it was quite evident that the only sure method of securing permanent relief was to remove the uterus, which, in its position of extreme retroversion, was practically a "useless" organ.

A sixth lesson was that the cessation of the headache, freedom from backache, the absence of menstrual irritation, the relief from bladder irritability, the comforting sense of pelvic security, following hysterectomy, facilitated the resumption of pleasurable marital relations, and restoration to health as no other plan could.

A seventh lesson was that the cessation of menstruation following hysterectomy does not seem materially to lessen the bad effects of goitre, and subsequent experience has taught that removal of the thyroid is an important factor in facilitating a return to health.

During the past few years we have learned to look upon an acrid, foul smelling, acid vaginal secretion before and after hysterectomy (a "senile" vaginitis) as a local manifestation of a general hypalkalinity which must be treated by alkalis internally, as well as by local applications to the vaginal canal.

CASE XXIX (J-23). This was the result or sequel in this case. Woman, aged fifty-two years, from whom we removed a large, heavy, uterus dragging on the thickened, tender uterosacral ligaments; causing a weak back, bearing down, and pulling sensation in the right iliac and hip; relieved whenever tampons or a pessary would stay in. From shortly after operation (February 16, 1905) to the present time, off and on, there has been an acid vaginal discharge with pain through the right hip, to the iliac fossa, down the groin and inner side of the thigh. The old opicoid headache returned, and on walking her whole flesh seemed to beat and throb. From time to time we renewed the alkalis, insisted that she drink ten glasses of water a day; and applied crude pyroligneous acid to the vaginal wall; inserting a tampon of ichthyol twenty-five per cent. glycerin, seventy-five per cent, and limiting the ingestion of fruits and acid forming foods to a minimum. When she failed to adhere to these restrictions the acidity or hypalkalinity recurred.

SUMMARY OF CONDITIONS CALLING FOR OPERATION IN THIRTY CASES.
Group A. B. C. Total.

Prolapse bladder	2	1	0	3
Prolapse bladder and uterus	1	1	0	2
Prolapse bladder, uterus, and rectum	1	1	0	2
Prolapse bladder and rectum	1	1	0	2
Prolapse rectum	1	2	0	3
Uterus, retroverted	8	7	3	17
Uterus, fixed, posteriorly	2	2	3	7
Uterus, fixed, laterally	1	6	1	8
Uterus, fixed, abdominal wall	0	1	0	1
Uterus, hypertrophied	7	3	5	15
Cervix anteverted	1	1	2	4
Cervix lacerated	2	1	3	6
Perium lacerated	1	4	2	7
Ovaries and tubes diseased	1	1	4	6
Vaginitis, severe	4	0	2	6
Visceroprosia	1	1	0	2
Kidneys, prolapsed right	2	3	1	6
Kidneys, prior to suture	0	2	0	2
Stomach dilated	1	1	1	3
Stomach prolapsed	1	1	1	3
Goitre	1	1	1	3

SUMMARY OF OPERATIONS

Group A. B. C. Total.				
Hysterectomy, vaginal and colpocectomy	3	0	0	3
Hysterectomy, vaginal and partial colp.	3	1	0	4
Hysterectomy, vaginal	1	2	1	4
Hysterectomy, supravaginal	0	2	2	4
Hysterectomy, abdominovaginal, pan.	0	3	0	3
Hysterectomy, abdominal, pan.	1	0	1	2

	Group A.	B.	C.	Total.
Hysterectomy, supravag. ovary and tube.	0	0	2	2
Hysterectomy, vaginal ovary and tube.	0	0	1	1
Anterior colporrhaphy	1	1	0	2
Perineorrhaphy	2	2	0	6
Cervix, amputation	0	0	2	2
Appendectomy	1	1	2	4
Uterine drainage	1	0	0	1
Cervical stump drainage	1	0	1	2

In closing permit me to offer the following conclusions:

That removal of a troublesome, useless uterus is not only justifiable, but the most rational procedure—

1. In "senile" women; and that denudation and complete closure of the vaginal canal is the one sure and permanent means of curing hernia vaginæ.

2. In well nourished women, who have ceased to menstruate, or who have passed or are approaching the "approximate age" when the menses should cease, hysterectomy and partial colectomy will prove most beneficial and still provide for marital relations.

3. In a menstruating women under thirty-five years, after every means to conserve her childbearing function have been exhausted; when the conditions cause a life of semiinvalidism; when they prevent her from working and earning a living; when they seriously interfere with her duties to husband and children, and condemn her to a life of unalloyed suffering, then and then only, as a last resort, should the uterus be removed, as the safest, surest, and most satisfactory operation.

4. Whenever the pelvic conditions are associated with a troublesome, colicky appendix, or simple or exophthalmic goitre they should be removed.

5. Whenever combined with visceroptosis, a cure cannot be expected unless the patient is fitted with a properly fitting corset.

616 MADISON AVENUE.

THE CURABILITY OF CHRONIC URETHRITIS.*

By WALTER S. REYNOLDS, M. D.,
New York,

Late Chief of Clinic and Instructor in Genitourinary Diseases,
Columbia University; Formerly Professor of Venereal
Diseases, University of Vermont.

The statement is made not infrequently that chronic urethritis is an incurable disease. Such a statement, if true, is certainly deplorable, confessing, as it does, the uselessness of all treatment. I shall not, therefore, offer an apology for the presentation of a paper on a subject of which so much has already been written.

It would be difficult to determine how often acute urethritis results in a chronic condition. I believe there can be no question that the acute attack is receiving much better attention and treatment than formerly, for strictures and other serious complications which, a few years ago, were very common, are now comparatively rare. Men are becoming impressed with the seriousness of urethritis and therefore more frequently seek proper medical advice, and the physician is better equipped than formerly to advise as to treatment. That there is much to be

desired in these respects must be admitted, for chronic urethritis is still much more frequent than thorough and efficient treatment, persistently carried on until a cure is effected would seem to warrant.

While the prevalence of chronic urethritis cannot be denied, we may be inclined to overestimate its frequency, as many of the men drift from one physician to another in search of relief. This may also be the cause of the skepticism regarding its cure. My experience leads me to the belief that often failure to relieve these men is because medication is too frequently resorted to without apparently considering the pathological processes involved. Treatment, if it is to be successful, must be founded on full knowledge of the conditions present, and this is to be obtained only by careful and painstaking examination. No one would think of treating an inflammatory affection of the eye without first looking to discover the cause. Why should we be satisfied with the mere statement that a man is suffering from a urethral discharge without attempting to locate the cause of the trouble and learn something of its character? The history of one case only will serve as an example of what is not infrequently seen. A young man contracted gonorrhea ten years ago. The acute symptoms subsided under treatment, but there has been a persistent discharge, slight in amount, noticeable principally in the morning, since that time. Aside from this he has had no symptoms, except some slight burning sensation on urinating at times, usually after some indiscretion in diet. He has been treated by a number of physicians; has had irrigations, massage of the prostate, vaccines, sounds, and has used a variety of injections, all without benefit. No one has attempted apparently to learn the exact seat of the trouble, or what was taking place in the urethra. Examination showed that his trouble was confined to the anterior urethra, and urethroscopic examination showed patches of infiltration with a good deal of glandular involvement. After a prolonged course of treatment, the urine has become clear and the urethra presents a normal appearance.

The symptoms of chronic urethritis do not need lengthy discussion. The one chief symptom is a slight purulent or mucopurulent discharge. This may be noticeable only in the morning, the reason being that at such times, the urethra not having been washed out for several hours, the discharge collects in sufficient amount to be noticeable. This constitutes the morning drop. It must be remembered that a discharge of this kind is not always a symptom of chronic urethritis, as the following case illustrates: A young man having had urethritis three years previously, since which time he has had no symptoms, indulges in sexual and alcoholic excesses. Following this he is able to squeeze out a sticky, mucoid secretion. Microscopical examination of the expressed drop shows it to be principally mucus, with some epithelial cells. The urine is concentrated, high colored, and markedly acid. A week of abstinence from alcoholic stimulants and sexual excitement, with orders to drink plenty of water to dilute the urine, relieves all symptoms.

While, ordinarily, in chronic urethritis, the chief or only symptom is slight and persistent discharge,

*Read before the New York Academy of Medicine, Feb. 16, 1916.

in some cases there may be more or less disturbance of the urinary or sexual functions. The urinary symptom may be increased frequency or painful urination. Increased frequency due to the excretion of an increased amount of urine must be differentiated from that due to irritation. The sexual symptoms may be increased excitability, with frequent nocturnal pollutions, or there may be partial or complete impotence. These symptoms are nearly always indications of involvement of the posterior urethra.

In considering the treatment of any disease, the question naturally arising first in the mind is, What can be done in the way of prevention? I believe much can be done to lessen the frequency of chronic urethritis, but the scope of this paper will not allow of more than a brief consideration of preventive measures. Since chronic urethritis presupposes in nearly every instance a preceding acute inflammation, preventive measures must be directed to the prevention or cure of the acute condition. There is only one absolutely sure way of avoiding infection. The man who is continent or does not indulge in extramarital sexual intercourse need have little fear of contracting urethritis. We have all probably had patients offer elaborate explanations of how the disease was contracted in some other way than through sexual intercourse. But such explanations are seldom satisfactory, except to the unduly credulous. There are some who believe that teaching the benefits of continence helps to lessen the frequency of urethritis. Personally I am not very optimistic in this respect. My experience does not lead me to believe that such teaching will have very great restraining influence. Instinct, especially the sexual, will not be restrained by reason under certain circumstances, at least with the majority of men. Man, endowed with intelligence, is still the animal so far as the sexual instinct is concerned when favoring conditions arise.

There are some men, who, knowing the danger of infection, will not deny the cravings of their sexual instincts, and they seek to compromise by the use of protectives. There is great possibility of this leading to disaster.

Prophylactic measures have recently received a good deal of attention and seem to offer some considerable degree of protection if it is possible always to be prepared. In the army and navy, where there is excellent opportunity to judge of its usefulness, such measures were employed for a time with apparently a good deal of success. The higher authorities, however, lately refused to sanction their use as an official measure of prevention of venereal disease, believing, I presume, that it encouraged vice. Whether this opinion is correct, may be questioned.

Abortive measures may sometimes be successfully employed where the patient is seen early enough. Unfortunately in the great majority of instances, men do not consult a physician until the disease is beyond control by such treatment. Our chief reliance, therefore, is, I believe, on increasing efficiency in the treatment of the acute inflammation. It is not my purpose to consider the treatment of acute urethritis, and a few generalizations only will be offered. Our aim should be not only to destroy

the infectious organisms which can be reached, but also to inhibit the growth and spread of the infection. The organisms can thrive only under suitable conditions, and all treatment must be carried out with this fact in mind. Nature's processes are at work and nothing should be done which might destroy the natural defenses. Routine measures and favorite prescriptions should have no place in rational treatment. Each patient must be judged according to the conditions present, and treatment carried out accordingly. In from three to six weeks, with proper treatment, we may ordinarily expect the patient to be cured.

The successful treatment of chronic urethritis depends in large measure upon the thoroughness of the examination and the accuracy of the diagnosis. In a previous paper I gave in detail the steps necessary for the carrying out such an examination and I shall refer only briefly to it here. Such an examination is to be made with from four to six hours' urine in the bladder. A specimen of the discharge is first obtained for microscopical examination. This will determine not only the presence or absence of organisms, but also the relative proportion of pus cells. Repeated examinations, to be made after treatment is begun, are of great importance in following up the benefit from treatment. The anterior urethra being washed out until free from secretion, a small part of the urine is passed for examination. This will determine whether there is involvement of the posterior urethra or not. The prostate and vesicles may then be examined, after we are assured that there is clear urine remaining in the bladder.

If, as a result of this examination, which has determined as far as possible for it to do, something of the site and somewhat of the character of the trouble, we find that the specimens show considerable turbidity or cloudiness due to the presence of pus, it is an indication of a more or less generalized involvement of the urethra. This is best treated by irrigations, and the two remedies which I have found most useful for this purpose are potassium permanganate and silver nitrate, provided that no pathogenic organisms have been found. If gonococci have been found, I rely on the use of protargol. It should be used in strengths only sufficient to excite a very mild reaction, usually from 0.12 to 0.25 per cent. The potassium permanganate and silver nitrate can be used either separately or in combination as seems necessary to meet the indications; the permanganate in strengths of from one in 8,000 to one in 2,000, and the silver nitrate from one in 30,000 to one in 5,000.

Inflammation of the urethra is always accompanied with more or less round cell infiltration of the mucous and submucous tissues. If the inflammation is promptly relieved, resolution takes place, with absorption of the infiltrate. If we find that, in spite of treatment, the infiltration persists, sounds or the Kohlman dilator, carefully, and not too frequently used, is of great benefit in hastening absorption. The use of these instruments should always be followed by urethral irrigations of either the potassium permanganate, silver, or possibly boric acid solution.

Antiblenorrhagics are often given. I have never

felt satisfied that they were of any use in this stage of the disease, and I rely chiefly on the free use of water as a urinary diluent and possibly on small doses of some of the urinary antiseptics.

Vaccine therapy in chronic urethritis has never seemed to me to be of much benefit.

In many cases of urethritis which come to us the only evidence in the urinary findings is the presence of a greater or less number of shreds. These are indications that the process is restricted and distinctly localized. By the aid of the urethroscope the whole urethra may be examined and the source of the trouble located. In the anterior urethra are many glands and follicles, which are frequently found to be affected, while in the posterior urethra, the verumontanum or the nearby region is more apt to be the site of the trouble.

The cause of the trouble having been definitely located, our aim now is to make application of our remedies directly to the affected areas and to bring about reparative processes which shall restore the parts to a normal condition. For this purpose solutions of silver nitrate are most generally useful. The strength of the solution must vary according to the condition present; it is usually from one to ten per cent. The applications must be made under direct observation. Where the glands and follicles are affected, a very fine applicator must be employed, and wherever applications are made, the surface should first be freed from all secretion and lubricant. In some instances iodine will be found of more use, and in some instances I have used carbolic acid with good results. The latter must be used with great care or more harm than good will result.

Having used fulguration in the treatment of bladder tumors, I began about a year ago to try its effect in destroying the follicles and glands that were slow to improve under other treatment. I have used it in several cases since that time, wherever from some cause it has seemed justifiable. I believe, however, that it is far better to try to restore the parts to normal, although it may require a longer time, than to resort to the destruction of the follicles. Swinburn has recently published a paper giving his experience with fulguration and reports excellent results. If there are evidences of sclerotic changes accompanying the foregoing conditions, they must be treated by appropriate measures directed to their removal so that the urethra regains as far as possible its full calibre and elasticity.

I have left for the last perhaps one of the most important considerations. We cannot expect to be successful with any plan of treatment if the man's habits are not regulated so as to relieve the urethra of all sources of irritation. Alcoholic stimulants must be stopped. Sexual irritation must be minimized, and the diet regulated so that the urine is kept bland and unirritating. The necessity of drinking water in sufficient quantity to keep the urine well diluted and the urethra frequently washed out must be constantly impressed upon patients, as they are apt to neglect such measures as do not seem to them to be in the nature of medication.

No mention has been made of the complications often found to accompany chronic urethritis. This paper is confined to the treatment of the

urethral condition alone so as to avoid confusion and to keep it within proper limits. If all the measures outlined herein are carried out, successful results will be obtained, and the physician will be reasonably safe in promising a cure. Under such conditions chronic urethritis will not be found to be an incurable disease.

132 WEST SEVENTY-THIRD STREET.

SARCOMATA IN UNUSUAL SITUATIONS.*

BY HUBERT A. ROYSTER, A. B., M. D., F. A. C. S.,
Raleigh, N. C.,

Surgeon, Rex Hospital; Surgeon in Chief, St. Agnes Hospital.

Sarcomata occurring in unusual situations may well engage our attention, not only on account of their pathological interest, but also because of their diagnostic importance. If sarcomata always invaded organs and regions in which we expected to find them, their recognition would be comparatively easy and their disposal more certain. But when they are situated where benign growths are more apt to be found, not to suspect their presence would be productive of serious harm.

It is not necessary to discuss the general nature of sarcomatous tumors. It is enough to recall that they are atypical cellular tumors of the connective tissue group, neoplasms which in their structure closely resemble embryonic or immature connective tissue. In common they present the following characteristics: Their cells have no wall and are in constant relation with the stroma; vessels ramify among the cells and are very thin walled; dissemination by bloodvessels and not by lymphatics is the rule; local recurrence is common; their rate of growth is not slow, but varied and spasmodic; they usually attack young, active organs and tissues; they contain no juice; they often result from injury.

The truth of the last statement has been recently assailed by Schepelmann (1), who believes that no one has succeeded in proving experimentally that trauma produces new growths and cites Lubarsch to the effect that not a single authentic case has been reported in which trauma alone gave rise to a malignant neoplasm. He admits that continued mechanical irritation is a factor in their production, but thinks that not more than two per cent. of tumors show a history of preceding injury, and that in many of the cases it is probable that the trauma only revealed the presence of a tumor that already existed. He lays down the dictum that "there is no possibility of a neoplasm having been caused by injury if the interval between the accident and the development of the tumor is more than three or four weeks." Schepelmann further says it is not known whether trauma is capable of changing a benign into a malignant tumor, but, if Cohnheim's theory is true that all tumors are benign at first and become malignant only from the removal of inhibiting influences, this would seem very probable.

Schepelmann's paper has been reviewed somewhat at length because it bears directly upon some of the points for discussion in the cases about to be presented. The views expressed seem to be at

*Read before Southern Surgical and Gynecological Association, Cincinnati, December 11, 1910.

variance with those of many other authors. At best the question is difficult to prove one way or the other.

Among my records I have found six cases in which sarcomata were discovered in unusual situations, either growing from tissue rarely the seat of such growths, or exhibiting other characteristics out of the ordinary. In addition, I have abstracted



FIG. 1.—Sarcoma of right breast (Case III).

from the literature certain reports of cases corresponding to them, and as far as they go, I have grouped these under separate headings.

CASE I (fibrosarcoma of the sheaths of the musculospiral and median nerves). Miss B., aged seventeen years; July 7, 1899, had tumors of right upper arm and left wrist, both the size of golf balls; hard, movable, and not tender, but accompanied at times by shooting pains. Duration about six months. Operation showed that the growths developed from the sheaths of the right musculospiral (three inches above the elbow) and the left median nerves (two inches above the wrist) respectively. The nerves themselves were not involved in the growths. The tumors were removed without resection of the nerves, but on the right pressure had been sufficient to cause atrophy of the nerve at one point and a partial wrist drop had developed. This persisted for some time and was not yet entirely relieved. The girl declined any further procedure to remedy this condition. She continued in good health with no recurrence of the growths. The pathological report was fibrosarcoma.

Tumors of nerve tissue itself (glioma or gliosarcoma) are not uncommon; sarcomata of the connective tissue covering the nerve bundles are very rare. The only case found in the literature showing a similar origin is a sarcoma of the carotid sheath, reported by Spicer and Collier (2). They removed the growth with portions of the carotid artery, internal jugular vein, and pneumogastric nerve. Much shock attended the operation, but the patient soon rallied and recovered.

CASE II (rhabdomyosarcoma of the trapezius). Mrs. M., aged twenty-eight years; March 22, 1900, presented a flat, ulcerating growth on the upper posterior aspect of the left shoulder, covering an area two by two and one half inches. She had noticed the lesion for three years. She complained of severe pain. A wide excision was made, deep enough to remove a strip of fibres from the left trapezius. The resulting raw surface was allowed to granulate. Healing took place rapidly and the patient has not seen the slightest evidence of return. The pathologist pronounced the growth rhabdomyosarcoma.

According to Adami, "the existence of this type renders it possible that a group of large spindle celled tumors of muscle showing also great irregularity and some polymorphism may be sarcomata derived from muscle elements." They exhibit large and very long imperfectly formed muscle fibres. This tumor is less frequently seen than similar growths in the unstriated muscles (liomyosarcomata). The muscles of the extremities show the largest number of sarcomata of the rhabdo variety. A peculiar feature of these tumors is their predilection for the kidneys, especially in early life, showing that embryological causes play by far the greater part in their determination. A look through different libraries reveals no sarcomata occurring in the trapezius save the one herein reported.

CASE III (fibrosarcoma of the breast). Mrs. S., aged twenty-nine years; September 5, 1911, presented a large solid tumor of the right breast (Fig. 1), comprising the whole gland and hanging away from the chest wall, as if pedunculated. The tumor had existed for twelve months or more, and had grown slowly until the last three months. It was not very painful; there were no enlarged glands in the axilla and no discharge from the nipple. Under local anesthesia the breast was raised and severed from the chest. Enough skin was left to make a good closure. The patient easily recovered and was soon perfectly well. No recurrence was noted. Fibrosarcoma was the pathologist's report.

Undoubtedly this growth was originally benign and later underwent a so called sarcomatous degeneration—a customary process. Attention is called to the case for the purpose of emphasizing the fact that, though rare, sarcoma does occur in the breast and we must be ready and able to distinguish it. We have had two other cases, but the records are incomplete and they are, therefore, not included. In Rodman's list of 5,000 mammary tumors, 16.5 per cent. were benign and 2.7 per cent. sarcomatous. A recent investigation by Geist and Wilensky (3) disclosed twenty-two sarcomata (3.9 per cent.) among 558 cases of breast tumors. Following is a summary of their findings: The growths were chiefly fibromyxosarcomata and spindle celled; as a rule, rapidly growing with fixation of the skin and dilatation of the veins in one third of the cases. Lymph node metastasis was rare. Heredity seemed to play small part in the etiology. A history of trauma existed in ten per cent. Nipple retraction and cachexia were uncommon. Cystic tumors presented a more favorable aspect, being suitable for simple excision, while the round and spindle celled varieties gave the worst prognosis. Altogether the outlook is better than in carcinoma of the breast, sixty-three per cent. of all cases being cured. Radical operation is advised, but even then one third of the patients show local recurrences.

Accumulated experience seems to demand that the same thorough operation be done for sarcoma as for carcinoma of the breast. We are beginning to believe that glandular involvement in sarcoma is almost as frequent as in carcinoma, and it would be unwise, therefore, not to clean out the axilla in operating, whether the glands are palpable or not.

Numbers of instances might be cited to illustrate the rapidity of sarcomatous change in previously benign breast tumors and the certainty of recurrence in many cases in spite of radical procedures.

Duchamp (4) saw a woman of twenty-four years, with fibrosarcoma of the breast, which grew to a great size. It had been noticed for three years, but had just recently taken on very rapid growth. The axillary glands presented no enlargement, and the growth did not adhere to the pectoral muscles. It was easily removed, but two years afterward returned in the scar. The patient refused a second operation and soon died. Malherbe (5) speaks of a breast sarcoma, a third recurrence upon fibroma. The patient rapidly succumbed. He also lays stress upon the earliest possible removal of a fibroma of the breast and mentions the case of a woman, sixty years old, who had a breast tumor for fifteen years, enlarging progressively, hard and lobulated, not adherent to the skin or chest wall. Ulceration took place later. It was removed with difficulty owing to the extensive area involved. Two months after operation the pectoral muscles became infiltrated along with the axillary glands. A second operation proved fatal. Mosher (6) did a radical operation on a sarcoma of the breast, and recurrence came after three years in the upper arm, involving the humerus; the patient died the fourth year from brain complications. The x ray relieved the pain, but appeared to hasten death.

The woman whose case I have reported here, owes her life so far to the fact that the sarcomatous change had probably just begun, and not to the character of the operation performed. It is another example of the advantage of a simple operation in the early stage over any extensive operation in the later stage.

CASE IV (spindle celled sarcoma of the abdominal wall). Mrs. H., aged forty years, called August 27, 1912. Sixteen years previously a small growth appeared under the skin of the abdomen just above the pubes. Four years ago, it was removed under local anesthesia, but promptly recurred. It grew larger, and two years ago was again removed, this time under a general anesthetic. Rapid recurrence took place and again it increased in size. The mass, about the size of a large coconut, was situated in the lower mid-abdominal region, raised above the surface and glazed, but not ulcerated. It was attached only to the abdominal wall, was somewhat movable, and showed little tenderness. The tumor was excised widely and deeply down to the sheath of the rectus, the bleeding points were ligated, and the wound was closed with some tension. This patient recently reported that there was no sign of the tumor's return. The laboratory diagnosis was spindle celled sarcoma.

Sarcomata of the abdominal walls usually result from malignant transformation of originally benign tumors. The commonest of these are the fibromata, formerly referred to as desmoid tumors, on account of the arrangement of their constituent elements. They differ in no respect from fibroid tumors elsewhere in the body. Lipomata, papillomata, and cysts also occur here, as well as tuberculosis, syphilitic myositis, and actinomycosis. Cancer is seen generally in association with the involvement of some intraabdominal organ. The prognosis of sarcoma in this region is not encouraging. Bouffleur (7) reports the successful removal of a fibrosarcoma of the abdominal wall involving the iliac vessels and requiring the removal of a portion of the external coat of the iliac artery.

CASE V (lymphangiosarcoma of the coccygeal region). Mrs. C., aged seventy years; presented, February 4, 1915, a tumor in the region of the coccyx, rather toward the left buttock, slightly movable. It was barely elevated above the general surface, but encroached perceptibly upon the

rectum. Three years before, she fell down some steps, striking forcibly, as she said, on the end of her spine. She thought no more of it until six months ago, when she noticed the enlargement and felt the pressure on the rectum. It was impossible to be sure of the nature of the tumor. The x ray, however, showed it was not a bony growth. It was with difficulty excised and found to spring from the periosteum and fascia covering the tip of the coccyx, which was also removed. The rectal wall was freely exposed in the dissection. The tumor of the size of a large orange, was bilobed and soft and covered by a fibrous sheath. Laboratory finding, lymphangiosarcoma. The patient bore the operation well. She reported that she was still in good condition, but it was too early to draw conclusions.

The age of the patient, the type and site of the tumor, and the history furnish the interesting features in this case. The growth could easily have been mistaken for a lipoma (as it was), and it was also very naturally at first thought to be of bony origin. In spite of the views of Schepelmann and Lubarsch, previously cited, a suggestion of trauma even at the age of seventy years will be ignored by few.

Malherbe (5) records a sarcoma of the ischio-rectal fossa in a woman of fifty years. There were five or six separate small tumors between the rectum, vagina, and left tuberosity of the ischium, the deeper ones being free, the superficial adherent to the skin. The patient had been operated upon twice. The same author also speaks of a sarcoma in the coccygeal region, a recurrence upon one removed ten years before. No history is given. Again, he describes a tumor of the sacrococcygeal region, which was removed from a woman sixty years of



FIG. 2. Huge sarcoma of left buttock (Case VI).

age. The appearance of the growth dated from a fall twenty-five years before. It was a sarcoma with mucoid degeneration, cystic, resembling a dermoid. Its contents were a gelatinous material, traversed by fibrous bands and containing cavities with hemorrhagic foci. The whole neoplasm was enclosed in a distinct fibrous capsule. This case tallies closely with the one herewith reported.

CASE VI (myxosarcoma of the buttock). James T., colored, aged twenty-one years, on April 7, 1915, presented

an enormous growth of the buttock. He first noticed a swelling on the left hip, in 1905, but it did not grow much until a year ago, when it began to enlarge rapidly. There were small masses also on the right shoulder and thigh and on the right leg. The growths were all semifluctuating. There was no history of tuberculosis or of syphilis. The man complained of no pain, but was greatly emaciated and anemic. On account of the size of the tumor (Fig. 2) he was unable to walk, and when he stood without support he fell toward the left from the tumor's weight. It was an inoperable case, but the patient constantly implored us to remove at least a portion of the mass, being perfectly sensible of the risk. Accordingly an excision of the tumor was attempted. After making a very long incision, I found that a part of the growth was too deeply imbedded to remove. From this part about a pint of yellowish fluid was evacuated. The basal attachment was the intermuscular septum of the gluteal region. The patient's condition became critical on the table and the operation was not completed. He died an hour afterward. The tumor was a typical myxosarcoma.

Not a few sarcomata of the buttocks have been observed and some of them attained to large size. A huge one is pictured in the *American Textbook of Surgery* (8). The enormous tumors are usually seen in patients of the lowest class, who through ignorance and neglect allow them to grow to these proportions. Almost invariably such tumors in the beginning were small, of slow growth, and non-malignant, but assumed sarcomatous change after a long period of quiescence. Injury or irritation may play an important role, either before the original growth develops or after it becomes large enough to be vulnerable.

In a concluding paragraph it may not be out of place to mention some other rare cases of sarcomata collected from the bibliography. Primary sarcoma of the tongue, of which there are very few cases on record, is referred to in *Guy's Hospital Gazette* (9), in which one case is reported and elsewhere by Downie (10), who presents two cases. The same number of the *Gazette* contains notes on a sarcoma of the esophagus, growing from the anterior wall and dilating the lumen instead of contracting it, and also a large sarcoma of the neck, involving the larynx—both with interesting autopsy findings. MacDonald (11) and LeConte (12) each report a sarcoma of an undescended testicle, the former case appearing in the groin and weighing over six pounds; the latter situated retroperitoneally and mistaken for a peritonitis of appendicular origin. Healy (13) relates a case of primary sarcoma of the pancreas with extension to the liver, while Jores (14) contributes an angiosarcoma of the spleen and liver. Malherbe's (5) remarkable list contains a sarcoma of the plantar aponeurosis, and one of the dura mater. Boldt (15) extirpated a primary melanotic sarcoma from the posterior vaginal wall, which proved to be malignant, evidences of recurrence being present in two weeks.

BIBLIOGRAPHY.

1. SCHEPELMANN: *Med. Klin.*, xi, 741, 1915.
2. SPICER and O'LLIER: *Lancet*, August 5, 1899.
3. GEIST and WILENSKY: *Annals of Surgery*, LVIII, 1, 1915.
4. DUCHAMP: *Louis med.*, Nov. 15, 1898.
5. MALHERBE: *Recherches sur le sarcome*.
6. MOSHER: *Brooklyn Med. Jour.*, xviii, 226, 1904.
7. BOUFFLEUR: *Ann. of Surg.*, Nov., 1899.
8. *American Textbook of Surgery*, 1892, p. 168.
9. *Guy's Hosp. Gazette*, III, 186, 1889.
10. DOWNIE: *Brit. Med. Jour.*, Oct. 21, 1899.
11. MACDONALD: *Albany Med. Jour.*, xiv, 65, 1893.
12. LE CONTE: *Internat. Clin.*, 17, iv, 125, 1907.
13. HEALY: *Jour. Roy. Army Med. Corps*, iv, 362, 1905.
14. JORES: *Centrbl. f. allg. Path. u. path. Anat.*, xix, 662, 1908.
15. BOLDT: *Trans. N. Y. Obstet. Soc.*, 153, 1906-7.

SPASTIC PARALYSIS IN CHILDREN.

With a Report of Seven Cases,

BY JACOB GROSSMAN, M. D.,
New York,

Orthopedist, Lebanon Hospital, Out Patient Department.

The etiological significance of traumatism in the production of nervous diseases in childhood is frequently overestimated by laymen and probably also by physicians. In the popular mind traumatism plays the same part in the etiology of nervous diseases as catching cold in that of the internal diseases. Nevertheless we cannot deny that traumatism is an important causative factor in many diseases of the brain and spinal cord, and that birth injuries may be responsible for the most severe lesions of the central nervous system.

Intracranial hemorrhage is one of the common results of a birth injury or of a traumatism occurring at some later period. Among the causes of cerebral hemorrhage after childbirth, injuries, whooping cough, purpura, severe atrophy, and sinus thrombosis play important roles. The symptoms in this condition resemble those of brain embolism and do not differ materially from the symptoms observed in the cerebral hemorrhages in adults.

Intra partum hemorrhage into the meninges possesses a clinical importance which even yet is not properly appreciated. Where many infants have been examined post mortem, hemorrhages within the cranial cavity were often encountered. There is no doubt that in the majority of cases of otherwise healthy newborn infants the blood is absorbed without producing symptoms; but in some cases the hemorrhage is of such extent that it renders life impossible. Between these extremes there must be a long series of intermediate degrees, the recognition of which is probably impossible and which no doubt are of great importance in the production of cerebral symptoms that manifest themselves later. In most cases the occurrence of congestion and laceration of the bloodvessels within the skull, is readily explained by a severe protracted labor with marked displacement of the cranial bones (Kundrat). Easy spontaneous delivery may also lead to submeningeal hemorrhage (Finkelstein). This is particularly likely to be the case in premature labors, or where there is a pathological condition of the blood or a congenital arterial predisposition.

In most of the cases the hemorrhage takes place at the vertex, somewhere in the region of the two paracutal lobules, where heavy deposits of coagulated blood are found. The hemorrhage may involve one or both convexities of the cerebral hemispheres (Sarah MacNutt), more rarely the base of the skull and the cerebellum. The subjacent portions of the cortex are compressed and infiltrated with blood. In children who have survived a hemorrhage, porencephalus, external hydrocephalus, and local meningoencephalitis have been demonstrated as end products of the lesion.

The symptoms of severe endomeningeal hemorrhage do not always point to the brain. There may be severe asphyxia; respiration may be abolished at once or may become very feeble; the child may be cyanotic and the temperature may fall. Death may ensue from gradual failure of respiration, or with

convulsions. In other cases convulsive seizures, trismus or tetanoid convulsions, spasms, exaggeration of reflexes dominate the picture and these cases also frequently end fatally. Some infants, however, survive these conditions and actually or apparently recover (Henoch, Finkelstein, and others). In another class of cases the initial symptoms are very slight, no more than a short period of asphyxia, from which the children apparently recover completely. Later, however, convulsions make their appearance in different parts of the body, or without convulsions the children show spastic paralysis. With that degree of frequency *intra partum* hemorrhage, which produces no symptoms at the time, later may lead to epilepsy or idiocy. Such an etiological relationship must be suspected whenever convulsions develop in infants several weeks of age without recognizable cause.

A number of cerebral affections in childhood, which terminate neither in complete recovery nor in death, leave behind certain anatomical defects and clinical disabilities. A permanent condition results in which the child presents certain symptoms, which represent the remains of the former disturbance. These disturbances include, not only the cerebral affections in which paralysis of the extremities is the most prominent symptom, but also the numerous transitional cases, such as epilepsy, idiocy, and optic atrophy (Freud).

Common among the etiological factors of spastic conditions are:

1. Intrauterine (prenatal) causes:
 - a. Malformations of the brain among which are included porencephalus, microcephalus, atrophy of one hemisphere, and congenital cysts.
 - b. Cerebral diseases.
 - c. Injury to the mother, such as a severe blow on the abdomen.
 - d. Heredity and alcoholism probably have no etiological significance; the theory that emotional excitement during gestation may have an influence on the child's central nervous system is scarcely tenable.
2. Birth injuries (natal, *intra partum* causes).

These are chiefly intermeningeal hemorrhages which have been previously described. Even where the labors are not protracted and difficult, especially if they are precipitate, intracerebral hemorrhage is possible. Cases of cerebral palsy occurring after premature deliveries may possibly be explained in this way.

3. Among extraterine causes, head injuries involving the skull or accompanied by subdural hemorrhage may lead to cerebral infantile palsy. Circumscribed encephalitis occurring spontaneously or during the course of an infectious disease such as measles or scarlatina, may cause cerebral infantile palsy, particularly of the unilateral variety. Sinus thrombosis and embolism may produce the same clinical result.

To what extent syphilis may be responsible for these palsies is difficult to say. Recently Rolly, König, Fournier, Erlenmeyer, and others have shown that permanent cerebral symptoms occur more frequently in hereditary syphilis than was formerly believed.

In a large number of cases all we can learn about the beginning of the disease is that the palsy developed within the first one or two years of life after convulsions, which in most cases are said to have been unilateral. There are many cases in which, owing to the mildness of the initial symptoms or to less observant parents, it is impossible to elicit definite history, so that we can form no conclusion in regard to the date when the palsy began.

SYMPTOMATOLOGY.

Infantile hemiplegia is characterized by paresis of one facial nerve and spastic weakness of the arm and leg of one side of the body. The right side is somewhat more frequently attacked than the left. The facial palsy is limited to the middle and inferior branches; it varies greatly in degree and in older cases is barely perceptible. In protracted cases of facial palsy, spasm of the paralyzed muscles is sometimes produced, so that the sound side appears smoother and the symptoms of a crossed paralysis of the extremities and face are simulated. The arm lesion often manifests itself in permanent contractures; the elbows and the wrist joints are flexed and the arm is held close to the body; fixation in extension is more rare. When the paralyzes and contractures are of this pronounced type, active movements are practically impossible, and passive movements encounter a violent resistance. In other cases there is only a marked rigidity of the muscles; movements are possible, but are awkward and ineffective. The paralysis is always more marked in the hand. The fingers are folded over the thumbs and it requires considerable effort to open the hand; the finer movements of the hand are performed only with great difficulty. The legs also present a typical spastic hemiplegia, with extension at the hip and knee joints and plantar flexion at the ankle joint. *Pes equinus* with spasticity is often produced. Even when the paralysis is comparatively mild, the disturbance of the gait is marked; the child drags the leg and swings it around (circumduction) in bringing the foot forward. When the gait is not especially interfered with, paresis of one leg may reveal itself in the child's inability to stand alone on the affected leg, to hop, or to rise on the toes. When the child sidesteps to the sound side, the paralyzed leg is dragged instead of being lifted clear, because the movement increases the spasm of the adductors. Monoplegia occurs rarely if ever in cerebral infantile palsy. There may be a greater and more evident paralysis in one or the other extremities in a given case. This is undoubtedly due to a greater degree of destruction in that area.

Paresis and spasm are therefore the characteristic features of cerebral hemiplegia. They may, however, be combined very unequally. Thus we see cases in which the rigidity of the extremities is pronounced, while the paralysis is moderate. Others again may show where the paresis and the increase in the muscle tone are marked in the leg, while the arm presents only a slight increase in the reflexes.

The deep reflexes are always increased. Ankle clonus as well as the Babinski reflex and Oppenheim's leg reflex are not infrequent. In older cases and in cases in which the hemiplegic phenomena have been less pronounced, a unilateral increase of the deep reflexes is sometimes the only visible sign of cerebral palsy. Diminution or absence of the reflexes is extremely rare and occurs only in the exceptional cases. This phenomenon has never been explained. The skin reflexes in these conditions are often diminished.

It is not rare for individual cranial nerves to be involved in cerebral hemiplegia. The tongue may deviate toward the sound side, indicating involvement of the hypoglossus. Strabismus is quite fre-

quent. Nystagmus, hemianopsia, a tendency to a forced position of the eyes, and atrophy of the optic nerve have also been observed.

Sensory disturbances are rare and when present are mostly confined to the hands. The disturbance of stereognosis which occasionally occurs is perhaps partly referable to the lack of digital dexterity which prevents the child from feeling objects properly.

Motor aphasia as a sequel of a left sided cortical lesion is at times observed. In these cases the disturbance is one of speech function, rather than one of pronounced aphasia.

Atrophy of the individual groups of muscles does not occur in cerebral hemiplegia. Interference with the growth of the paralyzed side is not infrequent, particularly when the palsies are acquired in early childhood or are congenital. The face may be narrow, the arm and leg may be smaller in all dimensions, the muscles

and bones taking part in the atrophy. The electric irritability of the nerves and muscles in all such cases is normal or increased, which serves as an important factor in differentiating cerebral from spinal palsies.

Muscular hypertrophy occurs when the spasticity is very great and is usually due to overwork.

A peculiar phenomenon of hemiplegia is seen in the posthemiplegic motor disturbances, which occur frequently. The mildest form is the tremor which can be seen during active movements, particularly at the height of the intended movement (intention tremor); in its severest form it may consist of permanent tremor, chorea, or athetosis. These motor disturbances make their appearance either soon after the beginning of the disease, or later, following an existing spastic paralysis. The facial muscles sometimes take part in the involuntary movements. In posthemiplegic chorea the movements are of a jerky, rotating, and extending character and persist practically without interruption, except during sleep. In athetosis the characteristic movements consist in spreading, extending, and flexing the fingers, and frequently render the child incapable of holding an object in the hand, writing, or doing any kind of manual work. The feet may also take part in these motor disturbances.

Cerebral hemiplegia is not always strictly unilateral. In otherwise typical cases, rigidity and exaggeration of reflexes in the leg which is apparently not involved, without recognizable paralysis, are frequently seen. Such cases form the connecting link between hemiplegia and diplegia. In the latter the palsy may attack either two or all four extremities.

The entire muscular system may be rigid. The rigidity in these cases is noted in earliest infancy and interferes with the manipulations in bathing and dressing the child. Later delayed function is noticed in these children of sitting and walking. There is a peculiar crossing of the legs when they attempt to walk. The arms are closely pressed to the trunk and flexed at the elbow; the forearms are in pronation and flexed at the wrists; and the fingers are folded. The back is rigid, the abdomen is hard and retracted, the legs are in extreme extension, the feet spastic and in a position of pes equinus. The reflexes, which are difficult to elicit on account of the impossibility of inducing relaxation, are everywhere greatly exaggerated. Oppenheim's eating reflex may sometimes be present. The children are easily frightened, especially by sudden loud noises. Strabismus and dysarthria may be present. This form of palsy is particularly likely to follow birth injuries.

Here, as in hemiplegia, there may be choreic movements, athetosis, cranial nerve symptoms, and bulbar symptoms. The choreic movements and athetosis are usually bilateral. The symptoms previously mentioned may be associated with epilepsy, dementia, or idiocy.

COURSE AND PROGNOSIS.

The course and prognosis of cerebral palsy are such as we should expect from the nature of the disease. Since we are dealing with a reparative process, we do not expect additional focal symptoms to develop, but rather look for the further improvement of the palsy. A great many children suffering from severe unilateral or bilateral paralysis are seen to recover. The improvement is limited; in palsies of the hand, particularly, recovery is very incomplete. The spasms and posthemiplegic disturbances exhibit even less tendency to improvement. Occasionally the rigidity subsides and the muscular tension diminishes, while again we may see cases in which the contractures go on increasing, and the usefulness of the extremities is severely and permanently impaired. The same is true of the choreic and athetoid movements, which show no tendency whatever to subside. The arms and hands suffer most in this permanent posthemiplegic condition, as all the finer movements which are necessary for any kind of work appear to be interfered with. Children usually learn to walk, though it may be with great difficulty and not without resorting to many artificial aids.

Among the secondary symptoms disturbances of speech and pseudobulbar disturbances also exhibit a tendency to improve. Dysphagia also usually undergoes gradual improvement.



FIG. 1.—(Case 1.) Left spastic hemiplegia.



FIG. 2.—Same as Fig. 1. Note the position of the left big toe.

Sharpe (1), by means of a decompression, offers relief in certain selected cases of spastic hemiplegia, paraplegia, and diplegia.

TREATMENT.

There is no prophylactic treatment of cerebral palsy. Cases that respond to iodine and mercury are to be suspected; they are probably brain syphilis and not cerebral palsy. The symptomatic treatment consists of massage, electricity, exercises, and operation.



FIG. 3.—(Case II.) Right spastic hemiplegia.

HEMIPLEGIA.

The results of treatment depend upon the degree of mentality in the patient. From the orthopedic standpoint we attempt to stimulate the nutrition of the part, to prevent deformities and to improve the function of the affected parts.

Where the patients are seen before the secondary contractions have appeared, deformity may be influenced in great degree by massage and passive movements in the directions opposed to the habitual positions.

Electricity may prove of some value. Massage and passive movements are of more value than electricity. The electric treatment must be adapted to the peculiarities of the individual case. If the palsies are the most prominent symptoms, the faradic current is employed. The treatment must be strictly limited to the weak muscles, to the exclusion of the antagonistic muscles which are usually hypertonic. If the spasms or posthemiplegic disturbances are more prominent, sedative treatment with the anode is indicated; the anode being lightly passed over the muscles or applied to the extremity. The cathode rests on the back or upper portion of the extremity. With the massage, movements, and electricity, we can improve the control of the affected limb.

Many of our cases come to us late in childhood, when the deformities have become fixed. The foot is usually turned inward and downward; the knee is flexed, and the hip is flexed and adducted. The older the deformity, the greater is the resistance of the contractions. In these cases stretching and cutting the more resistant tissues, i. e., the tendo Achillis, the plantar fascia, and the hamstrings and adductors of the hip, usually assist us in improving function. The division of these resistant tissues and tendons should be followed by encasement of the limb in plaster of Paris bandages. After removal of the bandages a suitable brace is of service in guiding the limb. Massage, forcible passive movements, and proper exercises should be employed.

Where the arm is only slightly affected, exercises

should be persisted in. In the extreme cases, where the fingers are clasped over one another, treatment is of little avail. In some cases tendon transplantation may be of assistance. Athetoid movements of the hand and arm may be relieved by prolonged fixation in plaster bandages.

PARAPLEGIA.

On account of the more marked disability and mental impairment in these cases, treatment is very much more difficult and less satisfactory. In general, in infancy, we must rely upon manipulation and massage. Multiple tenotomies with prolonged fixation may offer some relief.

Förster has suggested an operation for the purpose of lessening the constant stimulation of the spinal reflexes. He has shown that in spastic patients the long continued posture alone will produce permanent contractions in that muscle which is shortened by that position. It is to remove these permanent contractions that he resects the sensitive part of the reflex arc. He lays claim to excellent results. He especially recommends this procedure for the lower extremities. For the upper extremities he recommends neuroplasties. For the hand deformities which resist all other forms of treatment, plastic operations on the median and radial nerves are highly recommended by Spitzzy.

A. S. Taylor (2) has modified Förster's operation. Instead of doing a laminectomy he removes a lateral section of the spine, between the spinous and articular processes. The dura is opened and the posterior roots of the lumbar and first sacral nerves are divided on the dorsal side of the ganglion.

Tendon transplantation according to the method of Lange and others has proved of value.

William Sharpe (1), in his work on cerebral spastic paralysis, has performed decompressions in selected cases, with gratifying results. He emphasizes that this operation should be performed only in cases showing intracranial pressure by ophthalmoscopic examination. It is especially useful in those cases of spastic paralysis with a history of difficult labor with or without instruments, in which, on ophthalmoscopic examination, the definite signs of increased intracranial pressure are to be seen in the fundus of the eye.

The operation he performs is a large subtemporal decompression to relieve the intracranial pressure. The usual pathological findings were definite subcortical fibrous or cystic formations resulting from a cortical hemorrhage occurring at birth.

Sharpe lays great stress on the aftertreatment.



FIG. 4.—(Case V.) Spastic paraplegia (syphilitic).

This consists, briefly, of correction of the deformities by tendon lengthenings, if necessary, or merely stretchings of the contracted muscles or the maintenance of corrected positions through the employment of braces, massage, and faradism. A careful, systematic course in muscle training is carried on daily.

CASE I. Walter L., aged three years; diagnosis: Left spastic hemiplegia. Family

history: No bearing on the case. Personal history: Perfectly well until one year ago, when he fell from a window. The distance was three flights. He sustained a fracture of the skull, with other injuries. He was removed to Bellevue Hospital in a comatose condition. Operation was advised, to which the mother did not consent. Conservative measures were then instituted. The child recovered, with a typical spastic hemiplegia on the left side of the body and a paralysis of the right side of the face. This condition remained stationary, then became progressively worse, resulting in marked contractures of the upper and lower extremities. At this time operation was again advised to which the mother consented. A right subtemporal decompression was performed, which relieved the contrac-



FIG. 5.—Same as in Fig. 4. Note the position of the big toes.

tures to some extent. He came to the orthopedic clinic of Lebanon Hospital, three months subsequent to the operation. At this time examination disclosed a typical hemiplegia (spastic) and a right facial paralysis. Examination of the fundi of both eyes by Dr. S. M. Jacobs revealed nothing abnormal. Wassermann was not done, as it had no bearing on the case.

He is receiving daily massage and manipulations. There has been some improvement in the few weeks that he has attended the clinic.

CASE II. Marcus W., aged three and a half years. Diagnosis: Right spastic hemiplegia. Family history negative. Personal history: First child, noninstrumental delivery. Duration of labor was twenty-two hours. The child was cyanotic and did not breathe immediately after birth. Was resuscitated after ten minutes of artificial respiration. There never were any convulsions; the child rested quietly thereafter. When the mother had left her bed she experienced some difficulty in dressing the infant. She attributed this to a slight stiffness of the upper extremity. She called her physician's attention to this stiffness and he told her it was of no serious account. The mother then disregarded the symptom. In the meantime the child was progressing excellently. He nursed well and was gaining weight rapidly. He sat up at the age of nine months. He walked at the age of eighteen months. His gait gradually became uncertain and shuffling in character. He fell often. The stiffness in his upper extremity became markedly worse. At this time he presented a typical picture of spastic hemiplegia. The mother never noticed any facial involvement. He was taken to the Neurological Institute of this city. After one year of massage, which had not benefited the patient, the visits were discontinued. The child was brought to the orthopedic department of Lebanon Hospital. At this time examination revealed a typical spastic hemiplegia with flexor contractures. Reflexes increased. Babinski present. Mentality was good; facial paralysis was absent. Examination of both fundi of the eyes by Dr. S. M. Jacobs revealed nothing abnormal. Wassermann was not done as it had no bearing on the case.

Massage and manipulation were instituted. After

three weeks of this treatment, the child has partially responded. He walks better and does not fall so often. The flexion contractures are not so marked.

CASE III. Baby G., aged fourteen months. Diagnosis: Right spastic hemiplegia. Family history negative. Personal history: First child, full term, normal delivery, non-instrumental. The patient remained quiet for thirty-six hours, then began to have convulsive twitchings of the left eyelids, followed by a spasticity of the entire body. Preceding these twitchings and spasms, the child uttered a shrill cry. This cry lasted about thirty seconds and simulated the whoop in pertussis. Immediately thereafter the twitchings of the eyelids and the spasms occurred. The convulsions lasted about one minute and occurred periodically every half hour. During the intervals the infant was perfectly quiet. After having the convulsions for about twelve hours, the child was removed to Lebanon Hospital. At this time, the only physical signs present were a slight bulging of the anterior fontanelle and a slight spasticity of all extremities, more marked on the right side. The question of operation arose and as there was a difference in opinion it was delayed. An exploratory lumbar puncture was performed and a clear fluid under slight pressure was obtained. The bulging of the anterior fontanelle subsided. The spasticity and the convulsions also gradually subsided and the child had an uneventful recovery.

The child progressed well, gaining in weight and mentality, until it was about thirteen months of age. At this time the mother noticed that the child was unable to sit up and that the right lower extremity was stiff. She also noticed occasional stiffness of the right upper extremity, especially in the hand. This stiffness in the hand manifested itself in a closing of the fingers at times so severe that it required great effort on the part of the mother to force them apart.

On examination, a slight spastic condition of the right arm and leg was revealed. There was no facial paralysis. The reflexes were all increased on this side. Babinski on the right side present. Child was unable to sit up. Fell forward when placed in the sitting posture. No evidence of paralysis in the back muscles. There were no other paralyses, except as previously mentioned. The mentality of the child was good. The general condition was excellent.

Massage and stretching was practised daily. In two months the spasticity had disappeared. The child was able to sit up when last heard of.

CASE IV. Charlotte K., aged thirty months. Diagnosis: Infantile paralysis. Family history negative. One previous child. Personal history: Second child, full term, normal noninstrumental delivery. The duration of labor was six hours. The first eight months of this patient's life were uneventful. At the eighth month, the mother on attempting to have the child stand, noticed that the child stood on its toes. Nothing further was thought of this, as the child had otherwise enjoyed excellent health. The mentality was good. The general nutrition was excellent. Later, when the child attempted to sit, the mother noticed that it was unable to do so. Occasionally when it did succeed in sitting up, it did so with difficulty and very awkwardly. This she attributed to the fact that the feet assumed an unnatural attitude. She described this attitude as one in which the toes turned inward and downward in such a manner as to throw the baby off its balance when it assumed the sitting posture. This condition became progressively worse.

The patient never made any attempt to walk until she was two years of age. At this time she walked on her toes and could get around only with the aid of surrounding objects. Even with this artificial support, her gait was very awkward and uncertain. This uncertainty manifested itself in the many falls which she sustained. The mother never noticed any facial paralysis. There never was any perceptible disturbance of function of the upper extremities.

When the child was first seen by me, she walked with an awkward, shuffling gait. The limbs were flexed, adducted, and rotated inward. The knees touched each other. The feet were turned inward in a persistent attitude of equinovarus. The reflexes were exaggerated. Babinski was present on both sides. The mentality was good. She understood everything that was said to her. She observed sur-

rounding objects. She answered when spoken to. Face and upper extremities were negative. Examination of the fundi of both eyes by Dr. S. M. Jacobs did not disclose any increase of intracranial pressure.

Massage and stretching of the affected limbs were the main basis of treatment. Although the condition has not cleared up entirely, still the patient is able to walk better. She walks without artificial support. She does not stand on her toes as much as previously. The feet adapt themselves more to the ground than previously. Her gait is not uncertain. She still falls, but not so frequently. She sits up better. Her condition has certainly been improved.

CASE V. Henry H., aged seven years. Diagnosis: Spastic paraplegia (syphilitic). Family history: Father had a spastic hemiplegia; Wassermann four plus. Mother had a cerebrospinal syphilis; Wassermann four plus. Had had three miscarriages, and had four living children. All had a four plus Wassermann. Two had had an eruption at the age of three months.

Personal history: Third child, normal delivery. Had had measles and an eruption at the age of three months; otherwise past history negative. Present illness began when he was four years of age. At this time the patient had weakness of the leg muscles, stiffness, and difficulty in walking. His gait was awkward and shuffling. This condition progressed until he experienced great difficulty in getting around.

It was at the age of seven years that this patient was seen with Dr. M. Grossman, to whom I am indebted for the report. At this time the gait was very awkward and shuffling in character. The limbs were flexed, adducted, and rotated inward. The feet were turned inward in a persistent attitude of equinovarus. The reflexes were exaggerated on both sides. Babinski present on both sides, more marked on the left. The mentality of the patient was rather sluggish. Oppenheim and fan reaction on the left side. Ankle clonus present on the left side. There were no sensory disturbances. The pupils were dilated, unequal, and fixed to light and accommodation. Wassermann was four plus. Examination of the fundi of both eyes by Dr. S. M. Jacobs did not disclose any signs of intracranial pressure.

The treatment consisted of mixed treatment and muscular relaxation and exercises. The patient is gradually responding to this treatment.

CASE VI. Baby S., aged four days. Diagnosis: Left spastic hemiplegia. Family history had no bearing on the case. Personal history: First child, precipitate labor. The child was born while the mother was out of bed, the head of the child striking the floor. In going to her bed the mother dragged the child along the floor. The child at birth weighed seven and a half pounds. In the four days that it lived it lost four pounds. The child rested well for the first twelve hours. Thereafter it became stiff at times. There were no active convulsions. This stiffness became progressively worse. The child refused to nurse and sank rapidly. Examination on the evening of the third day revealed a poorly nourished infant, skin cold and clammy. The cry was feeble. There were no convulsions. Large hematoma over the right parietal region. The anterior fontanelle was bulging. There was marked spasticity of the left upper and left lower extremities. The right side of the face was paralyzed. The reflexes were all increased on the left side. Left Babinski present.

Operative treatment was out of the question on account of the feeble condition of the infant. Conservative measures were instituted. The infant succumbed shortly after. Autopsy was not permitted.

CASE VII. Baby X., aged two days. Diagnosis: Right spastic hemiplegia. Family history had no bearing on the condition. Personal history: First child, instrumental delivery, occiput posterior position. The patient was in labor for twenty-four hours. The child at birth was normal. It cried as soon as it was born. Thirty-six hours after birth the left side of the face was relaxed. On closer examina-

tion the right arm and leg were found to be spastic. The reflexes on this side were exaggerated. Babinski was present on the right side. There were no convulsions noticeable. This condition remained stationary for about a week; thereafter it gradually began to clear up, until it had entirely disappeared. The entire attack lasted about two weeks.

This undoubtedly was a case of intracerebral hemorrhage, the result of a protracted labor and probably injury from the forceps. The spontaneous recovery can be accounted for by the complete absorption of the hemorrhage. It is one of the cases where unless a careful examination is made, the spastic hemiplegia is often overlooked. When seen recently, at the age of eighteen months, there was no evidence of the spastic hemiplegia. The child walked at fourteen months. The general condition and mentality were excellent.

SUMMARY AND CONCLUSIONS.

1. Spastic paralysis may result from an apparent normal delivery (Cases III and IV).
2. In some cases interference with the dressing or the bathing of the infant may be the first evidence of an existing spastic paralysis (Case II).
3. In other cases delayed functions of sitting and walking directs one to the existing spastic paralysis (Cases III and IV).
4. Convulsions in infants, either immediately after or shortly after delivery, should make us suspicious of cerebral injury.
5. The possibility of syphilis as the etiological factor in some cases of spastic hemiplegia must always be remembered (Case V).
6. Where ophthalmoscopic examination reveals increased intracranial pressure, and where there is not a great amount of interference with the mentality of the patient, subtemporal decompression, as described by Sharpe, should be performed.
7. In the other cases, and in the after-treatment of cases operated in, massage, electricity, manipulation, supports, tenotomies, and muscle education usually offer relief to the patients, and influence to a certain degree the existing condition.

REFERENCES.

1. WILLIAM SHARPE: A New Operative Treatment for Selected Cases of Cerebral Spastic Paralysis, *Journal A. M. A.*, Feb. 6, 1915.
2. A. S. TAYLOR: *Medical Record*, Dec. 18, 1909.

1051 BOSTON ROAD.

THE STANDARDIZATION OF DISINFECTANTS.

A Critical Comparison of the Hygienic Laboratory and Ridal-Walker Tests.

By J. T. AINSIE WALKER,
New York.

Fellow, Royal Society of Medicine.

Conditions incident to the European war have done much to stimulate widespread interest in the subject of disinfection, both in connection with surgical treatment and in safeguarding the health of those exposed to infection. While several factors are properly to be considered in the selection and use of disinfectants or bactericides, such as their toxicity, causticity, etc., it is of prime importance

that their germicidal efficiency should be accurately determined.

For many years, in England and other countries, disinfectants have been standardized under Government control by means of their carbolic acid coefficient as determined by the Rideal-Walker test, so that their relative efficiency may be known to the user.

In this country, the Rideal-Walker method has been generally recognized by well informed workers as furnishing the only simple and scientifically accurate means yet devised for determining the relative germicidal value of disinfectants; but owing to the fact that *Hygienic Laboratory Bulletin No. 82* sets out what was stated to be an improvement upon the Rideal-Walker test, many workers who are unfamiliar with the latter have naturally been misled into an employment of the so called "hygienic laboratory test" for serious scientific work, in the mistaken belief that it is the official Government test.

A recent instance of such an employment of the hygienic laboratory method, with its necessarily inaccurate results, has prompted me to yield to previous requests that I should publish a critical comparison of the standard Rideal-Walker test and the alleged improvement known as the hygienic laboratory test.

In the first place, I think it is not open to doubt that a reliable test for the standardization of disinfectants in respect of their germicidal efficiency, should comprehend the following elements:

1. It should compare the germicidal activity of all disinfectants with that of a standard germicide of known reliability and of certain specified purity, and prescribe the means for securing this degree of purity.
2. It should specify standard conditions respecting the preparation and use of a standard organism, so as to furnish a culture which will offer uniform and consistent resistance to the action of the standard germicide and that of those to be subjected to comparison with it.
3. It should specify a method of working out comparison with the standard, in such terms, and in such relations to normal conditions requiring the use of disinfectants, as will afford a fair basis for comparing one disinfectant with another to determine their relative merits for normal use.
4. It should prescribe a technic simple enough for common use, and yet adapted to permit accurate work, yielding accurate results.
5. It should prescribe conditions excluding as far as possible all disturbing elements that would operate to create improper factors in calculating results.
6. It should be capable of yielding concordant results in the hands of all workers following the prescribed technic under the conditions imposed.

It only remains to be seen which of the two tests under consideration meets these six conditions. I will take them up seriatim, and bring out the extent to which each complies with the ideal, or departs therefrom, as the case may be.

1. The test should compare the germicidal activity of all disinfectants with that of a standard germicide of known reliability and of certain specified purity, and prescribe the means for securing this degree of purity.

The R-W test complies with this requirement; but the H-L test does not, as will more fully appear from the following:

In the R-W test as described in the *American Journal of Public Health*, III, 6 (May, 1913), the procedure specified appears in the following paragraph:

Standard carbolic acid. As carbolic acid crystals are very often contaminated by cresols to such an extent as to make them unreliable for purposes of bactericidal control, their purity should be established by a determination of the solidifying point (point of constant temperature) on at least 50 c. c. of the material with the thermometer in the liquid. The point is very sharp, the thermometer showing a constant temperature for a period of from five to ten minutes. The solidifying point of the crystals is 40.5 but anything over 40.0 may be accepted. A 5 per cent. (by weight) stock solution is then prepared and standardized by titration with decinormal bromine. From this solution (which keeps indefinitely in stoppered bottles) the various working strengths are made up by diluting some comparatively large quantity, such as 100 c. c., to the desired volume; this serves to eliminate the error introduced by measuring out small quantities of strong acid.

In the H-L test as described in *Hygienic Laboratory Bulletin No. 82*, the phenol control is described as follows:

For the phenol controls a standard dilution of pure phenol (Merck's Silver Label) is made and standardized by the U. S. P. method (Koppeschaar) to contain exactly 5 per cent. of pure phenol by weight. From this stock solution the higher dilutions are made fresh each day for that day's test.

As pointed out by Walker and Weiss in a note on the R-W Phenol Control published in the *Journal of the Franklin Institute*, July, 1912, this method of standardizing phenol is wholly unreliable, as it fails to indicate the cresol contamination. The following summary is taken from the paper by Walker and Weiss:

1. Phenol crystals are usually contaminated by cresols to such an extent as to make them unreliable for purposes of bactericidal control.
2. This impurity depresses the coefficient of a disinfectant.
3. The bromine titration is insufficient to insure the purity of phenol.
4. The purity must be first determined before the phenol is selected for use.
5. The purity should be established by determination of the solidifying point as outlined in the present paper.
6. The bromine titration should be used only as a check on the gravimetric preparation of the stock 5 per cent. solution.
7. The authors present as a recommendation that no phenol showing a solidifying point of less than 40° C. be used for purposes of bactericidal control.

The Committee on Disinfectants of the American Public Health Association appear to have appreciated the fact that the bromine titration method specified in the H-L test is insufficient to insure purity in the phenol control, as will be seen from the following paragraphs taken from their report as it appeared in the *American Journal of Public Health*, October, 1912:

Merck's Silver Label Phenol is recommended in *Bulletin No. 82*, page 22, as the standard phenol. It has been found, however, that phenols vary in the amounts of cresols and the higher phenols which they may contain.

The following procedure has been used in England for the purpose of eliminating these higher phenols and cresols on the one hand, and any accidental contamination of the phenol with water on the other. While the committee have no specific data in any amount to warrant the recommendation of this procedure, it would be advisable for those who desire to apply the Hygienic Laboratory Phenol Coefficient Method under conditions of the greatest refinement to purify the standard phenol in the following manner:

Merck's Silver Label Phenol should be distilled fractionally. The first third, which will contain water, is discarded, the last third, which may contain cresols and the higher homologues of phenol, is discarded, and the middle

third, which should contain neither, is used in making up the 5 per cent. stock dilution.

My researches in respect of this matter amply confirm the statement of the Committee on Disinfectants that they "have no specific data in any amount to warrant the recommendation of this procedure" and show that the proposed modification does not in any respect remove the difficulty found in the original specification of Anderson and McClinic.

The following figures taken from my laboratory note book will make this quite clear.

Phenol crystals, freed from water, and containing 90.5 per cent. pure phenol (the difference being cresols) were distilled as recommended by the Committee on Disinfectants, with the following result:

First third	93.0 per cent. pure phenol
Second third	91.2 per cent. pure phenol
Third third	88.5 per cent. pure phenol

It will be apparent from the foregoing that, not only do we fail to get a pure phenol for use as a standard in the H-L test, by the procedure recommended by the Committee on Disinfectants, but that the second third recommended for choice contains more impurity than the first third, which they recommend should be rejected.

2. The test should specify standard conditions, respecting the preparation and use of a standard organism, so as to furnish a culture which will offer uniform and consistent resistance to the action of the standard germicide and that of those to be subjected to comparison with it.

The R-W test prescribes *Bacillus typhosus* as the test organism; and so does the H-L test, the only difference being that the H-L test prescribes *Bacillus typhosus* (Hopkins), which introduces an entirely unnecessary restriction. As regards uniform and consistent resistance, both tests specify standard conditions of the same general nature, i. e., *Bacillus typhosus* is grown in nutrient broth and a twenty-four hour culture is used in the test by introducing a definite amount into five c. c. of each dilution of the disinfectant under test and the control.

But, in the R-W test, the nutrient broth prescribed contains twenty grams per litre of Liebig's extract of meat, while that prescribed in the H-L test contains but three grams per litre; and in the R-W test the definite amount of culture introduced into the various dilutions of disinfectant subjected to comparison is 0.5 c. c. of culture to five c. c. of dilute disinfectant, while that introduced in the H-L test is 0.1 c. c. of culture to five c. c. of dilute disinfectant.

The result of this modification, found in the H-L method, is to introduce into the test an organism which does not offer uniform and consistent resistance to the action of the disinfectants. That is, *the organism, in the first place, is insufficiently nourished in the weak broth to furnish a vigorous twenty-four hour culture, and, in the second place, such a small quantity of this feeble culture is subjected to the action of the various dilutions of disinfectant that it is demonstrably impossible to obtain uniform and consistent results.*

On the other hand, the R-W test specifies such standard conditions as will give a uniformly vigorous twenty-four hour culture from day to day, specifies precautions against carrying over the cul-

ture for more than one month, to avoid attenuating the organism to the point where inconsistent results would ensue,¹ and also specifies that a sufficient quantity of the vigorous twenty-four hour culture shall be subjected to the action of each dilution of disinfectant (i. e., 0.5 c. c. to five c. c.) as will insure a thorough test of the disinfectant.

To quote from the Approved Technic of the R-W test, in *American Journal of Public Health*, III, 6 (May, 1913):

B. typhosus, grown in R-W broth and incubated for twenty-four hours at 37° C. provides the test culture. To insure even distribution of the bacilli in the broth culture, and to avoid the necessity of filtration, the culture tube should be shaken and allowed to rest for half an hour before it is finally removed from the incubator, the temperature of which should not vary more than half a degree from day to day. It is advisable to make a subculture every twenty-four hours from the previous twenty-four hour culture, even if on many days no test is to be performed; but as this tends to attenuate the organism, it should be continued for not more than one month, after which a fresh subculture in broth should be taken from a month old agar culture. By this means a culture not varying much from day to day in resistance to disinfectants is obtained, making the selection of the proper dilution of carboloid acid much easier than it would be if the culture from which the twenty-four hour growth is obtained were older on one occasion than on another.

Hamilton and Ohno (*American Journal of Public Health*, June, 1914) stated that "while occasionally the bouillon culture has been noticed to change in its resistance, the agar culture seems to be exceptionally uniform." This confirms my specification.

Furthermore, the use of *ten c. c. of the weak broth* for the subcultures in the H-L method, in place of the *five c. c. of strong broth* used for the subcultures in the R-W method, does not serve to correct matters, but only adds to the impossibility of getting consistent results.

A careful examination of the tables set out in the last part of *Hygienic Laboratory Bulletin No. 82*, pp. 38-71, will serve to reveal very great inconsistencies in the action of the *phenol controls* under what must be supposed to be similar conditions, to say nothing of the obvious inconsistencies shown in the action of the disinfectants under test.

In my earlier work, prior to the publication of the R-W test, I myself used a broth as weak as the one specified in the H-L test, until I found that accurate results could not be obtained; then I increased the proportion of the extract, first to five grams, then ten grams, then fifteen grams, and eventually to twenty grams per litre, but was still unable to get uniformly consistent results until I increased, also, the amount of culture subjected to the action of the disinfectant up to the present ten per cent (0.5 c. c. of culture to each five c. c. of dilute disinfectant).

That is, even with the strong broth containing twenty grams of Lemco (Liebig's extract of meat) per litre, it was found necessary to use 0.5 c. c. of culture to each five c. c. of disinfectant before uniformly consistent results could be obtained.

3. The test should specify a method of working out comparison with the standard, in such terms, and in such relations to normal conditions requiring the use of disinfect-

¹Richard and Wallace, in a recent note, recommended as a further precaution that the culture be inoculated at intervals for a phenol dilution higher than one in 110 or lower than one in 95. *Loc. cit.*

tants, as will afford a fair basis for comparing one disinfectant with another to determine their relative merits for normal use.

Here, again, both tests agree in general, by assuming to find a coefficient having a relation to the comparative killing power of the disinfectants within the time normally permitted in ordinary disinfection; but the R-W test prescribes the working out of the coefficient from data showing life up to five minutes, and death at seven and a half minutes, while in the H-L test the coefficient is obtained by taking the mean of the ratios found at two and a half minutes and at fifteen minutes—that is, the mean between the coefficient found for the lowest dilution that will produce death at two and a half minutes, and the coefficient found for the lowest dilution that will produce death at fifteen minutes.

If all disinfectants increased their efficiency in direct proportion to the increase in time of contact, this could furnish no objection to the H-L method of determining coefficients. But we find, to quote Chick and Martin (*Journal of Hygiene*, VIII, 5, 1908):

The effect upon the time taken to kill of varying concentration is not the same with different classes of disinfectants.

To make this point quite clear they give the coefficients of mercury bichloride obtained from ratios taken at two and a half minutes and at thirty minutes. The coefficients are 13.6 and 550.0 respectively!

Thalhimer and Palmer (*Journal of Infectious Diseases*, IX, 2, Sept., 1911), working with quinone, found a hygienic laboratory coefficient of 84.3—the mean of 8.6 and 160.0!

Of what practical value is this knowledge? At what point during the fifteen minutes' test does this figure hold good? It would be impossible to say. One of the principal objects in determining the coefficient of a disinfectant is to enable us to prepare reliable working dilutions. For instance, when we learn that the R-W coefficient of a certain product is 2.0 we know that a dilution of one in 50 is indicated if we wish to prepare a dilution equivalent (at 5 to 7½ minutes) to the average one in 25 hospital strength of phenol. Would it be safe to assume in the case of quinone that the equivalent bactericidal dilution is 84.3×25 , or one in 2,107? Scarcely.

Thus it appears that this feature of the H-L test (working out the coefficients of all disinfectants by taking the mean of two extremes when the extremes are themselves incomparable) affords an unfair and unscientific basis for comparing one disinfectant with another. It opens the door to fraud, a fact of which many unscrupulous manufacturers have not been at all backward in taking advantage.

The only fair and scientific basis for comparison is to work out the coefficients as of a period, related to the condition obtaining in normal use, that will give each disinfectant its fair coefficient for such normal use.

If the special condition in which a disinfectant is to be used permits of contact for a greater period than that prescribed for obtaining the coefficient which is used for standardization purposes, it is of course possible to work out, by the same method of

testing, the comparative values of different disinfectants for such special uses.

But the R-W method furnishes a coefficient that is fair to all disinfectants, while keeping in view the ultimate purpose of disinfectants in safeguarding the public health; it produces standardization that standardizes in a manner fair to both the public and the manufacturer, though where the two interests conflict it favors the public rather than the manufacturer.

And this must necessarily be the case with any test that should be adopted by public health authorities.

There has been some criticism by uninformed persons, respecting the manner of finding the coefficient by the R-W method. This criticism is exemplified by what is said in *Bulletin No. 82*, where three tables are given (purporting to be R-W tables) in which the coefficient of a certain disinfectant is worked out at 4.44 by taking the ratio as of a point showing life at 2½ minutes and death at five minutes, then at 5.5 by taking the ratio as of a point showing life at 7½ minutes and death at ten minutes, and then at 5.91, by taking the ratio as of a point showing life at 12½ minutes and death at fifteen minutes!

These tables demonstrate the fact that nearly all disinfectants increase their relative efficiency with increased time of contact; and this fact requires a due consideration of the time of contact ordinarily available in the normal use of disinfectants.

And so, in the R-W method, the time point is fixed so as to make the comparison with a standard control whose action is such as to show life up to five minutes only; and no coefficient is recognized that is not ascertained as of this time point.

To show that the limits prescribed by the R-W test were not understood by those who assumed to criticize it, I will quote from the paper of Dr. David Sommerville in the *Medical Times* for October, 1912, as follows:

They then state their objections to the R-W test, and in justice to the authors of this test I should like to say that in my opinion, as in that of many workers in England with whom I have discussed the question, Anderson and McClintic's criticism is most unfair and wholly misleading. It is difficult to believe that they reached the conclusions which they published before familiarizing themselves with the literature of the subject, yet by no other hypothesis can their findings be explained away.

"The great objection to the method," to quote from their original paper, "is the latitude allowed in determining the coefficient." Three tables are then set out as typical examples of R-W tables, not one of which would be recognized as such by any one familiar with the work. Two dilutions of the phenol control appear in each of these tables, instead of one as called for in the R-W test, and ratios are obtained by comparing the action of postulant and control at 2½, 10, and 15 minutes, although the authors have repeatedly stated that ratios should be taken at 5 minutes only. Equally misleading is the objection to the drop, which is described as too indefinite, although for years it has been standardized at 0.1 c. c., as is also the criticism of the temperature at which the test is conducted, the difference in results obtained within a variation of 2° F. being negligible.

It cannot be too emphatically asserted that any variations in results experienced by two workers observing the conditions laid down by Rideal and Walker arise from failure in some respect on the part of the worker, and not out of the method, which has for several years been adopted officially by the leading State and Public Health Departments of Great Britain and the British Colonies.

4. The test should prescribe a technic that will be simple enough for common use, and yet be adapted to permit accurate work, yielding accurate results.

Here the R-W test is far superior to the H-L test, as is well understood by every one who has had experience with both methods.

To increase the number of dilutions of control and disinfectant (as is done in the H-L test) to 14 or 15, while yet attempting to obtain readings at $2\frac{1}{2}$, 5, $7\frac{1}{2}$, 10, $12\frac{1}{2}$, and 15 minutes, necessarily cuts down the time available for seeding or medication and subculturing to such an extent as to preclude accurate work and prohibit the possibility of keeping the time periods from overlapping. If the time periods overlap, the results of the test must be inaccurate.

Doctor Rideal's criticism of the *Lancet* test in regard to this particular feature, which was adopted in the H-L test, applies equally, of course, to the latter. In discussing the *Lancet* report at the British Pharmaceutical Conference, at Cambridge, July, 1910, Doctor Rideal said:

The time allowed in the *Lancet* method to inoculate the disinfectant dilutions, and later to inoculate the subcultures from the dilutions, is not sufficient for a thorough mixing. In the R-W test the disinfectant dilutions are shaken before a loopful is taken out, not merely stirred. This is impossible in the *Lancet* method because of the short open pots employed, even if sufficient time were available. . . . One would think that a man inexperienced in bacteriological testing would prefer a test lasting fifteen minutes which required one platinum loop, four dilutions of disinfectant and one of the carbohc acid, and thirty tubes to inoculate at the rate of one every thirty seconds, in place of a test that needs an apparatus requiring some practice to use, nine or ten dilutions of disinfectant and four or five of carbohc acid, and over seventy tubes to be inoculated, one every twelve and a half seconds, and the test taking thirty minutes to finish.

Also, as Doctor Rideal points out in a criticism of the H-L test itself, the use of several loops for subculturing is not advisable, as no two loops can deliver mathematically exact doses, while accurate results are certain when one loop only is used, as recommended in the R-W test.

5. The test should prescribe conditions excluding, so far as possible, all disturbing elements that would operate to create improper factors in calculating results.

Here, the adoption of the open pots of the *Lancet* method by the authors of the H-L test, in preference to the plugged tubes of the R-W test, introduces the great danger of contamination and prevents the shaking together of dilution and culture necessary to get thorough admixture during contact in the seeding tubes, and thus prevents accurate subculturing therefrom.

This serious defect at least partly explains the apparent impossibility of obtaining harmonious curves in H-L test tables shown in the last part of *Bulletin No. 82*. Also, it accounts for the lines in those tables showing no growth signs followed by growth signs. This same difficulty in the *Lancet* test was pointed out by Doctor Rideal as follows:

The specimen pots (of the *Lancet* method) which contain the dilutions and culture broth are left unplugged throughout the test. On some of my charts, and also on some published in the *Lancet* there is a "no growth" sign, followed by "growth" later on. In my case these accidents have occurred in tests that seemed most carefully carried out, and the only explanation of the contamination appears to be the open pots. On this ground the R-W

test is preferable. The dilutions and the broth tubes for subcultures are all plugged, and the cotton wool plug is only removed while a loopful of the disinfectant dilution and culture is being transferred to the broth subculture.

6. The test should be capable of yielding concordant results in the hands of all workers following the prescribed technic under the conditions imposed.

Here, many years of experience has served to demonstrate that the R-W is the only test that is capable of yielding concordant results in the hands of all who follow the technic under the conditions imposed.

The *Lancet* test was so incapable of yielding concordant results that it never was adopted as a means for standardizing disinfectants, in England or anywhere else, but was thoroughly discredited by its own demonstrated defects.

The features in the hygienic laboratory test that were taken from the *Lancet* test are the very ones that contributed largely, if not entirely, to its unreliability.

The fact that the H-L test is utterly unreliable appears only too plainly from the experience of all who have investigated it.

Doctor Rideal, in an article in the *Lancet* for September, 13, 1913, said:

Among all the fifty-four disinfectants tested by McClintic, only two comparatively high values are given—viz., 12.3 and 15.0. The published test chart for one of these cannot be considered satisfactory; it is stated in the introduction to the report (p. 36) that "in determining the coefficient of a disinfectant, from two to five experiments were performed, and the experiment whose coefficient approximated the general average of all the coefficients determined was selected for report." As a rule high values are more difficult to determine than low ones. A large number of disinfectants employed, at any rate by the English authorities, have coefficients nearer 20 than 10, and if this is the best result obtained after five performances of Anderson and McClintic's lengthy test, it certainly will not recommend this method to those who have to pay the cost and wait for the result . . . a standard test is required to control the daily output of disinfectants and not simply to determine once and for all the bactericidal value of definite substances.

Hamilton and Ohno, in the *American Journal of Public Health* for June, 1914, said:

That the hygienic laboratory method often gives different results in the hands of different workers, is also evident from the following results compiled from different sources (giving table). The foregoing instances are sufficient to make one doubt the correctness of any of these tests.

Weiss, in his paper in the *Franklin Institute* for June, 1913, said:

It is far easier to obtain concordant results with the Rideal-Walker method than with the modified method of Anderson and McClintic, and the reason for this is clearly brought out when the count of simplicity is considered.

The writer has had experience with the operation of both methods and feels that there could be no unbiased critic but would concede at the start that the hygienic laboratory method is far more cumbersome, complicated, and involved than is the older method. It may be noticed in the report of the Committee of the Public Health Association that the inference is made that there were still some considerable discrepancies observed in tests of duplicate samples by different members of the committee. Further work was suggested to determine the cause of the discrepancies. Now, if the members of this committee, who should, supposedly, be the workers *par excellence* in carrying out the method, fail to obtain consistent concordant results, what chance has the "outsider"? It would seem poor policy to endorse a method as a standard, when operators of this high degree of excellence could not consistently check each other's work. English experience has shown that

workers not specially trained can obtain concordant figures with the Rideal-Walker method.

CONCLUSIONS.

When one considers the fundamental defects in the H-L method, i. e., 1. The variable phenol control; 2, the inconsistent resistance of the test organism; 3, the use of an arbitrary mean between two abnormal extremes for ascertaining a fictitious coefficient; 4, the complicated technic; 5, the open pots which preclude thorough mixing and also permit contamination; 6, the impossibility of obtaining concordant results by different workers (added to which the H-L method is recognized to be inaccurate by the fact that the authors themselves recommend that the test be repeated two to five times and that an *average* of the various results be taken as the coefficient), it is not surprising that, with a disinfectant having a standard Rideal-Walker coefficient of 20, Professor Pearson, of Hahnemann College, Philadelphia, found a H-L coefficient of 22.5; Doctor Steiner, State Health Officer, Texas, found a H-L coefficient of 18.0; Dr. J. F. Anderson's assistant, at Washington, found a H-L coefficient of 16.6; Professor Prescott, of Boston Technical Institute, found a H-L coefficient of 12.2; and I, myself, found a H-L coefficient of 22.0.

These results proved nothing of scientific value as to the germicidal efficiency of the disinfectant; they only testified concerning the above noted defects in the hygienic laboratory method. On the other hand, with the same disinfectant, among the many investigators who had no difficulty in determining its standard Rideal-Walker coefficient of 20, may be mentioned the following:

Professor Prescott, Boston Technical Institute.

Dr. William Park, Research Laboratory, city of New York.

Doctor Pease, Pennsylvania R. R., Altoona.

Doctor Matson, City Bacteriologist, Pittsburgh.

Mr. H. W. Mahr, Central Testing Laboratory, city of New York.

It would seem from the foregoing that, instead of being an improvement upon the standard Rideal-Walker test, the so called hygienic laboratory method is so defective as to be wholly unreliable and incapable of furnishing results of any scientific or practical value whatever.

WOOLWORTH BUILDING.

THE THERAPEUTIC VALUE OF DIATHERMIA.*

BY ALBERT C. GEYSER, M. D.,
New York,

Professor of Physical Therapeutics, Fordham University Medical School; Late Clinical Instructor in Radiography and Radiotherapy, Cornell University; Etc.

The term, therapeutics, means that branch of medical science which considers the application of remedies as a means of cure. In this definition are involved two points of interest. First "consideration," second the production of a "cure." Treating a disease according to its symptoms requires little or no consideration as to the ultimate cure of the

disease. The abatement of the symptoms seems to be the only goal, and, that accomplished, the patient is supposed to be cured. It must be obvious, when a patient is suffering the enormous pains that sometimes accompany the blocking of the common duct or one of the ureters with an attempted passage of a stone, that the inhibition of pain by the administration of morphine has in no way cured the disease. Another patient who is suffering from headache as the result of high arterial tension, is given nitroglycerin and his headache subsides; can he be looked upon as cured?

The fact is, there never was any "consideration" as to cure, for the word, cure, if it means anything, means a return to a normal physiological condition of the system.

As a rule, the human economy possesses all the necessary elements for a cure, no matter what the system may be suffering from, though it frequently happens that some toxic material so suddenly overwhelms the system that it is incapable of gathering all of its forces for adequate defence. It is under just such circumstances that we must give "especial consideration" to remedies as a means to a cure. While the attempt is made to create by artificial means such products as antitoxins, serums, and biochemical substances, we must recognize that any and all of these products should and ought to be produced promptly within the human economy in order to be really physiological. The question naturally arises, "Why does the system succeed in one case and utterly fail in another to protect or cure itself from disease?" A complete answer to this question would lead us too far afield. Suffice it to say, we are all born free, but not equal. Heredity and environment are important factors.

Let us for a moment consider the therapeutic or curative means possessed by the normal system. Is it not a fact that ultimately every extra physiological effort to produce antitoxins, antibacterial serums, vaccines, etc., if manufactured within the body itself, would require an extra effort, extra labor, extra metabolism? All these extras, when summed up in one word, spell inflammation. Inflammation, as we are now aware, is a perfectly physiological process; it is Nature's attempt to cure, and if successful cannot be equalled by the best of our artificial means. We have also recognized that is the one principal factor of an inflammatory process is heat.

Let us pause just a moment and see what would happen if some particular germ gained entrance to the body, that the toxins from this germ were either insufficient as a stimulus, or that the body, weakened from previous conditions, exposure, heredity, or environment, failed to respond to the curative process? As no reaction has taken place by the multiplication of the germ, the toxins increase until they form combinations with the body cells. Let it be understood that a drug or poison cannot manifest itself unless that drug or poison has formed a combination or association with some of the cells of the body. It is because of such an association that the individual cells are hindered in the performance of their physiological function that we have an unphysiological function performed, which functioning we designate as disease.

*Cf. Diathermia; a Physiological Specific, by Albert C. Geysler, M.D., NEW YORK MEDICAL JOURNAL, February 19, 1916.

As soon as this unphysiological functioning takes place, either the system is stimulated into activity and by the process of an inflammation produces the necessary physiological antidote, or, as may happen, it is unable to respond on account of the combination of the poison with cells that are vital to the performance of physiological functions. As a result inadequate reaction takes place, the patient succumbs to the disease, or lays the foundation for a more or less perverted physiological action of the involved cells, and we have the condition designated as chronic state of a disease. In either case an acute disease process, failing to be cured by the forces of the system or the establishment of the chronic state of disease, is primarily the result of inadequate reaction at the beginning of the disease process.

It is now possible to see how this energy, supplied in the form of heat early in the disease process, might have so roused the activity, especially of the wandering cells, that the proper antidote or antitoxins would have been formed. This heat must be the result of energy on the part of both the fixed and the wandering cell.

How shall we cause this latent reaction to manifest itself? This may be and has been accomplished in various ways; by diet, change of climate and environment, administration of drugs, rest, and a host of other methods.

We are here considering diathermia or the application of a high frequency current. From clinical observations, we know that when the human tissues are traversed by this current, they invariably respond with an immediate and positive reaction. This is manifested by local heating and reddening of the tissues, followed by a constitutional rise of temperature; in other words, the main cardinal symptom of inflammation.

At this time we are entitled to consider the term, diathermia, as a therapeutic agent, because we have given due consideration to the selection of this agent. We are not making use of diathermia for the purpose of relieving, changing, or obscuring some symptom. We are using diathermia with the sole object of assisting Nature in furnishing that needed reaction which for some reason she has failed to initiate. With this end in view, we are not attempting to cure the disease process, but we are assisting, encouraging, I might say compelling the system to overcome the disease. This seems logical, natural, and physiological; this is as it ought to be. In fact, no agent should be used primarily to cure a disease process, because that is a thing that belongs to the domain of physiology and biology, and not to any agent like drugs or electricity.

This view at once explains why the one electrotherapist alleges and actually produces the most astounding results, while another equally well meaning operator meets with nothing but dismal failure.

The difference between the two is this: The former recognized that Nature only could bring about a cure, and therefore applied diathermia with a view of assisting the body in the performance of its physiological function. In a case of disease, for reasons frequently unknown, the system fails to respond with that all essential inflammatory reaction.

Diathermia simply furnished that which was lacking to the patient.

The second operator, on the other hand, ignored Nature and the laws of physiology, and proceeded to remove or at least change the symptoms of which the patient complained. Whenever he succeeded in doing this, he glorified himself, and when he failed, he condemned the agent. Generally speaking, his successes were few, while his failures were many.

Heat is a therapeutic measure when physiologically produced. Diathermia produces physiological heat within the tissues and is, therefore, a therapeutic measure.

231 WEST NINETY-SIXTH STREET.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVII.—How do you treat rickets? (Closed.)

CLXVIII.—How do you treat cyclic vomiting of infants? (Answers due not later than March 15th.)

CLXIX.—How do you proceed in post partum hemorrhage? (Answers due not later than April 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the Journal. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXVI was awarded to Dr. Howard S. Anders, whose article appeared on page 459.

PRIZE QUESTION CLXVI.

TREATMENT OF CONSTIPATION IN SEDENTARY MEN.

(Continued from page 461.)

Dr. John I. Fanz, of Philadelphia, observes:

Chronic constipation in men of sedentary habit, not due to gross pathological conditions such as postoperative adhesions, tumors, or stricture of the gut, is one of the most common complaints met with in daily practice. It almost invariably lends itself to treatment, provided the cause is understood and removed. Two varieties are to be distinguished: 1, The hypertonic, and, 2, the atonic or really hypotonic types.

The hypertonic type of constipation is usually the type experienced by thin, nervous, mentally overworked men of poor hygienic life. These patients are usually of dark complexion, excitable temperament, and often are confirmed users of tobacco in excess. The underlying condition seems to be excessive activity of the intestinal distribution of the vagus or pneumogastric nerve. The constant and excessive use of tobacco gradually de-

velops an increasing vagal tonus to counterbalance the effect of nicotine.

As the vagus is visceromotor to the intestine, overactivity on its part always causes spasms of the musculature of the bowel at some point, thus offering a mechanical obstruction to the fecal current, resulting in desiccation and retention. Men so afflicted often remark that they are unable to have a proper stool, unless they previously chew tobacco, or smoke a strong pipe or cigar.

The chief causative factors of hypertonic constipation are:

1. Tobacco addiction in excess.
2. Continual use of highly seasoned foods, concentrated, or in small amount.
3. Use of strong alcoholic beverages, especially on an empty stomach.
4. Hyperchlorhydria.
5. Gallstones, erosions of the gastrointestinal tract, ulcers, chronic appendicitis, fissure, eczema of the anus, etc.
6. Food ingesta having small residue, e. g., a diet composed largely of meat.
7. Nerve strain, nervous overwork, and worries.

With the exception of the sixth, all these factors bring about reflex spasm of the small or large intestine by causing vagal hypertonus. Owing to the spasm of sigmoid and rectum musculature, and to the pressure of the desiccated feces contained therein, hemorrhoids develop as a result of the obstruction to hemorrhoidal venous return. The stools are small in amount, dark in color, much segmented, and often scybalous.

Headaches through reflex meningeal congestion are common.

Treatment. The removal of the causative factors, simultaneous with the diminution of vagal hypertonus are the keynotes of the situation. Atropine is the drug *par excellence* to diminish spasm of the bowel, owing to its effect in depressing the peripheral vagi. The following prescription is especially valuable:

R Tincturæ belladonnæ foliorum,	3ii;
Fluidextracti rhamni purshianæ aromatici,	5vi;
Sodii bromidi,	3ii;
Essentiæ pepsinæ, q. s. ad.	3iv.

M. Sig.: A teaspoonful, three or four times daily, before meals.

This is to be given over a period of four or five weeks in gradual diminishing doses, after the natural habit has been established. It is a good rule to precede this treatment with thorough purgation.

Hygienic treatment of course is directed toward the elimination of nerve strain, and business worries, the encouragement of open air exercise, and regular and sufficient sleeping hours. Smoking and chewing must be abandoned.

Dietetic treatment. Highly seasoned food, strong alcoholic beverages on an empty stomach, and concentrated foods are to be replaced by their opposites. Vegetables and bulky foods, and the drinking of large quantities of water are to be advised. Alkaline iron free mineral waters are beneficial.

Patients exhibiting the atonic (hypotonic) type of constipation generally seem healthy, are usually light complexioned, fat, or of the lymphatic temperament, but exhibit some degree of anemia.

Many factors acting either separately or in combination, bring about constipation. Important ones to be considered are the following:

1. Lack of tonicity of the unstriated musculature of the intestine.
2. Poorly developed musculature of the abdominal wall and pelvis, encumbered with excessive fat deposits (sometimes amounting to the pendulous condition).
3. Enteroptosis.
4. Deficient innervation of the intestinal tube, resulting in faulty peristaltic movements favoring stasis and fermentation.
5. Lack of stimulation by ingestion of too bland a diet.
6. Biliary insufficiency causing loss of tone, and lessened number of the rhythmic segmentation movements of the small intestine.
7. Gastrointestinal catarrh, decreasing the secretory activity of the mucosa of the gut tract.
8. The underlying anemia, almost always present, is a general factor, causing many aberrations in organ and tissue function.

The feces are usually large in amount, owing to large ingesta and imperfect digestion; are brownish, hard, and well formed. These accumulations distend part of the transverse and entire descending colon, sigmoid, and rectum. Owing to the insufficient muscular propulsive power of the small and large intestine, bacterial putrefaction of the alimentary content is permitted. The toxic products of this fermentation gives rise to the well known symptoms, and also increase constipation by paralyzing or lowering intestinal muscular tone.

One or more of the foregoing factors may be responsible, but the trouble is invariably aggravated when the regular calls of Nature are postponed from lack of time or absorbing business interests. This, if persisted in, leads to pronounced dilatation and atony of the colon.

Treatment of the atonic type. The aim is to develop normal muscle tonus, and to bring about proper secretory and excretory activities of the gastrointestinal mucosa. In the attainment of this nothing excels nux vomica, physostigma, and cascara. Hepatic activity is increased by a preliminary course of calomel in one tenth grain doses, every hour, followed by brisk saline catharsis, and an enema. The following prescription given for two weeks, then gradually cut down for three or four weeks, is suitable:

R Extracti nucis vomicæ,	gr. iv;
Extracti physostigmatis,	gr. iii;
Extracti rhamni purshianæ,	gr. xv;
Pancreatini,	gr. xl.
M. Et fiat pilulæ No. xx. Sig.: One pill three times daily before meals.	

A liquid preparation similar to the foregoing may be selected preferably:

R Tincturæ nucis vomicæ,	3vi;
Tincturæ physostigmatis,	3iii;
Liquoris potassii arsenitis,	3i½;
Fluidextracti rhamni purshianæ aromatici,	3vi;
Essentiæ pepsinæ, {	
Glycerini,	aa q. s. ad 3vi.

M. Sig.: One teaspoonful three times daily after meals.

Note that in the two foregoing prescriptions the amount of cascara is to be regulated to suit the de-

gree of constipation in each case. Pure mineral oil or an emulsion of petroleum containing fluidextract of cascara is a good corrective and lubricant.

In cases of hepatic torpor and catarrhal conditions of the intestine and biliary passages, the following are useful:

Phosphate of soda Na_2HPO_4 dissolved in one half pint of hot water sipped before breakfast, each morning.

When constipation is accompanied by gaseous fermentation, and when the stools are gray in color the following is indicated:

R Hexamethylenamine, Si ;
Fellis bovis inspissati, Si ;
Aloni,gr. $\frac{1}{2}$;
Extracti rhamni purshianae,gr. x.
M. et pone in capsulis No. xx. Sig.: One capsule three times daily after meals.

Agar agar, useful in hypertonic constipation where bulk is required of the stool, fails to improve hypotonic types.

Hormonal, the absolute theoretical remedy, does not give brilliant practical results. Phenolphthalein over long periods of time seems to cause eczema.

Hygienic treatment. Increase of tone and strength of the abdominal musculature is essential. Exercises, such as rowing, cross country walking, swimming, and deep breathing are necessary. Abdominal manual massage, and the old method of rolling a ten pound felt covered cannon shot in a circle on the abdomen, in the direction of the hands of a clock, are instrumental in urging on the fecal column, and promoting bowel tonus. In cases showing a tendency to viceroposis an elastic binder is to be worn for support.

Dietetic treatment. Fairly well seasoned foods, fatty foods such as butter, cream, ice cream, and sweets are to be recommended. Vegetable foods rich in cellulose residue promote peristalsis; green vegetables correct anemia. Alkaline effervescent waters, buttermilk, cooked fruits, oranges, grape fruit, prunes, etc., all tend to correct. An apple eaten at bed time is a good old fashioned remedy. Water should be taken generously two or three hours after a meal, but not with the meal.

Dr. Louis Neuwelt, of New York, advises:

Exercise to tone up the general system and also the diaphragm and the abdominal muscles is necessary to restore the functional peristaltic function of the bowels and the other organs. The form of exercise depends upon particular habits, mode of life, physical condition, and occupation. To some, attendance at a gymnasium where are found elaborate apparatus, such as rowing machines, pulleys, etc., will appeal most; lately Zander institutes have become popular. Others will benefit by a change to a more active occupation; some will require passive motion and massage. Outdoor exercises are preferable when possible, including riding, rowing, swimming, tennis, golf and mountain climbing. Great benefit may, however, be derived from simple systematic exercises at the home, night and morning, with the windows open to insure the access of fresh air. Various forms of massage or vibration of the abdomen, or duplicate and active movements may be advised.

The patient may have the services of a masseur,

or may himself knead the abdominal muscles, or use a cannon ball of two to ten pounds weight, covered with chamois or felt. There are many vibratory apparatus on the market, but the trained human hand is the most effective. The massage should be firm, very deep, and slow, starting in the right iliac region over the head of the colon, passing upward over the ascending colon toward the ribs, then across over the transverse colon, and downward on the opposite side over the descending colon, ending in the left iliac area with slow circular movements over the sigmoid and rectum. This should be done for ten minutes twice a day. The patient's knees are elevated so as to relax the abdominal wall as much as possible. Sometimes great benefit is derived from vibratory massage along both sides of the spine, from the first to the fourth lumbar vertebra. In addition to the massage, certain exercises strengthen the abdominal muscles:

Exercise 1. Patient stands with hands behind the head. The trunk is circumducted to the right, then directly backward, then to the left, and then forward. 2. Patient lies on his back with hands at the side. Raises right leg (fully extended) to a right angle to the body. Raises left leg and then both. 3. To exert pressure on the abdominal contents, patient on his back with arms at the sides, raises the right leg with the knee bent; clasps the hands over it and presses the knee against the abdominal wall. Repeats with the left knee. 4. Patient sits on a chair without a back with arms clasped behind his back. Circumduct the trunk forward to the right, and then to the left. Each of the exercises is to be repeated twenty times.

Passive motion in the form of abdominal massage is of service to those unable to take active exercise. This form of treatment may take weeks or months to produce results and therefore should not be abandoned too quickly.

Electricity is suitable for constipation due to weak abdominal walls and atonic intestinal musculature. The faradic current is applied over the colon, beginning at the cecal end along its entire length. One electrode is placed over the spine and the other pressed deep into the abdomen. A frequently interrupted galvanic current may also be used, with one electrode in the rectum and the other passed along the abdominal wall over the colon.

Hydrotherapy is an important adjunct in the treatment of this condition, both to stimulate the abdominal muscles and to promote intestinal peristalsis. The cold morning bath followed by a dry rub with a coarse towel is an excellent tonic, but can be borne only by a few people, as the shock may be too great. Various modifications may be substituted. The patient may stand ankle deep in a tub of warm water and sponge the body with cold water, or pour cold water over the spine and abdomen. It is well to start with the water lukewarm, and gradually reduce its temperature until the patient becomes accustomed to the cold. The Priessnitz bandage, the drip sheet, the half bath, and the different douches are all valuable aids in this form of constipation.

In addition, the usual anticonstipation diet should be prescribed and also suitable drug treatment. No reliance should be placed upon medication, as it

should be used only to institute habits of regular bowel movements. As soon as the patient has acquired regular habits, drugs should be stopped. The sheet anchor in the treatment of this condition is appropriate and sufficient exercise.

Dr. John H. Shaw, of Lancaster, Pa., writes:

The treatment of constipation in sedentary men resolves itself into four important measures, viz.: 1. Systematizing of the daily habits; 2, massage; 3, electricity; and, 4, medicinal.

In the systematizing of the daily habits, it is necessary to change the patient's mode of living, as this is the principal cause of his costiveness. Change of occupation from sedentary life to active outdoor life is, in the majority of cases, curative, but this change is infrequently adopted, so that other methods must be used for this class of patients.

The one important object is to secure a daily evacuation of the bowels, at a regular hour, which corresponds to the daily call of Nature. Nothing should interfere with this duty.

The meals should be at regular hours every day in the week. Much depends upon the state of the patient's stomach, in which case the food should be regulated accordingly. However, it is best to advise the eating of foods productive of much intestinal residue, such as vegetables, cereals, and fruits. Foods with much protein should be sparingly used, such as meat, eggs, and milk. Fruits which have much oil, such as olives and nuts, are beneficial. Water should be taken during the day in sufficient quantity. It is a good plan on going to bed to drink one or two glassfuls of hot water and on arising to drink a glassful of cold water.

It is particularly necessary for the development of the abdominal and intestinal musculature, and also for the benefit to the nerve supply, that the patient take sufficient exercise. Walking one or two hours twice a day is beneficial; riding has long been known to be a great benefit. Almost any exercise which takes the patient into the open air is beneficial.

Sleep is necessary in resting an oversensitive or exhausted nervous system, and suitable measures other than drugs should be adopted. These patients should take a daily bath, together with brisk rubbing, particularly over the abdomen.

The wearing of tight belts is to be condemned, and if there is a tendency to pendulous abdomen a suitable abdominal bandage should be used.

Massage in the treatment of constipation has been of great value. It should be done before arising in the morning, at first mild then increasing gradually in vigor, particular attention being given to the colon.

The patient may be instructed and can carry out the treatment himself. The massage should be daily and not last longer than one half hour. As improvement takes place, every other day is sufficient and the massage should be kept up for one or two months.

When electricity is available, it may be used, the operator directing the vibratory massage only over the part affected.

Medicinal treatment, if used at all, is only an aid to other and better methods. In the beginning of

the treatment of constipated patients enemas, saline cathartics, or even vegetable cathartics may be necessary. Great care should be taken in the use of drugs.

As soon as the patient begins to have regular evacuations. Nature should continue unassisted.

(To be continued.)

Contemporary Notes.

Safeguard Ethics.—Medical ethics is a good thing, according to the *Texas Medical Journal* for February, 1916, and the ethical ideals should be high. There is always danger, however, that harm may be done in the name of medical ethics. Let a member of a profession but suggest that a thing is unethical, and often it is condemned without a proper consideration of whether it is in fact unethical. Medical ethics should never be allowed to stand as a bar to progress in the science of medicine; neither should it be used as an excuse for one physician giving another an undeserved kick. Ethics, because it is such a popular term, is always in need of safeguarding from abuse. It is safe in the hands of those who always behave as gentlemen should behave, but the interpretation is so pliable that it is at times used as a weapon for wrongdoing.

A Libel on the Medical Profession.—The *Providence Medical Journal* for March remarks editorially that the analysis of a hundred and forty-seven cases of drug addiction by McIves and Price (*Journal A. M. A.*, Feb. 12, 1916) prompts the authors to draw certain conclusions which are in our opinion unwarranted. Of these patients "one hundred and forty-three were males and forty-four females. The majority of women were prostitutes and some of the men were cadets. A number were notorious crooks and thieves and the majority were dwellers in, or frequenters of the 'tenderloin.' When questioned as to why the habit of opium smoking was acquired, it was stated that all first used it through associations in the tenderloin. Of the eighty-one who used morphine, twenty-eight learned of the effects of the drug through its hypodermic administration by a physician or through a physician's prescription." The author states that "these figures prove conclusively that the largest single factor in the production of morphinism has been professional medication." We do not believe that the profession can be charged with such a crime and very little credence should be placed in the statements of prostitutes, crooks, and thieves. Moreover, one of the characteristic symptoms of such drug addiction is the total disregard of the truth. They are all notorious liars and their statements are to be regarded with the gravest suspicion. The personal experience of thousands of reputable physicians will bear out the contention that a very small proportion of drug users can truthfully ascribe their habit to dereliction of the profession, and the publication of such statistics and conclusions do the profession an injustice while affording its enemies ammunition for further assaults. It is a question whether the Harrison law has accomplished much more than the restriction of traffic in narcotic drugs.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange, post office or express money order, payable to the A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 11, 1916.

THE PHYSICIAN AND SOCIETY.

We believe in American ideals and we take sharp issue with those chambered minds which fail to see in America the general trend to a greater and finer democracy than the world has ever known; we part company with those who stand aloof in mental isolation as critics of their fellow men. We realize that there is a real danger to every professional man in placing false values on book knowledge and academic learning. Many physicians who have never worked with their hands and who are ignorant of the great industrial world, look at society as through a glass darkly. He who builds a fence between himself and the realities of social living is a student of things, not of men. The social trend of today is set toward reciprocal helpfulness and cooperation in community interests.

Happily, among medical men the mere students of books and narrow specialties are few in number. The profession favors and honors those who lay their individual foundations broad and deep on which to build professional accomplishment. The physician is forced more and more into leadership in all matters pertaining not only to community health but to community education, and so tends to become more completely sympathetic with community endeavor. He is socialized through his in-

terest in the prevention of ignorance, disease, and poverty.

Moreover, the physician with modern outlook has abandoned the medieval conception of mankind as relegated to "higher" and "lower" social levels. He does not view some men as superior and other men as inferior, but classifies them as broad or narrow according to their limitations of birth, education, training, and opportunity. He has learned to think in terms of social extension, not of social altitudes. He believes in the democracy of opportunity, realizing that feudalism was based on the ignorance of the many, exploited by the intellect of the trained few, and so he becomes the practical advocate of wider general public school education as a means of bringing light and hope into the lives of men and thereby of counteracting the forces of pharisaism. He holds no "holier than thou" attitude toward his fellow men. He believes in social standards based not alone on the dollar but on contribution to the social weal. There is no more earnest and loyal American than the American physician.

THE SPECIFIC TREATMENT OF TYPHOID
FEVER.

Ranking as it does among the most serious of the acute infections, it is not astonishing that much attention has been devoted to typhoid fever. After its exact etiological determination, the trend of investigators was toward the preventive and sanitary aspect of the question, and great advance was made in control of the disease. Soon after came the discovery of practical vaccination against typhoid, and the case for the preventive side seemed complete. Proper quarantine precautions, protection of water and food supplies from infection, and immunization of the human recipient against typhoid, these made a strong and full array.

Along with this really remarkable development of the sanitary and prophylactic campaign came renewed determination on the part of many investigators to carry the matter further and to seek as successful an issue in therapeutics as had been won in prophylaxis. Marking this second line of endeavor we have particularly to note the use of the high calory diet and its scientific evaluation. More recently attention has been directed to the subject of a specific cure for typhoid, but in spite of the recognized specificity and success of typhoid vaccination, therapeutic results were not obtained.

In a series of studies in typhoid immunization, carried on in the Hearst Laboratory of Pathology and Bacteriology at the University of California (Clay and Claypole, *Bull. Ent. Med.*, xii, 613, 1913;

xii, 622, 1913; xiii, 471, 1914; xiv, 662, 1914; xiv, 671, 1914; Gay and Chickering, *Ibidem*, xvii, 303, 1916), great progress has been made toward this end. In the last communication noted, these authors made a detailed study of 105 cases of supposed typhoid fever. Of these, forty were excluded because the clinical diagnosis could not be confirmed bacteriologically. Of the sixty-five cases in which the diagnosis was absolutely certain, twelve, for various reasons, could not be treated. The remaining fifty-three cases represented the symptomatic treatment by over fifty physicians, and in no case was this treatment influenced by the investigators. These cases were in the greatest variety of circumstances, some in hospital, some in private homes, and some with no private purse. These conditions without question affected the mortality.

The mortality was nine per cent., which McCrae is quoted as setting for the disease under the best of surroundings. This strongly suggests that had this series been under uniform conditions in hospital, the mortality would have been distinctly lower. The specific treatment consisted of the intravenous injection of "from one fiftieth to one twenty-fifth mgm. (150 to 300 millions) of a sensitized polyvalent killed typhoid vaccine sediment prepared after the method of Gay and Claypole." A definite reaction followed, in which the secondary fall of temperature and increased leucocytosis were at least of temporary benefit and sometimes were permanent. Distinct improvement was noted in sixty-six per cent. of the cases, evidenced by fall of temperature, improvement of the mental condition, and hastened recovery. "In 41.5 per cent. of this sixty-six per cent. the recovery was of an abortive form with a critical fall of temperature and a permanent normal temperature established in a few days," in an average of seven days after beginning treatment. Even in the thirty-four per cent. apparently unaffected by the treatment, no harmful effects ensued, in spite of four cases which received too large a dose and showed temporarily serious symptoms.

Gay and Chickering believe that a series of hypodermic injections after the intravenous injection helps to prevent relapse. They ascribe the improvement to a specific hyperleucocytosis and to the presence of antibodies in the patient's blood. In several cases disappearance or decrease of the bacteriemia was demonstrated. They believe that success with this treatment depends on the quantity of antibodies already in the patient's blood. With this view, in certain cases with low antibody content, they combined the vaccine with typhoid immune serum from goats, and the results seemed to favor

their hypothesis and to indicate that this procedure increased the value of the inoculation.

This work marks a distinct advance in the specific treatment of typhoid fever, and there is reason for hope that therapeutic weapons may soon be as effective as are the preventive weapons against its occurrence.

A NATIONAL BOARD OF MEDICAL EXAMINERS.

Although a democracy consisting of the union of a number of States has much to recommend it, it has serious essential faults. The question of State's rights is a difficult one; each State is jealous of its sovereign powers and opposes all attempts to hinder its activities. A war was fought in an attempt to solve the difficulty, which still, however, remains unsettled. A parallel condition directly affects many physicians and undoubtedly has interfered with the welfare of numerous men who have wished to better themselves by going from one State to another. We refer to the power that each State possesses to make its own laws concerning the qualifications necessary to practise medicine within its borders. No one holds that the State should not have that right, yet it seems that there should be some way by which a single medical examination would suffice.

For years the matter has been discussed, more or less bitterly at times, and the outcome has been favorable in that reciprocity has been adopted in many instances. As things now are, graduates from certain schools, after passing the examination required by one board of medical examiners, will be acceptable to a large number of States, although not to all.

An attempt at overcoming the obstacles has been made in the establishment of an unofficial National Board of Medical Examiners. This board is made up of men like Surgeon General Braisted, of the United States Navy; General Gorgas, Surgeon General Rupert Blue, and others of equal reputation. The requirements of this board are very high; two years in college in the study of science, physics, chemistry, and biology, four years in a class A medical school, and at least one year in a good hospital. Any one who can meet these demands satisfactorily might well be permitted to practise medicine anywhere in the Union.

Nothing, however, can be accomplished until the individual States signify their willingness to accept the licentiates of such a board. They cannot be coerced into accepting any such arrangement, but there must be some way by which the certificate of such a board could be recognized everywhere.

It does seem preposterous that a graduate from a good school, perhaps a man of national reputation, should have to undergo examination in order to practise his profession in another State. It is to be hoped that this so called National Board will become one in fact as well as in name, and that its mark of approval will be sufficient for all.

A POISONOUS INCOMPATIBILITY.

In answer to a correspondent, the *American Druggist* for January, 1916, states, on the authority of J. Leon Lascoff, that a mixture of aspirin and quinine, if allowed to stand for any length of time, causes the development of a poisonous substance, quinotoxin, isomeric with quinine and resembling digitoxin in its physiological action. The change occurs still more intensely in a mixture of cinchonine and aspirin, also in elixirs and syrups containing quinine in acid solution. Physicians should be cautious in prescribing or handling these drugs, therefore, and would be on the safe side in not combining them at all. We suggest with diffidence a warning mnemonic phrase; a patient taking one of the dangerous mixtures might proceed *Per aspirin ad astra*.

PUBLIC AND PRIVATE HEALTH.

Recent statistics published in the *JOURNAL* show that while there has been a decline in mortality from the diseases preventable by public measures, there has been no such decline, but a rise in death rate, from causes with which the individual, and he alone, can cope. Much of this increase in premature death is due to the fact that a considerable proportion of the weaker members of society, formerly carried off by infectious diseases, survive and meet their end from a giving out of the most used organs. There has, too, on account of improved conditions of living, been a survival from infancy of those organically less fitted for long life.

But the statistics, if not proving that the average of human life for a given physique is actually becoming shorter, show all too plainly that death is too often premature and that life ought to be longer than it is. The mortality is strikingly due to the wearing out of kidneys, to failing heart, and degenerating arteries. But all these organs have to do with handling food materials. They ought, compared with other organs, to be fully up to their work, whether the possessor is born with a sound or a weak constitution, and their early failure can mean only that those who die of diseases of these organs have overburdened them with food materials. This is not to

be wondered at, for the average man, and even the poor man, has but recently come to have more food than he needs. At the same time, man's need for fuel has been rapidly declining, for he has taken to urban life and to having machines do all his work, including that of getting about. Even his play is done by proxy.

There can be no doubt that the final aim of life for the vast majority of mankind is to eat and to own a "machine." We would rather eat more and live a shorter time than eat less and live longer; we would rather run rapidly in a machine for a briefer allotment of years than go slowly afoot for a few years additional.

Many will admit as much. A woman who consulted us for obesity, exclaimed over a suggested limitation of certain articles of diet, "if I cannot eat all I want of those things, what is there for me in life?" An opera singer, in a recent interview, said that the lives of such as he were reduced to a fourth of that of other men because, in order to save his voice, he must be careful of his eating and drinking. The history of most athletes is notoriously confirmatory of this yielding to intemperance. The training table is but the necessity of the moment, and after the contest athletes hasten to excess in meats and drinks and to decrease in muscular activity.

This matter of premature death is of importance to the insurance companies, but of practically no concern, as yet, to the individual. On the part of the latter it is in accord with his ideals. If the insurance companies can suggest some way of improving these ideals, of fixing the minds of their policy holders on something better than muscular indolence, eating, and getting rich, the physician will be glad to help in the matter. It is the duty of the physician to warn his patient of the error of his ways, but, at present, his warning is not likely to be heeded.

THE AGE OF THE NEW YORK MEDICAL JOURNAL.

While congratulating our esteemed contemporary, the *Medical Record*, on achieving a half century of publication, as announced in its handsome and interesting issue for March 4, 1916, we must, with all respect and good will, take exception to its statement that the *NEW YORK MEDICAL JOURNAL* was but one year of age when the *Record* appeared upon the medicoliterary scene. We acquired, indeed, full twenty-one years of additional existence by the incorporation, in 1895, of the *Medical News*, of Philadelphia, and may therefore lay just claim to seventy-three years of uninterrupted publication. Journals may, if men may not, by taking thought add a cubit to their stature.

Obituary.

WILLIAM LOUIS RODMAN, M. D.,

of Philadelphia.

Dr. William Louis Rodman died on March 8th at his home in Philadelphia, of pneumonia. He was born at Frankfort, Ky., September 7, 1858; obtained the degree of M. A. at the Kentucky Military Institute in 1875, and that of M. D. at Jefferson Medical College, Philadelphia, in 1879. He married Bettie, daughter of Dr. J. Q. A. Stewart, of Frankfort, Ky., on October 31, 1882. Doctor Rodman was house surgeon at Jefferson Hospital, Philadelphia, in 1879-80, and surgeon in the army from 1880 to 1882. He then removed to Louisville, and was demonstrator in surgery at the University of Louisiana from 1885 to 1893. Subsequently he became professor of surgery at the Kentucky School of Medicine, professor of surgery at the Medico-Chirurgical College, Philadelphia, and professor of surgery and clinical surgery at the Woman's Medical College of Pennsylvania. He was chairman of the surgical section of the American Medical Association in 1897, and delivered the oration in surgery before that body in 1900. He was president of the American Medical College Association in 1902, and became president of the American Medical Association at the sixty-sixth annual meeting in San Francisco in 1915. Doctor Rodman was a frequent contributor to medical literature, particularly on subjects connected with major surgery. His presidential address to the A. M. A., at his own request, appeared in full in the *NEW YORK MEDICAL JOURNAL* for June 26, 1915.

HELENA LEEMING JELLIFFE,

of New York.

Through the death of Helena Leeming Jelliffe, wife of Dr. Smith Ely Jelliffe, of New York, from January, 1906, to November, 1908, associate editor with Dr. Frank P. Foster of the *NEW YORK MEDICAL JOURNAL*, the medical profession suffers a distinct loss. She died on Friday, March 3, 1916, of cerebral hemorrhage from rupture of an anomalous vessel in the circle of Willis. She was forty-eight years of age and was the mother of five children,

all of whom survive her. Although she was not a physician, she was in close touch and sympathy with medical work, and cooperating with her husband, chiefly through translation, she broadened the fields of nervous and mental medicine. It is chiefly a result of her activities that the excellent work of Dubois, on the *Psychic Treatment of Nervous Disorders*; that of Grasset, on *The Seminsane and Semiresponsible*; of Payot, on *The Education of the Will*, and of Déjérine, on the *Psychoneuroses and Their Treatment by Psychotherapy*, were translated and made available to the medical profession of America. The editorial columns of the *Medical News*, when Doctor Jelliffe was its editor, were en-

livened by her wit and clear presentation of medicosociological topics, and the readers of all the medical weeklies have not infrequently, although unknowingly, read her editorial comments. An example of her singularly happy editorial power may be seen in the editorial obituary of Dr. Hughlings Jackson, published in the *Journal A. M. A.* for October 28, 1911.

During the early years of Doctor Jelliffe's association with the late Dr. George F. Shrady on the *Medical Record*, this being coincident with the first years of Doctor and Mrs. Jelliffe's married life, and previous to the work on the *Medical News*, one could readily distinguish Mrs. Jelliffe's editorial articles by their singular felicity of expression and happy

mirthfulness. She had many warm friends among her husband's colleagues, who always found her actively interested in medical topics.

News Items.

Doctor McCarthy to Study German Prison Camps.—President Wilson has appointed Dr. Daniel J. McCarthy, of Philadelphia, as the American agent to study German prison camps. He will sail for Germany next week.

Annual Dinner of Zion Hospital.—The medical staff of Zion Hospital, Brooklyn, will give their first annual dinner at the Hotel Brossert, on the evening of March 14th, at 8:30 o'clock. Dr. J. Goldstein is chairman of the committee.

A Department of Dietetics in the University of Rochester.—The will of the late Lewis R. Ross, of Rochester, N. Y., contains a bequest of \$700,000 to the University of Rochester, which is to be used to establish a department of dietetics in the university. In accordance with Mr. Ross's wishes, the money will be spent in research work in foods.



THE LATE DR. WILLIAM L. RODMAN.

Cholera in Austria.—According to press dispatches, cholera has broken out again in thirty-seven towns and villages of Austria.

Death Rate Lower in New York State.—The annual report of the State Department of Health, which will be sent to the Governor in a few days, shows a reduction in the death rate from 15.8 in 1913 to 15.1 in 1915. Attention is also called to the reduction in the infant death rate from 120 in 1913 to 101 in 1915. The report points out that the reduction in the death rate from 15.8 to 15.1 indicates a saving of about 4,000 lives.

A Consolidation of Medical Journals.—The *American Journal of Gastroenterology* has combined with the *Proctologist*, the name of the new journal being *The Proctologist and the Gastroenterologist*. The editorial staff consists of Dr. Rollin H. Barnes, of St. Louis, proctology; Dr. Anthony Bassler, of New York, and Dr. Lewis Brinton, of Philadelphia, gastroenterology; Dr. A. L. Benedict, of Buffalo, dietetics. The journal will be issued quarterly.

New Officers of the Philadelphia Academy of Surgery.—The following officers were recently elected to serve for the ensuing year: President, Dr. Charles H. Frazier; first vice-president, Dr. Edward Martin; second vice-president, Dr. George G. Ross; recorder, Dr. John Speese; treasurer, Dr. Edward B. Hodge; secretary, Dr. George P. Müller; business committee, Dr. Morris Booth Miller and Dr. W. E. Lee; council, Dr. Thomas R. Neilson and Dr. J. Chalmers Da Costa.

The Charities Investigation.—The State Charities Aid Association has adopted a resolution expressing hearty approval of the action of Governor Whitman in instituting the present charities investigation which is being conducted by Charles H. Strong. The resolution points out that it has been the policy of the association, during the forty-three years of its existence, to support any effort to improve the condition of dependent children and other wards of the public.

Anthrax Germs in Shaving Brushes.—Dr. Charles F. Bolduan, director of the Bureau of Public Health Education of the Department of Health of the City of New York, has received a letter from Dr. A. K. Chalmers, health officer of Glasgow, Scotland, who said that two shipments of London made shaving brushes had been received in Glasgow, and that each brush had been found to contain anthrax germs. The health department announces that hereafter all importations of shaving brushes will be thoroughly examined for the presence of the germs.

Alcohol and Pneumonia.—The United States Public Health Service brands strong drink as the most efficient ally of pneumonia. It declares that alcohol is the hand-maiden of the disease which produces ten per cent. of the deaths in the United States. It believes that this is no exaggeration. It has long been known that indulgence in alcoholic liquors lowers the individual vitality, and that the man who drinks is peculiarly susceptible to pneumonia. The United States Public Health Service is a conservative body; it does not engage in alarmist propaganda. In following out the line of its official duties it has brought forcefully to the general public a fact which will bear endless repetition. The liberal and continuous use of alcoholic drinks will do well to heed this warning, particularly at this season of the year when the gruesome death toll from pneumonia is being doubled.

A Psychopathic Dispensary at Cornell Medical College.—The State Charities Aid Association calls the attention of physicians in Manhattan and the Bronx to the free dispensary for the treatment of psychopathic conditions, especially the milder forms, which is maintained by the Cornell University Medical School, in conjunction with the Mental Hygiene Committee of the association. The work of the dispensary is done chiefly by the staff of the Psychiatric Institute of the New York State Hospitals and by two social workers on the staff of the State Charities Aid Association's Committee on Mental Hygiene. These social workers, Miss Jessie Taft and Miss Julia F. Wells, assist the examining physicians at the clinic, and, when desirable, visit the patients in their homes to aid in carrying out the directions of the physician, and in adjusting the environment which may in part be responsible for the patient's condition. This committee earnestly desires the co-operation of physicians, who are in a position to detect mild psychopathic disorders, and whose assistance will greatly aid in the campaign for the prevention of insanity.

Memorial Tablets to Be Unveiled at Beth Israel Hospital.—The medical staff and the Alumni Association of Beth Israel Hospital have issued invitations to the unveiling and dedication of memorial tablets to their departed colleagues, Dr. Abram Brothers and Dr. Archibald Isaacs, at the Beth Israel Hospital, Jefferson and Cherry Streets, Sunday, March 12th.

Feeble-mindedness in Delinquent Girls.—A high percentage of mental defectives was discovered by the New York Probation and Protective Association among delinquent girls last year. In the annual report of the association, which has just been made public, it is asserted that of 164 cases taken under observation by Dr. Frederick Ellis and Dr. Anne T. Bingham, of the association, fifty-six, or about 34 per cent., were found feeble-minded.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, March 13th, Samaritan Hospital Medical Society; Tuesday, March 14th, Pediatric Society; Wednesday, March 15th, Section in Otology and Laryngology, College of Physicians; Thursday, March 16th, Section in Ophthalmology, College of Physicians, Northeast and Southeast Branches of the County Medical Society; Friday, March 17th, Jefferson Hospital Clinical Society.

The Grave of Dr. John Morgan.—Another search is to be made by the University of Pennsylvania medical alumni for the grave of Dr. John Morgan in the crypt of old St. Peter's Church, Philadelphia, where the founder of the medical school (and known as the father of medicine in America), is supposed to have been interred. Dr. Swithin Chandler, Dr. Clarence P. Franklin, Dr. William Pepper, and Dr. Albert D. Ferguson, Provost J. Fahs Smith, of Philadelphia, and Sir William Osler have been appointed a committee to find the grave and to prepare a marker to be placed thereon. Ultimate removal to the university campus may be possible in the future.

Women to Be Admitted to the Medical Department of Columbia University.—The trustees of Columbia University, at a meeting held on Monday, March 6th, voted to admit women as students in the College of Physicians and Surgeons as soon as the present medical school buildings can be altered to furnish the proper accommodations. Since 1889 efforts have been made by women to induce the university authorities to open the medical department to women, and, five years ago, Professor James C. Egbert, director of the summer session, decided to offer certain medical courses during the summer to which women might be admitted. Only a limited number of courses were given at first, but the number has been increased each year.

Alienists and Neurologists to Meet in Chicago.—The fifth annual meeting of the Alienists and Neurologists of the United States will be held in Chicago, June 19th to 23d, under the auspices of the Chicago Medical Society. At the 1915 meeting resolutions were passed requesting governors of the various States to appoint committees to investigate the causative forces of feeble-mindedness, and the reports of these committees will be presented at the June meeting. The society is waging a campaign of education of physicians and the general public as to the causative forces of mental deficiency, believing that great good will result. It is their belief that there is no branch of medicine so neglected as the study of mental diseases. Dr. W. T. Melford, 2159 Madison Street, Chicago, is secretary of the conference.

Death Rate in New York.—During the week ending March 4th, 1,603 persons died in the city of New York, compared with 1,548 during the corresponding week of last year and with 1,628 during the previous week of this year. The death rate for the past week was 14.97 and 15.20 for the previous week, while it was 14.81 for the week ending March 6, 1915. Although 55 more deaths were recorded during the past week than during the corresponding week of last year, the increase in the population of the city accounted for all but 17. The total deaths from contagious diseases were 56, the same as during the previous week. The deaths from heart diseases and Bright's disease as well as the deaths from influenza, bronchitis, and pneumonia were less numerous during the past week than during the previous week. They were, however, slightly more numerous than during the corresponding week of last year. The death rate for the first ten weeks of 1915 is 15.04 per 1,000 population, compared with 14.78 for the corresponding period of 1914.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Tenth Communication.

DIGITALIS.

With characteristic dramatic force, old Doctor Todd, of honored memory, used to impress upon his class in therapeutics this dictum: "Digitalis pro-o-o-lon-n-n-gs the diastole, and *energizes* the systole." And this wise pronouncement continues to be the clinician's belief as he calmly listens to the prolonged clashings of the pharmacologists.

Probably concerning no other drug have there appeared more diverse, contradictory, and conclusively inconclusive findings than have been published about digitalis; and we may reasonably feel that concerning no other drug has so much scientific investigation been carried on so unscientifically. At one time, one author contends for the superior value of the tincture because of the insolubility of some of the glucosides in water; later, other writers contend that the infusion is as valuable as the tincture, their conclusion coming from physiological findings with no reference to the chemical content. One investigator finds, in his experiments, that digitalis causes a considerable and prolonged rise in blood pressure; a correct finding, in his case, even though his subjects were not studied at all for idiosyncrasies or for possible continuance of atropine influence from previous experiments. Another experimenter, failing to secure similar results in a few experiments on blood pressure, dismisses the work of the other man as unreliable. In neither case, apparently, was any account taken of the personal equation of the subjects, or of the fact that the two experimenters were probably not using the same preparation of digitalis.

No two preparations of digitalis can be guaranteed to be of uniform percentage of glucoside content or of uniform pharmacodynamic efficacy. On the hearts of frogs or cats (provided that the animals used are of the same age, sex, weight, species, and habitat) the different preparations may possibly approximate in their toxic action, and yet yield dissimilar results when used by different experimenters on carelessly selected groups of normal subjects.

Present studies indicate that digitalis exerts an irritant influence on at least three different points, the muscle of the heart, arterial muscle, and the vagus, beside an obscure occasional action on the kidney. The influence on the heart muscle is assumed to be such as to increase tonicity, resulting in uncompleted relaxation and in more vigorous and complete contraction. The action on the arterial wall is assumed to be similar to that on the myo-

cardium, expansion being less extensive, and rebound more rapid and effective. The action on the vagus is thought to be such as to inhibit to some extent the transmission of the vagal impulse along the bundle of His. Since this last mentioned influence is antagonistic to the first two, the qualitative symptoms which arise must depend largely on which physiological function is the more sensitive to the digitalis bodies, the quantitative reaction depending on both the physiological sensitivity and the relative proportion and potency of the several glucosides present.

Inasmuch, therefore, as the personal equation is a very important factor in determining the reaction to digitalis, all conclusions concerning experiments in which this factor has been ignored are practically valueless for purposes of comparison, as well as for serving as permanent scientific data. In any test experiment on a normal individual, if he is a person whose vagal response is relatively sensitive and whose myocardium is relatively resistant, the phenomena ensuing will be unlike that of a subject in whom the relative sensitiveness is the reverse. Yet in what published series of experiments on the human subject has such a predetermination been made? To such a lack of control must be due in part some contradictory observations.

Treatment of Migraine.—Migraine can be cured in most cases and greatly relieved in the remainder according to E. W. Lazell (*Colorado Medicine*, February, 1916). When an attack is coming on the patient should at once take five to ten grams of calcium carbonate, citrate, or acetate, and drink a large volume of heavily charged mineral water. If diuresis is not readily produced, a large dose of lithium citrate should be given with the calcium citrate. Two hours later, one or two grains of caffeine should be given hypodermically. In some cases two drams of citric acid will give good effects. It should be given in capsules. The most important phase of treatment is that undertaken in the intervals between attacks. This should comprise the avoidance of all factors which lead to an increase of toxins in the body, such as constipation, excessive exercise, unsuitable foods, and fatigue; drugs that reduce blood pressure and the specific gravity of the urine, such as alcohol, coffee, etc.; mental stress and excitement; and conditions which induce polyuria. Drugs such as the salts of the vegetable acids and the salicylates should be given to increase the alkalinity of the urine. Iron and nuclein by hypodermic injections and suprarenal extract should be given to increase blood pressure. Every effort should be made to increase the alkalinity of the blood and to secure the excretion of an abundance of concentrated urine of high specific gravity to carry off the toxins and prevent phosphatemia.

Treatment of Renal and Ureteral Calculus.—V. Campan, in the *Revista de Ciencias Medicas de Barcelona* for December, 1915, recommends strongly the use of a mineral water treatment in all cases as this alone may cause the passage of a stone. In ureteral calculus catheterization of the ureter with injection of glycerin or oil should then be tried. In renal calculus pyelotomy is of service in some cases, but nephrotomy is the operation of choice, and when there are several stones a wide incision is indicated and, the hemorrhage being necessarily free, it is well to compress the pedicle with rubber incised forceps. When there is an accompanying pyelonephritis or pyonephrosis, Campan advises a previous lavage of the renal pelvis with one to 2,000 or one to 4,000 silver nitrate solution or protargol one per cent.

Operative Treatment of Deformities Due to Infantile Paralysis.—Edwin W. Ryerson, in the *American Journal of Orthopedic Surgery* for February, 1916, advises that during the first two years following an attack of infantile paralysis the patient be treated by muscle training, electricity, massage, etc. After this he prefers to operate. In drop foot he lengthens the tendo Achillis by splitting and fastens the long extensors, if active, to the bases of the metatarsal bones. In paralysis of the tibialis anticus and toe extensors he transplants one or both peronei and the tibialis posticus in front of the malleolus, to the scaphoid or middle cuneiform. In paralysis of the peronei and tibialis posticus he performs the Gallie operation plus arthrodesis, or else the Putti operation. In pes calcaneus he employs the Whitman operation. In thigh paralysis he transplants the biceps and semitendinosus into the patella, unless the semimembranosus and gastrocnemius are inactive.

The New Wound Therapy with Benegran.—Benegran, according to Salomon (*Berliner klin. Wochschr.*, Sept. 6, 1915), is composed of ninety-seven per cent. of hydrocarbons of the paraffin group and a small added amount of caoutchouc. The remaining three per cent. is taken up by added drugs such as resorcin, dermatol, chrysarobin, or extract of hamamelis. The remedy is solid at body temperature and for application should be heated at 90° C. in a water bath. The application should be made while the material is at that temperature. Some slight pain is often caused by the heat, but this is insignificant. In the treatment of open wounds the hot material should be thoroughly applied directly to the wound surface. When it has solidified somewhat, a thin layer of gauze should be applied and incorporated with the aid of a second application. When the whole has become solid it should be gently pulled off, leaving the wound surface clean and fresh. Then a second application should be made at once and left for one or two days. This should be changed daily or every other day at first and less often as healing progresses. When the benegran is removed the wound surface should be washed off with some water, which need not be sterile. Under this plan of treatment wounds which are badly infected may be cleaned up rapidly and healing secured promptly. The application of benegran to boils

promptly leads to a liquefaction necrosis of the core with its expulsion, after which the cavity can be treated with the benegran as described for open wounds. The substance is also useful as an external application over inflamed joints and tendon sheaths, etc.

Newer Points in the Treatment of Typhoid.—Beverly Robinson, in the *Medical Record* for February 19, 1916, remarks that the Brandt cold bath treatment is falling into disuse and that sponging with water or water and alcohol at a temperature of 70° or 80° F. has taken its place. Water should be given freely, and when the urine is diminished in quantity, rectal irrigations are of great advantage. Milk free diet with enteroclysis as recommended by Seibert and Kemp prevents tymanites and hyperpyrexia. When rectal irrigations are not well borne, or where there has been intestinal hemorrhage, hypodermoclysis is valuable, taking care not to give too much fluid at any one time. Robinson also recommends an occasional dose of castor oil or purgative water at the height of the disease. In desperate cases Hare's formula of calcium chloride 0.25, potassium chloride 0.1, sodium chloride 9.0, in sterile water 1,000 c. c. should be used intravenously. Kemp's thermos bottle method of keeping saline solution warm for the Murphy drip is an improvement of note. Saline infusion is better than blood transfusion if either is required. Intravenous injection of vaccines, as used by Hollis in St. Luke's Hospital, is worthy of trial though untoward effects may follow.

Systemic Poisoning with Bismuth.—Reporting a case of severe chronic bismuth intoxication resulting from the injection of Beck's paste into the thoracic cavity, William H. Higgins (*Journal A. M. A.*, February 26, 1916) submits an analysis of the literature of this form of intoxication and points out the fact that the indiscriminate use of bismuth, even as a dressing for an external wound, is not devoid of danger. Two forms of intoxication are known; one results from the administration by mouth of the subnitrate and is due to the decomposition of this salt in the intestine with the liberation of nitrite, the other is due to the slow absorption of the bismuth itself and may result from any of the methods of administering or applying it, though it seems to be most common following local application.

Paravertebral Anesthesia.—P. W. Siegel's (*Medizinische Klinik*, Jan. 9, 1916) experience with this method of anesthesia in 770 cases leads him to commend it highly from the point of view of efficiency as well as of safety. The solution employed contains 0.5 per cent. of novocaine with a small amount of synthetic suprarenaline. The injections are made into the region of the dorsal spinal nerve roots from the thoracic to the sacral, depending in extent on the site of the operation. For pelvic operations it is necessary to inject the sacral roots as well as the lumbar, while for general abdominal surgical work only the lumbar and thoracic need be injected. The technic of the injection has already been described. Attention is called to the fact that if the novocaine is not introduced directly into a

bloodvessel it is practically nontoxic, as much as three grams having been injected along the dorsal nerve roots at a single sitting without symptoms. In practice Siegel precedes the conduction anesthesia with narcophin-scopolamine narcosis to eliminate psychic shock. With this combination of twilight anesthesia and conduction anesthesia, the use of one of the volatile anesthetics is seldom required. The method described practically eliminates postoperative pneumonia and in the total series now recorded has never caused a death. The anesthesia lasts for two or three hours and requires only fifteen to twenty-five minutes to make the most extensive injections.

Brain Lipoid as a Hemostatic.—A lipoid material was readily isolated from ox brain by Arthur D. Hirschfelder (*Berliner klin. Wochschr.*, September 13, 1915) and determined by animal experiment to have a pronounced hemostatic action when brought into direct contact with bleeding surfaces. This was tested clinically in several different types of surgical hemorrhage and found to produce prompt and firm clotting with checking of the hemorrhage. The substance was obtained in the form of a yellow powder which could be applied directly to the bleeding surface or dusted on a pad of gauze and applied with slight pressure for a few moments. The preparation is sterile or can be rendered antiseptic, if desired, by the addition of tricresol in the proportion of 0.1 per cent. in the dried product. The greatest advantages of the preparation are that it is easily prepared and is cheap.

Secondary Closure of Wounds.—Carrel, Dehelly, and Dumas, in *Bulletin de l'Académie de médecine* for January 11, 1916, state that, while experience in war surgery has shown that all deeper recesses of wounds should be laid open to permit of removal of foreign bodies and the avoidance of danger from infection, such treatment has in itself more or less serious consequences by reason of the length of time and extent of scar formation required for the process of repair. Muscles, fasciæ, and skin, normally sliding over one another easily, become bound together and immobilized by the large deposits of cicatricial tissue and their subsequent contraction. To obviate this, the authors aim to bring into close apposition, layer by layer, the wounded tissues as soon as the danger of infection has been overcome, thus reducing cicatricial tissue to a thin sheet which is incapable of much interference with tissue movement. After careful exploration, cleansing, and hemostasis of a wound a few hours after it has been sustained, they begin continuous instillation into it of a specially prepared one in 200 solution of sodium hypochlorite. When general and local inflammatory reactions have subsided and bacteria have disappeared from the wound secretions, the wound is carefully closed. This can be done at some time between the fourth and the tenth day. Such wounds, held closed by strips of adhesive plaster 2.5 to five cm. broad, behave exactly like fresh operative wounds and heal by first intention. In wounds in which this treatment has not been applied from the outset, and in

which the skin is adherent to subjacent tissues and granulations have entered the intermuscular spaces, similar though less perfect results are obtained by curetting the granulations, loosening the skin at the margins of the wound, and bringing the fresh tissues together by sutures. By this procedure the period of recovery is shortened, cicatricial tissue is reduced to a minimum, and subsequent stiffness and atrophy are obviated.

Eclampsia.—David James Evans (*Canadian Med. Assoc. Jour.*, February) maintains that every individual case must be studied, and that no single method of treatment is applicable to all. In the presence of evident symptoms of toxemia in the later months of pregnancy, associated with albuminuria and casts and an increased blood pressure, eliminative and sedative treatment is indicated. We must rely upon milk diet, hot baths, the copious use of fluids and purgatives, with rest in bed, to bring about improvement. If there is no improvement, labor should be induced. Venesection, sweating, moderate doses of morphine and chloral, with purgation and the free use of fluids, constitute the treatment of a case of actual convulsions. At or near term, surgical methods of delivery may be undertaken to save the life of the child, but unless these operations are attended with considerable hemorrhage they seem to have but little influence in relieving the condition of the mother.

Radium in Synovial Skin Lesions.—A case of this relatively uncommon and resistant condition is reported by Richard L. Sutton (*Journal A. M. A.*, Feb. 19, 1916) in which prompt and permanent cure followed eight exposures to fractional doses of radium.

New Method of Applying Extension in Thigh Fractures.—Braquehay, at a recent meeting of the surgeons of the French Sixth Army (*Presse médicale*, January 17, 1916), describes the following simple and practical method of applying continuous extension, originally employed by Arndt, of Berne. A cylindrical piece of jersey or some similar material, or a stocking with the foot cut off, is used; if the former, it must be split at its lower part by two longitudinal scissor cuts each ten cm. long, to provide room for the instep and heel and form two lateral bands upon which traction is to be made. These two lateral portions are lined with a band of some more resistant material, to afford a firmer purchase. The cylinder or stocking is, previous to application, completely rolled up on itself from above downward. The patient's extremity is then covered from the malleoli to the condyles of the femur with the following paste, previously melted on a water bath:

R	Zinci oxydii,	3iiss (10 grams):
	Glycerini,	
	Gelatini,	ââ 3i (30 grams).
	Aque,	
M. Fiat pasta.		

Finally, the cylinder or stocking is unrolled over the limb from below upward. Adhesion is perfect and, traction being diffused over the entire skin sur-

face of the leg, a twenty pound (8 kilogram) weight, if required, can at once be attached. The skin does not become abraded and the apparatus is very well borne. When it is to be removed, the patient takes a warm bath or the limb is washed with hot water, which dissolves the gelatin.

Treatment of Dysentery.—Edmundo Escomel (*Cronica Medica*, December, 1915) summarizes the treatment of the various forms of dysentery as follows: Amebic dysentery and amebic abscess of the liver are best treated with emetine; the trichomonal form with turpentine and the malarial form with quinine. The form due to *Balantidium coli* has no specific treatment, while ankylostomiasis dysentery is best combated by eucalyptol and thymol. The bacillary form he has not seen.

Treatment of Gas Gangrene of the Extremities.—P. Guizzetti (*Riforma medica*, Feb. 14, 1916), in reporting four cases occurring in Italian soldiers wounded in battle, rather discourages the use of injections of oxygen or hydrogen peroxide solutions, as the gas bubbles thus introduced under the skin give rise to confusion, since they cannot be told from the products of the gas bacillus. Furthermore, these measures are less efficacious than surgical methods, and valuable time is lost in delaying the proper operative treatment. These measures are free incisions and use of the thermocautery in mild cases, and amputation in severe cases. Immunizing treatment has not so far been practicable.

Treatment of "Trench Back."—J. D. Sandes (*West London Medical Journal*, January, 1916) gives this name to a number of conditions arising from injury caused either by a fall or blow or the impact of heavy weights. Symptoms are those of a subacute lumbago. One per cent. solution of sodium salicylate is applied to the lumbar region by means of a pad composed of six layers of lint, on which is placed a mail chain or copper gauze electrode about eight to ten inches square. A similar but larger pad soaked in saline is fixed to the upper dorsal region and connected to the positive pole. Thirty or forty milliamperes are given at first and later 100. One half hour is the duration of the treatment. Six applications usually bring about a cure.

Venesection as a Therapeutic Measure.—Charles H. Lawrence, Jr., reviews in the *Boston Med. and Surg. Jour.* for February 24th, a number of cases in which venesection has been practised recently, and comes to the following conclusions: 1. Venesection, performed under proper indications, is not a dangerous measure, especially since the "dose" can be accurately controlled; 2. in the presence of dilatation of the heart, renal toxemia, hypertension, or a combination of these conditions, it may be expected to act more promptly and more surely than drugs; 3. it lowers blood pressure and at the same time produces a more efficient circulation when performed in cases of hypertension, but does not, in therapeutic doses, lower normal arterial tension; 4. it should never be performed in the absence of definite indications, but should not be with-

held until the hope of success for any measure is gone; 5. the amount of blood to be withdrawn is to be decided by the point at which relief is obtained. The error generally is on the side of too small an amount; 6. repeated blood letting, when indicated, does not seem to have any ill effects upon the composition of the blood.

Chilblains.—Walker, in the *Medical Summary*, recommends the following for chilblains:

R Nitric acid,	3iv;
Turpentine oil,	15i;
Olive oil,	15iv.

M. et Sig.: Apply twice a day to the affected parts with gentle friction by means of a cloth wrapped around the end of a small stick.

Aconitine in Recurrent Rheumatic Iritis.—M. F. de la Cruz, in *Revista de Medicina y Cirugia Practicas* for January 7, 1916, reports a case of rheumatic iritis recurring every winter for twelve years in a man thirty-five years old which resisted the internal administration of antirheumatic remedies and local applications, but yielded readily and permanently to the internal use of aconitine.

Intravenous Administration of Mercury.—The *Gaceta Medica de Nicaragua* for December, 1915, editorially recommends the intravenous injection of mercury cyanide in doses of from 0.0025 to one cgm. daily in lesions which are either frankly luetic or merely suspiciously so. Such conditions are iritis, iridocyclitis, keratitis, chorioretinitis, glaucoma, obscure hepatic conditions, aneurysms, periostitis, and obstinate rheumatism. These mercurial injections have frequently succeeded where salvarsan and neosalvarsan had failed.

How to Blow the Nose.—E. Harrison Griffin says in the *Western Medical Times* for February, that the failure thoroughly to clean the nose by the handkerchief is responsible for over seventy-five per cent. of the catarrhal affections of the ear. To blow the nose properly it is best to look at it as a double barrelled shot gun. A deep inspiration is made to fill the chest with air, then one finger should be placed on the ala of one nostril to obstruct the passage. With one violent expiration the air from the chest is forced through the open chamber of the nose and the discharge caught in the handkerchief. The manœuvre is then repeated on the opposite side. He avers that if this method was universally taught, catarrh would be diminished and ear cases would be less common.

Extraction of Missiles from the Heart and Pericardium.—O. Laurent, in *Bulletin de l'Académie de médecine* for November 30, 1915, discusses the technic of the removal of foreign bodies from the heart or pericardium, already accurately located by the x rays. To expose the anterior and lateral aspects of the heart he recommends the formation of a horseshoe flap of skin and muscle with its pedicle over the sternum. Portions of the second, third, fourth, or fifth cartilage, according to indications, should be resected and the pleura covering the heart detached and reflected outward. Where the foreign body is located posteriorly, access should not be

sought, as has been attempted, through the posterior mediastinum. Instead, Laurent advises, as in the anterior cases, resection of one or two costal cartilages, from the second to the fifth, followed by a lateral incision two or more cm. long on the lateral aspect of the pericardium, thus exposing the posterior pericardium and posterior cardiac surface. After the foreign body has been removed and this incision sutured, the infundibular space remaining because of reflection of the anterior pleural cul-de-sac and border of the lung externally, with catgut suture to the intercostal muscles, is filled up by means of a mass of muscle tissue partially detached for the purpose from the overlying pectoralis major. This muscle tissue, with its pedicle directed toward the skin, is to be sutured to the intercostal structures.

The Allen Treatment of Diabetes.—Julius Friedenwald and Louie Limbaugh, in the *Interstate Medical Journal* for January, 1916, report twenty cases treated by the Allen starvation plan, all of which were rendered sugar free in from one to four days. The diet should be increased gradually after the starvation days, and fats and proteids as carefully regulated as the carbohydrates.

Thromboplastin as a Hemostatic.—As the result of Hess's work on the thromboplastic properties of tissue extract, John J. Cronin (*Journal A. M. A.*, Feb. 19, 1916) adopted the routine use of this material for the control of hemorrhage following the removal of tonsils and adenoids. The material was applied on gauze which was pressed firmly against the bleeding surface for a few moments immediately after the operation. Striking results were obtained, there being commonly only a little bloody saliva for a few moments. The procedure has been used by several workers under Cronin with uniformly good results, the dangers of postoperative hemorrhage having been almost entirely eliminated and the occurrence of bloody vomitus and blood in the stools having been wholly overcome. The experiences covered over 2,000 cases.

Therapy of Hodgkin's Disease.—After reviewing the etiology and pathology of this disease, J. L. Yates (*Colorado Medicine*, February, 1916) says that treatment should be based on the hypothesis that the condition is an infection with its portal of entry and paths of spread. When possible, the portal of entry and the infected tissues extending from it should be removed surgically. This should then be followed by x ray treatment of the affected areas, by hygienic measures, and by the intravenous administration of immune serum. Such postoperative treatment should be continued unremittingly for years. Arsenic is of no value other than as a tonic and even salvarsan is of no lasting benefit. X rays are of value only as an adjunct treatment and are not curative *per se*. Partial excisions, including the removal of glands for diagnosis, are dangerous. Vaccine treatment of whatever form has never produced any detectable improvement in the experience of the author. It seems that permanent cure may be hoped for in cases otherwise regarded as hopeless.

Intraneural Injection of Tetanus Antitoxin in Local Tetanus.—Arthur W. Meyer (*Berliner klin. Wochschr.*, September 13, 1915) reports success in two acute cases of tetanus in which he gave intraneural injections of the antitoxin while the disease was still localized in the wounded extremity. A third case was observed, in which it was too late to give such injections and death resulted. Since almost every case of tetanus shows an initial period in which the symptoms are largely or wholly confined to the extremity in which the infection occurred, the prompt intraneural injection is suggested as a routine measure. The injections should be made in the course of the main nerves of the affected extremity and as near the cord as convenient. They seem to check the passage of the toxin into the central nervous system; they can be combined with the other methods of administering the oxygen.

Prevention and Treatment of Mosquito Bites.—Alfred Zucker (*Berliner klin. Woch.*, Aug. 9, 1915) recommends, among other measures to keep the insects away, oil of tar, oil of cloves, or an alcoholic extract of pyrethrum. The following mixture, when diluted with twenty parts of water and used as a spray, is also very effective:

Carbon tetrachloride,	c. c. 30.0;
Sapo mollis (U. S. P.),	180.0;
Glycerin	240.0;
Tincture pyrethrum,	550.0.

Two excellent sticky pastes for use on paper or sticks to catch the insects can be prepared according to the following formulæ:

I.

Yellow wax,	20.0;
Linseed oil,	380.0;
Colophonium,	600.0.

II.

Honey,	120.0;
Castor oil,	360.0;
Colophonium,	720.0.

As a protective salve to be applied to the exposed parts of the body the following gives good results:

R Olei caryophylli,	10.0;
Adipis lanae hydrosi,	30.0;
Glyceriti amyli, q. s. ad.....	100.0.

M.

To rid large rooms of the pest, 100 grams of the following powder can be burned for every fifty cubic meters of space:

Chrysanthemum flowers, }	.....of each 200;
Valerian root,	
Potassium nitrate,	
Powdered capsicum,	400.

In order to allay the itching and irritation of the bites themselves, we may apply alkalies, such as spirit of ammonia, sodium bicarbonate, or soaps, or may touch the bites with a five per cent. solution of iodine or of menthol. An excellent local application can be made as follows:

R Mentholis,	0.6;
Zinci oxidi,	2.5;
Phenolis,	0.25;
Liquoris calcis,	240.0.

M. et S.: Shake well and apply locally.

Further, the local application of benzol gives prompt relief to the itching.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

September 13, 1915.

Influence of Inoculation on Typhoid Fever, by Goldscheider and K. Kroner.—The observations were: That the general course of the disease was rendered milder through inoculation. That three inoculations were more effective than two, and two than one. Very little benefit followed a single inoculation in the incubation period or after the onset of the disease, except when made during the last week of incubation. Two inoculations gave better results when the second fell within the inoculation period than when it fell in the beginning of the disease. No negative phase, in the clinical sense, was observed to follow the inoculations. Inoculation at the end of incubation often seemed to hasten the development of the disease, but it also seemed to make the course lighter. Inoculations completed before the incubation period gave better results than those made later, and these results were the better the longer before that time the inoculations were completed. A certain interval seemed necessary for the development of the action of the inoculations, which accounted for the differences in the results obtained from inoculations completed near or in the incubation period. Each inoculation seemed to increase the effectiveness of the preceding one, the beneficial action coming on in a shorter time after the last inoculation than after the first or second.

MEDIZINISCHE KLINIK.

January 16, 1916.

The Muscle Phenomenon in Over Exertion, by Ernst Mayerhofer.—As the result of many observations on soldiers, the author determined the existence of a muscular response of varying intensity, which seemed indicative of muscular exhaustion. When the belly of the biceps in the arm is moderately sharply struck while the arm is extended, the ulnar side of the hand being used for the blow, there is normally either no response or a very slight muscular elevation which can just be felt. In conditions of exhaustion the reaction becomes more and more evident the greater the degree of exhaustion. A moderate reaction is one with a distinctly visible elevation which lasts five to ten seconds; when the elevation rises to about 0.5 cm., is about five cm. in length, and lasts about ten seconds, it is considered marked; it is very marked when the dimensions of the elevation reach five to seven cm. by one cm. in height, and it lasts ten to fifteen seconds; and the most marked reaction of all is attained when the reaction exceeds the preceding. Such abnormal reactions were obtained in from eighty to ninety per cent. of soldiers coming from the field and were much commoner in such infectious diseases as typhoid, paratyphoid, typhus, variola, and dysentery than in other conditions. They were in no way directly associated with any particular disease, however, and the strongest reactions were found in men free from acute infectious process. The cause of the phenomenon seemed to be a chronic intoxication of the muscles themselves from long continued overstrain. In most cases the phenomenon disappeared

in two to four weeks with rest, but in some cases it lasted for months, such patients not being sufficiently restored to return to duty.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

January 11, 1916.

Reflex Paralysis and Hypotonia, by Babinski and J. Froment.—A soldier sustained a bullet wound on the dorsal aspect of the second interosseous space of the left hand. Without perforating the hand, the missile flattened out and remained in the wound, whence it was removed three months later, two months after healing had taken place. At first, the patient was able, with difficulty and feebly, to move the fingers and wrist. Later, returning to the front, however, fatigue led to the appearance of pain in the affected arm, which often became cold and cyanosed. Soon the patient lost all power to move the fingers and wrist, and was sent back to the hospital. Along with the paralysis of the hand and fingers were noted a slight paresis of the flexors of the forearm, and slight diffuse atrophy of all muscles in the limb, without reaction of degeneration. Vasomotor disturbances disappeared, but a constant local hypothermia was noted. No disturbance of sensation was present, and the x rays failed to show any bony lesion. Such a condition does not correspond to any known type of organic disturbance—circulatory lesion, central or medullary paralysis, neuritis, etc. The complete failure of expert psychotherapy and electrotherapy for eight months excludes hysterical paralysis. Peculiarities of the case were a very marked looseness of the wrist point and a pronounced increase in the irritability of the muscles of the hand and forearm to percussion and all electric stimuli. The condition is thus held to be one hitherto undescribed. No explanation of the case seems available, save that of a paralysis occurring through reflex inhibition. According to this, reflex motor disturbances occupy a much larger field than has hitherto been accorded them, comprising not only cases of amyotrophy with exaggerated tendon reflexes and cases of contracture of various types without exaggerated reflexes, but also cases of flaccid paralysis with hypotonicity of the muscles.

PRESSE MÉDICALE.

January 13, 1916.

Posterior Pericardial Friction Rub in Large Pericardial Effusions, by Chauffard.—Although the diagnosis of pericardial effusions has been greatly facilitated by the x rays, pericarditis is still a disease causing frequent surprises, and the signs of which must be closely examined into. In a case recently studied by the author, an intense friction rub was continuously heard over the entire precordium, though the pericardium contained over a litre of fluid. Conclusions as to the absence of effusion in cases of pericarditis exhibiting a friction rub are thus shown to be misleading. In Chauffard's case, moreover, the friction rub was heard also in the axilla and posteriorly. In the latter situation it was audible from the third to the eighth dorsal vertebra and even nearly fifteen cm. to the right of the median line. To the left it could be heard all round the chest to the precordium.

persisting when the patient held his breath. Study of a few cases of dorsally heard pericardial rub recently reported showed that all but one were in patients with pericarditis of nephritic origin and hypertrophied hearts. The friction rub heard posteriorly is not a transmitted anterior rub, but actually takes place between the posterior surface of the heart and the posterior parietal layer of the pericardium. That a pericardial friction rub may be transmitted to some extent was shown in the author's case by the extensive area over which it could be heard. The autopsy showed a diffuse, even, fibrinous pericarditis. Chauffard recommends Marfan's technic in paracentesis of the pericardium.

PARIS MÉDICAL.

January 8, 1916.

The Tongue Sign in Typhus Fever, by P. Remlinger.—The sign described is held to be an early manifestation of typhus fever and one of considerable value in the differentiation of this disease from typhoid and paratyphoid fevers. When a typhoid or paratyphoid patient is requested to protrude the tongue, he experiences no difficulty in exposing it fully to the physician's view. The typhus patient, on the other hand, shows his tongue only incompletely and with pronounced effort. He finds it impossible to project the tongue beyond the teeth. The tongue may even appear to be fixed to the palate and drawn toward the pharynx, as though the genio-glossi muscles were in contraction. At times there is an associated slight trismus, due to contracture of the masseters, and the patient's speech may be embarrassed, much as in tetanus. In an experience of three years in Tangiers, where typhus is common, Remlinger did not once miss the tongue sign in this disease and was even, in fact, in one case enabled to diagnose typhus correctly from this sign alone without having seen the patient. Study of the literature of typhus showed that, although this sign is not as yet mentioned in textbooks, a large number of obscure authors of articles or monographs who have had clinical experience with the disease, refer to a tremor of the tongue and pronounced difficulty in protruding it from the mouth.

BRITISH MEDICAL JOURNAL.

February 5, 1916.

Influence of Syphilis on the Chances of Progeny, by N. Bishop Harman.—Two series of parallel analyses were made, the one of a group of 150 families in which there was at least one definitely syphilitic child, the other also of 150 families selected only with regard to the probable absence of syphilis. The latter group was collected from the poorest class of public hospital patients and averaged worse on this score than the first group. In the syphilitic group there were 1,001 pregnancies yielding only 390 apparently healthy children, ninety-two miscarriages, eighty stillbirths, 229 infant deaths, and 210 children obviously syphilitic. In the 150 nonsyphilitic families there were 826 pregnancies with only sixty-one miscarriages, seventeen stillbirths, and ninety-four infant deaths. The healthy children in this group numbered 654. When these results were calculated on the basis of rates per 1,000, it was shown that there were just under

792 healthy children from the nonsyphilitic mothers, seventy-four miscarriages, 20.5 stillbirths, and 114 infant deaths, compared with the syphilitic group which gave only 390 healthy children with ninety-two miscarriages, eighty stillbirths, and 229 infant deaths, to which should be added the 210 living syphilitic children. The syphilitic mothers had about seventeen per cent. more pregnancies than the normal ones, which was probably due to the larger number of short pregnancies ending in miscarriage. There were only eleven syphilitic mothers to whom there was only one child born, and all eleven of these children were blind, though living at the time of the investigation. The figures for the group of syphilitics are, if anything, too low, for the disease was regarded as positively present only if there was indubitable clinical evidence in the children examined, and in no instance was a single symptom relied upon.

Traumatic Rupture of the Spleen with Recovery, by Walter H. Cam.—A case is reported of a healthy young woman who fell over the back of a chair and ruptured the spleen in the region of the vessels. The injury was relatively mild and did not cause external bruising. The spleen was removed and found to be perfectly normal, except for the rupture. Uninterrupted recovery followed splenectomy.—E. H. Jones also reports two cases of rupture of the spleen, one in a boy ten years old, the other in one nineteen years of age, both with recovery following splenectomy. An interesting feature of the first case was the temporary rise in polynuclear leucocytes induced by an intercurrent bronchopneumonia following the splenectomy.

LANCET.

February 5, 1916.

Examination of the Heart, by O. Leyton.—Attention is directed to a means of determining the prognosis in conditions of impaired heart function, which is both simple and trustworthy. It consists in measuring the relative intensity of the first sound at the apex and the second sound at the base of the heart. The measurements may be made with precision by the Bock stethoscope; normally the apical first sound should be approximately twice as intense as the basal second sound. When the relation is reversed the prognosis of impending sudden death is almost certain. Cases are cited to confirm this statement. When the two sounds are of equal intensity, it is an indication of considerable impairment of the heart's functional capacity and calls for rest and adequate treatment. If, under such treatment, the sounds tend to return toward the normal relationship a prognosis of recovery may confidently be given. The measurement of the sounds fails in the presence of murmurs. Pulsus alternans, which is another trustworthy index of serious or fatal cardiac impairment, may not become evident until after the reversal of the relative sound intensities, hence the latter is the earlier index of serious disturbance where it can be observed.

MEDICAL RECORD.

February 26, 1916.

Persistent Developmental Anomalies of Position of the Large Intestine, by Royale H. Fowler.—In reporting a case of persistence of the embryonic

position of the cecum revealed at operation, Fowler briefly reviews the literature on the subject and cites cases seen by Sherwood, Goodrich, and Miller, of Brooklyn. During 1910-12 the Mayos observed five cases where the colon failed to rotate, in one of which the diagnosis was made before operation. In chronic cases a large percentage of accurate diagnoses should be made by gastrointestinal radiography. Other points of aid in diagnosis are symptoms of pelvic, left sided, subhepatic, or retrocecal appendicitis and a difference in the colonic percussion note.

Bacteriology of the Recent Grippe Epidemic, by C. H. Nammack.—Examination of secretions of gripe patients showed that the influenza bacillus was seldom found alone, and pneumococci and streptococci were present in many cases. In fifty cases the influenza bacillus was found alone in six, and associated with other organisms in thirteen. The pneumococcus was isolated in eighteen cases, while the *Micrococcus catarrhalis* was seen in only one case. The terms gripe and influenza should not be used interchangeably, for, strictly speaking, influenza is a condition where the Pfeiffer bacillus is found.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE. SECTION IN GENITOURINARY SURGERY.

Regular Meeting, Held November 17, 1915.

The President, Dr. LEO BUEGER, in the Chair.

Incontinence in a Woman.—Dr. HENRY D. FURNISS read of a patient, forty-five years old, who had had two children, the oldest nineteen and the youngest sixteen years old. With the last child she was torn and had post partum hemorrhage. She had been a widow for seven years. She said that she flowed for three months after the birth of her last child, which was the only menstrual abnormality she had had. Since the birth of her last child she had a feeling as if the uterus was prolapsed. Three years ago she noticed that when she was walking she had some incontinence of urine; this at first was not troublesome, but it became so and finally she was unable to hold her urine while she was on her feet. She had never been troubled with escape of urine while lying in bed. A year ago she noticed a hard nodular swelling in the lower portion of the abdomen, about the size of the closed adult fist. On physical examination the patient was found to have a first degree laceration of the perineum, and the cervix was lacerated and somewhat enlarged. The mass that she felt in the abdomen was a pedunculated fibroid of the fundus of the uterus. Cystoscopy revealed normal trigonum and ureters. The patient was then put in the knee chest position and examined with the Kelly endoscope. Upon the withdrawal of the instrument it was noticed that the sphincter did not close over the urethra as it should. On May 18th, at the Post-Graduate Hospital, Doctor Furniss removed a pedunculated fibroid and then did the Kelly operation for incontinence of urine. This consisted in making a median incision

from near the urethral orifice backward to the cervix. The bladder was separated from the vagina about one and a quarter inch on either side. A Pezza catheter was placed in the bladder and, as an attempt was made to withdraw this, it localized the sphincter of the bladder. Mattress sutures were so placed that they enfolded the urethral sphincter on its under surface. Two rows of three sutures each of linen were placed underneath. The wound was closed with catgut. During the twelve days that the patient was in bed she had to be catheterized. She had had the same experience after a previous operation during her lying-in period. When the patient got up she found that she had continence of urine, but that she could hold it only an hour at a time. This condition had improved so that at the present time she did not leak at all and was able to retain her urine three hours or more.

Periurethral Abscess in a Woman.—Dr. H. D. FURNISS's second case was that of a patient, thirty-seven years old; married; never had had any children or been pregnant. Previous history was negative, except for indigestion beginning in 1910, and lasting for three years, but this had been relieved by treatment. In 1913, she had a sensation of fullness in the vagina under the urethra, but this disappeared in a week and she had no further trouble until October 23, 1915, when she felt an ache all over her body and was chilly at the same time. She took her temperature and found that it was 100° F. It had ranged between 100° and 101° since then, with the highest point in the afternoon. She was troubled with a sensation of swelling under the urethra which interfered somewhat with urination; she had difficulty in voiding and the stream was small. Physical examination showed an elastic swelling under the urethra that extended forward three quarters of an inch from the orifice of the urethra. Cystoscopy showed a mild trigonitis. No endoscopic examination of the urethra was made. On November 4th, she was operated upon at the Post-Graduate Hospital. In scrubbing up the patient, this mass diminished in size and pus was seen coming from the urethra. An incision was made over the most prominent portion of the swelling, which was in the median line, and about an ounce of pus was evacuated. The wound was packed with iodoform gauze, which was removed piecemeal, beginning forty-eight hours after operation, taking five days in all to remove. After removal of the gauze, the wound was washed with boric acid solution once daily for a week, at the end of which time the wound was entirely closed. Bacterial examination of the pus showed a mixed culture of colon bacillus and *Staphylococcus pyogenes albus*. Evidently she had been troubled with the same condition one year ago, and the abscess evacuated spontaneously through the urethra. The long packing of the abscess was done to allow the wound to granulate thoroughly from the bottom and to obliterate the abscess cavity.

Dr. VICTOR C. PEDERSEN said that it was known that in the male near the neck of the bladder and within the prostatic urethra mucous glands of the compound type might be very numerous. It was possible that in the case of Doctor Furniss a similar anatomical arrangement was present.

Dr. J. F. McCARTHY said that the first patient reminded him of a woman who had incontinence of urine for nine years. Every sort of examination was made, except cystoscopy. She had marked incontinence, which was accentuated when she walked about. The sac became distended with fluid and when she rested it did not evacuate, but when she was on her feet, moving about, there was movement which caused incontinence.

Tuberculosis of the Penis.—Dr. DAVID W. McKENZIE presented this case and read a report.

Dr. B. S. BARRINGER said that this man had received tuberculin, but gave neither a general nor a local reaction. It was thought to be carcinoma when the case came to the ward, and before that was believed to be a gumma. But the laboratory findings proved the inflammatory condition to be tuberculous, though no other focus of tuberculosis was found.

Mechanical Factors in Renal Infection.—

Dr. EDWARD L. KEYES said that consideration of the etiology of renal infections showed that the subject included three important topics: 1. The bacteria of urinary infection; 2, their method of access to the upper urinary tract; 3, the reason why they sometimes caused infection and sometimes did not. Apart from the gonococcus, the typhoid bacillus, and the tubercle bacillus, the bacilli of the colon group were recognized as causing about ninety per cent. of the infections of the kidney pelvis. Staphylococci and streptococci predominated in perinephritic abscess. The four routes by which bacteria reached the kidneys were: The descending (through the blood), the ascending, the lymphatic, and the traumatic. In order to explain why staphylococci predominated in cortical and perinephritic lesions, while the bacillus coli predominated in lesions of the kidney pelvis, Crabtree had suggested that the greater pus producing faculty of the pyogenic cocci encouraged glomerular suppuration, while the colon bacillus passed through the glomeruli, and caused infection in the tubules. Sweet and Stewart had shown that infection could not reach the kidney from the bladder within the lumen of the ureter. They had also shown that infection might reach the kidney from the bladder along the anastomosing lymphatic systems of bladder, ureter, and kidney pelvis. Many acute infections, however, were probably absorbed through the lymphatics of prostate or bladder and thence into the circulation, to be ejected by the kidney quite in the same manner as though they had come from some indifferent source. The accessory cause of infection was usually retention. Without some such accessory cause, the kidney was usually able to withstand the passage of any bacteria that were presented to it in the circulation.

Doctor FURNISS said that there was a condition that he had noticed in cases with such a history, that he thought was of mechanical origin; that is, in severe cases of cystitis, frequently after the cystitis had been cured and examination of the bladder was rendered easier, it was noticed that the ureters were more or less dilated. In several he had seen such dilatation. His explanation of this condition was that when a woman had a severe case of cystitis, the bladder was in a constant state of excitement and the urine from the kidneys was excreted against

pressure. In two cases he had proved by pyelography that this dilatation extended to the kidney. In another case he proved that dilatation extended only three inches up into the ureter. The first instance in which he noticed this condition was in a woman who had had a kidney removed for pyonephrosis. Before the kidney was removed she was unable to hold more than half an ounce of urine and had to wear a napkin on account of the constant dribble. When the bladder condition cleared up, it was noticed that one ureter was very much dilated, and he was astonished to find that this was on the side of the remaining kidney which was at that time excreting perfectly normal urine. Further observation had led him to believe that in any case of severe cystitis secondary to renal infection, the dilated ureter was on the side of the good or better kidney.

Doctor PEDERSEN would like to know the last word concerning pyelitis. It had been thought to be the result of infection traveling up the ureter, but there were cases where it must travel through the lymphatics from the bladder. They saw cases that were contradictory. He had seen a woman whose x ray examination showed two shadows of stones in the kidney. The ureter was large, a No. 7 catheter passing up easily. There was no shadow anywhere from the pelvis to the bladder indicating stones, yet she had stones in the kidney. The history showed no obstruction, unless she had had it during pregnancy. He had another patient from whose right ureter he had removed a calculus which obstructed it so that nothing could pass. But the laboratory findings of the urine were good except for pus. On the opposite side twenty-seven stones were removed. On the left side there was no obstruction in the ureter; the urine drained well from it. The diseased kidney with the twenty-seven stones could not be taken out because of the doubt of the condition of the opposite kidney. The kidney of the twenty-seven stones was probably cystic. Where the obstruction came from was not known, unless it was during pregnancy; she was the mother of three children and the first sign of her condition dated from her first pregnancy. He said he showed, last May, a boy who had gained strength in a year though suffering with pyelonephritis. He had a reasonably normal kidney on the other side. The x ray showed a large shadow in the ureter on one side, but there was no obstruction on that side. At operation they cut down, expecting to find a stone in the pelvis. The surface of the kidney was covered with yellow spots. A No. 18 bougie was passed without meeting any obstruction and in the pelvis no enlargement could be detected. Yet the shadow in the kidney pelvis near the ureter had increased since May. Nothing would stay in the ureter, so that x ray picture could not be taken. He did not know what to do for the boy unless he could find that shadow was of a stone outside the ureter which had been obstructing it. He intended to put the boy in the Trendelenburg position, fill the ureter with bismuth and then x ray it to distinguish the relation of this growing shadow to the ureter, and then operate if necessary.

Multiple Glass Urinary Test for Urological Diagnosis.—Dr. VICTOR C. PEDERSEN briefly outlined this. Its chief point was that it duplicated the

ordinary five glass test so far as the first four glasses were concerned. Instead of the fifth glass, which was obtained by massage, the fifth, sixth, and seventh glasses were used. Of these the first, so far as possible, contained the massage products of the prostate, obtained by carefully avoiding the middle line along which the ejaculatory ducts passed from the vesicles. The sixth glass was the massaged products of the less diseased vesicle obtained by massaging the vesicle itself and avoiding the ducts so as to eliminate products from the opposite side and from the prostate. The seventh glass was the massage product of the more diseased vesicle obtained in the same way as the sixth glass. This test was not an easy one to do and must be repeatedly practiced before satisfactory readings would be obtained. The test did not exclude urethroscopy or cystoscopy. It did, however, prove the site of greatest disease and thus furnished an index of operation. The test was worthy of trial and after experience and skill had been acquired, it would be found very valuable.

Dr. LEO L. MICHEL asked if Doctor Pedersen would depend upon the appearance of the urine as revealed by his eight glass test for a diagnosis of posterior involvement. If he did, he could not agree with him, for frequently in chronic prostatitis or seminal vesiculitis the last urine voided, whether it was that of a two, six, eight, or twenty glass test, might be clear, and these diagnoses could not be made upon the appearance of the urine, but dependence must be placed upon the microscopical findings of the prostatic or seminal vesical contents as expressed by massage of those glands.

Doctor PEDERSEN would not pass a catheter where there was any acute posterior disease, or acute anterior disease.

Doctor MCCARTHY would like to know if Doctor Pedersen could get the same results if he massaged the prostate and examined the specimen microscopically, and did he corroborate his findings by the cystoscope?

Doctor PEDERSEN replied that this was merely a means of getting good specimens from prostate and each vesicle separately. It took a half hour to do the test properly and the specimens must, of course, be given to a competent pathologist for satisfactory analysis.

Dr. A. L. WOLBARST regretted not having been present during Doctor Pedersen's presentation of his paper; but from the discussion he was able to grasp Doctor Pedersen's suggestion and he was ready to agree that, if the original test was carried out as described, it would be perfectly possible to differentiate between pus derived from the prostate and that derived from the vesicles according to Doctor Pedersen's suggestion. The principal feature of the original test was the employment of the catheter to draw off the bladder urine before it was passed by the patient, but if for any reason the catheter was not so used, the test failed, in his opinion, and he did not see how it was possible to distinguish between the contents of the bladder and those of the deep urethra. The idea underlying the original test was the tapping of the bladder urine before it came in contact with the deep urethra; hence the importance of the catheter procedure.

Doctor PEDERSEN said that if the patient had chronic urethritis and chronic cystitis, only the microscope would distinguish them. If the catheter was passed through the urethra into the bladder, nothing but bladder pus would be obtained after the patient had urinated in sufficient quantity to wash out the posterior urethra.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Regular Meeting, Held at the New York Academy of Medicine, November 15, 1915.

The President, Dr. THOMAS S. SOUTHWORTH, of New York, in the Chair.

The Ductless Glands and Atypical Growth.—

This paper, by Dr. SEELYE W. LITTLE, of Rochester, N. Y., appeared in the JOURNAL for January 29, 1916.

Dr. EDWARD WALLACE LEE, of New York, without attempting to discuss such a learned paper, would like to ask a few academic questions. They knew that hypopituitarism interfered with the growth of a baby, for instance. He recalled a case of twins, both being normal at birth and both receiving the same amount of food. One child developed rapidly and to enormous proportions, so that it was exhibited as a freak. They were in total ignorance from the academic point of view, and from the mechanical point of view in this case, of an abnormal child taking the same amount of nourishment as a normal child. Was the increase in weight due to an increased intake of atmospheric oxygen? There was nothing in this case to indicate such a condition. The second question that the speaker raised was in regard to cancer. He presumed that a total extirpation had been done as far as observation permitted them to judge of a complete removal. There was no evidence of cancer for a period of ten years, let us assume, and then there was recurrence. Was this to be regarded as an independent neoplasm, or did it belong to the same original cancer? The third question related to diabetes. Could they say in any way that diabetes was inherited? Did they know of any disease that was inherited, except syphilis? Doctor Little said that the parents or relatives of a diabetic patient might show some defective characteristic, in the teeth, hair, nails, contour, etc. Was this same primary element existing in the parents responsible for the pathological conditions developing in the child or relative?

Dr. B. H. WHITEBECK, of New York, had been doing considerable experimentation with pituitary extract in multiple arthritis with marked benefit in certain cases. The thymus had been used in tablet form with some benefit, but more improvement seemed to have been obtained from pituitary. In giving pituitary extract a one per cent. solution in normal saline was given hypodermically every day for two weeks, and then increased to a two per cent. solution. Certain facts had been noticed which might be of importance. In the examination of these patients the blood pressure and pulse had been noted. In certain of the cases the blood pressure was low and the pulse rapid, and after the use of

pituitary extract, the blood pressure was uniformly raised; in one case, for instance, from ninety-five to 120 and remained there, while the pulse dropped from 120 to between seventy-five and eighty, and also remained about this point. In other cases with a high blood pressure of 160 and over, the pressure gradually dropped down to the neighborhood of 130 and remained there. In one case the blood pressure was 240 before the administration of pituitary, and by the continued use of the hypodermic injections it dropped to 175 and remained there with an improvement of all the symptoms which usually accompanied high blood pressure. Another interesting observation was that certain of the patients were considerably below normal weight and while taking the treatment gained in weight considerably. Others, on the other hand, were overweight and lost correspondingly. The reason for the effect on the joints seemed to be a general stimulation of all the other ductless glands, as well as the pituitary, and in this way the nutrition of the joints was improved, as well as the resisting power of the patient. Advanced cases with erosion of the cartilage did not respond to the same degree as early cases.

DR. ROBERT T. MORRIS, of New York, said that the fault of their present position was that they could not hit one quail because there were so many others in the field of vision. Doctor Little very properly took them back fundamentally and they might go back still further and say that a man who was born with a defective scapula, mandible, or ear, might quite as well be born with some one or more defects of one or more of the ductless glands. That man would have difficulty in maintaining values between his ductless glands. Some sort of a balance was no doubt established, however. Why did cancer begin in one spot? Might they not assume that it began from one cell that had gone wrong? Let them assume that one cell had gone wrong because of nutritional fault and imagine that this consisted of a loss of one of the chromosomes out of the cell nucleus and that cell went on by haploid instead of diploid development. This was an instance of a cell gone wrong by a change in the chromosome. They knew of the remarkable tendencies after the loss of certain glands. If the testicles of a deer were removed, the antlers did not grow. A hen was described in the last number of the *Journal of Heredity* which took on masculine characteristics and post mortem examination showed cystic degeneration of the ovaries. An observation made in 1818 showed that female pheasants occasionally took on male characteristics, owing perhaps to a change in the ovaries. Now as to grafting, they might cover a wound by heteroplastic grafts; everything was all right until the cells of the individual attacked the graft. It was seldom that one individual would tolerate the cells of another; he had grafted ovaries and with good results for months, and in three or four cases for years. In one case a suprarenal gland was grafted with a fatal result. They did not cure cancer. Where cancer was local they apparently had a cure from proper surgery. He had removed cancer for the past thirty years and some cases, operated in as far back as that, had had no recurrence. As to radium, how did it act? The beta and gamma rays

stimulated the ductless glands to furnish nutrition which normal cells wanted, and instead of destructive action of new cells, they apparently had the x ray or radium stimulating the proper development of chromosomes in the cell nuclei or some similar process.

Doctor LITTLE expressed regret that his request for severe adverse criticism had been ignored. In answer to Doctor Lee's question, as to why in the case of twins, both well and with practically identical amounts and kinds of food, one might thrive more than normally and the other in an average degree—it might easily be that one had been born with one or more extraordinarily efficient ductless glands. He illustrated his meaning by citing an experiment. He had a preparation of pancreatic extract made for him. In each of two fermentation tubes he placed an equal amount of the same glucose solution and an equal amount of yeast. In one tube he placed one c. c. of the extract and in the other one c. c. of water containing the same amount of alcohol and glycerin that was contained in one c. c. of the extract. Repeated trials showed always the same result; the glucose in the tube containing the extract was fermented from ten to twenty times as much as the other. That meant that there was something in this extract that rendered glucose much more available for yeast. As to why diabetes appeared rather frequently in certain families, it was reasonable to assume that in such families there was an hereditary deficiency in the islands of Langerhans, just as in certain families nearsightedness was common, or extra digits in other families. Doctor Whitbeck's favorable results in arthritis with pituitary medication could be explained only by some unknown favorable influence on nutrition. Dr. Robert Morris thought that while ductless gland grafts might be theoretically correct, yet personally he had had little permanent success. The speaker agreed that grafts of ductless glands were not yet available for various reasons, but in view of a few successful results in animals, success might come eventually in human beings.

In reply to the question, Why was cancer not cured by surgery if the cancer was removed, never returned, and the patient lived to old age?—he would say that particular cancer was "cured," but cancer, the disease, was not cured. He would explain by saying that no surgeon, even if he was certain that every bit of any particular cancer was removed, could guarantee the patient against a return. The cause of cancer, whatever it was, must be removed, and not merely the tumor, in order to "cure" cancer.

DR. L. L. SEAMAN, of New York, congratulated Doctor Strong most heartily upon the work that he has done in Serbia. When he was in the Balkans, two years ago, the situation presented an altogether different aspect. In Belgrade and in the cities of southern Bulgaria, there was no typhus fever at that time, although cholera was present. The speaker said he had seen over 600 cases of typhus on Blackwell's Island in the epidemic of 1882. Five doctors and seven nurses died in the epidemic of 1872, where the patients were treated within the walls of Bellevue. In the epidemic of 1882 sometimes as many as 100 cases a day were received at Blackwell's

Island. The weather was very hot. Large tents holding fifty patients each, were erected and only the fly over the tent separated the patients from the outside air. This free circulation of the air was the only treatment the patients received. In the epidemic of 1871 the mortality was seventy-eight per cent. At Blackwell's Island, in 1882, it was only eighteen per cent. In the first epidemic the patients were treated within walls, in the other, without. The patients had baths, but the fresh air was the main feature. It was then thought that typhus, or ship fever, was a filth disease due to bad air and overcrowding. That was before its microbic origin and transmission by the louse were known. Since these recent discoveries, the speaker had not seen a case.

Letters to the Editors.

IMPROPER QUESTIONS FROM THE INDUSTRIAL COMMISSION.

ELMIRA, N. Y., March 1, 1916.

To the Editors:

In the blank form adopted by the State Industrial Commission for the attending physician's report in cases of workmen injured and coming under the compensation law, there are several questions which it would seem improper to answer. The physician is asked, for instance, whether there is evidence of syphilis, alcoholism, occupational disease, hypochondriasis, exaggeration, tuberculosis, any infectious disease, neurasthenia, hysteria, or malingering.

In order to avoid answering such questions, I make it a rule to repeat, at that point, the statement already made in answer to a previous question in the blank, namely, that "the patient is suffering only from the ordinary effects of his injury." Thus far no casualty or indemnity company has failed to pay my bill, though one or two companies have threatened to withhold payment unless I gave a complete report.

I hold that in order to answer all those questions positively or negatively, the physician would have to gain his patient's consent, especially if it happened to be a case in which syphilis had been previously diagnosed. And further, I maintain that the physician who makes such a report to an insurance company is entitled to a fee, just as in life insurance work.

Question 10 in the regular blank is as follows: Are the symptoms from which he is suffering due entirely to this injury? When the physician answers that question, Yes, does that answer not give the insurance company all the information they are fairly entitled to have?

WILLIAM BRADY, M.D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Theory and Practice of Bloodletting. By HEINRICH STERN, M.D., LL.D., Visiting Physician, St. Mark's Hospital; Consulting Physician, Methodist Episcopal (Seney) Hospital; State Hospital at Central Islip; Deaconesses' Home; Port Chester and Glens Falls Hospitals; Founder and Editor of the Archives of Diagnosis; Formerly Chairman, Section on Pharmacology and Materia Medica, American Medical Association, etc. New York: Rehman Company, 1915. Pp. vii-264. (Price, \$2.50.)

Bloodletting is one of our oldest therapeutic measures and, like other remedies, it has in turn been overrated, neglected, and employed rationally. Just now, there is a tendency to employ bloodletting when it can be of real service. Doctor

Stern's book is, therefore, timely. The first part deals with what the author calls "the general fundamentals" of bloodletting; the second part is entitled "special clinic of local and general bloodletting." The historical retrospect is brief and sketchy, and the author does not appear to be as much at home in this section of the work as he is in the clinical part. We find no mention of Magendie's demonstration of the absurdities of the "points of election" in bloodletting. The studies of Robin, Roux, and Schroeder are also ignored. It would appear from the footnote on page 21 that Doctor Stern considers that Visigoth is the name of a person. Who, we may ask, was Mirandola, mentioned on page 4? Pico of Mirandola we know; but there is nothing to show that our author meant the latter when he wrote the former. Unfortunately the author has permitted a most careless and slipshod method of writing to escape his revision; at times his style is ungrammatical, and when not absolutely incorrect his usage of words is often grotesque and unusual. Indeed, the work reads like a poor translation of an inferior foreign work. On page 108, we find: "However, it is a matter of a different nature whether a suitable donor is always promptly available." "Where quick, immediate action is required, blood transfusion, despite the brilliant, modern technic, is therefore out of the question in most of the pertaining cases." "Improvement did not ensue till 300 c. c. (ten ounces) of blood of dark brown, chocolate-like coloration was abstracted and a NaCl infusion been made." Page 188 is equally prolific in samples of the author's peculiar use of the English language. For example, "The experienced clinician has long since recognized the fact that we do not possess nor that we are likely ever to number among our assets . . ." "I wish to emphatically state right here . . ." "The only allusions to bloodletting in any way connected with this subject, which I have encountered, is an article by Torrance. . . ." "On the occasion of the Congress of . . . at Philadelphia in 1909, I have ventilated this question in various respects. The subject material of this chapter is to the greater part taken from my statements made at that time." We learn from page 3 that experimental physiology, pathology, and therapeutics are "the scientific fundaments of medicine." On page 237, we are told to "see p. 80"; the reason for this does not appear. Translated into English, and properly edited, this work might be of service in drawing attention to a valuable, but much neglected procedure.

The Colorado Industrial Plan. By JOHN D. ROCKEFELLER, Jr. Including a Copy of the Plan of Representation and Agreement Adopted at the Coal and Iron Mines of the Colorado Fuel and Iron Company, 1916. Pp. 94.

This booklet contains a complete copy of the Plan of Employees' Representation, or Industrial Constitution, and the agreement between the company and its employees adopted at the coal and iron mines of the Colorado Fuel and Iron Company. These are preceded by a reprint from the *Atlantic Monthly* entitled Labor and Capital—Partners, an address to the employees of the Colorado Fuel and Iron Company at Pueblo, and an address to the People of Colorado, delivered before the Denver Chamber of Commerce. The papers are full of good sense, and it seems as though the plan outlined and adopted ought to work.

Textbook of Nervous Diseases. For the Use of Students and Practitioners of Medicine. By CHARLES L. DANA, A.M., M.D., LL.D., Professor of Nervous Diseases in Cornell University Medical College; Consulting Physician to Bellevue Hospital; Neurologist to the Montefiore Hospital; etc. Eighth Edition. With 262 Illustrations, Including Four Plates in Black and Color. New York: William Wood & Co., 1915. Pp. x-632. (Price, \$4.25.)

For nearly a quarter of a century this work has held a leading place as a textbook for students and practitioners of medicine. The reasons for this preeminence are obvious. In the first place, there is the reputation of the author, based on unusual experience both in practice and in teaching; further, the book is characterized by a pleasing literary style, so that in reading this volume our quest for information is fraught with pleasure as well as profit; and the work is of a convenient and reasonable size. The present edition contains all the good points of its predecessors and, in addition, is enriched by interesting illustrations from the works of Stephanus, Vesalius, Willis,

and Ruysch. The sections on anatomy and physiology have been condensed, and the part dealing with mental diseases has been omitted, so that the book is somewhat smaller than before. We are glad to see that the author reprints that part of the preface to the first edition of his book which draws the student's attention to the more common and important diseases of the nervous system. Without some such guide the reader is apt to waste his time, needlessly burden his memory, and become bewildered and discouraged.

A Treatise on the Principles and Practice of Medicine. By ARTHUR R. EDWARDS, A. M., M. D., Professor of the Principles and Practice of Medicine and of Clinical Medicine and Dean of the Faculty in the Northwestern University Medical School, Chicago; Attending Physician to Michael Reese Hospital; etc. Third Edition, Thoroughly Revised and Rewritten. Illustrated with 80 Engravings and 23 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. xxi-1022. (Price, \$6.)

The present third edition of this excellent reference and textbook of medical practice is less bulky than the last, but is more succinct and comprehensive, and consequently more useful and valuable. The work has been thoroughly revised and rewritten. Many chapters are new: Icteroanemia, erythremia, sepsis, the arrhythmias and other cardiac neuroses, ductless glands, x ray findings, high calory feeding in typhoid with a table of food values, parasitic diseases which have been the object of recent advanced research, such as hookworm disease, trichinosis, sporotrichosis, and blastomycosis, as well as tropical affections and pellagra. Much consideration has been given to typhoid and other bacteriemias, meningitis, and poliomyelitis. The progress of hematology and adenology has been fully presented, and the advanced work in serotherapy. Especial attention has been given to the diagnosis and treatment of the bane of modern civilization, chronic affections of the heart and circulatory apparatus, and disorders commonly arising from urban competition and stress, such as neuralgia and drug addiction. An unusual amount of space is allotted to well considered treatment and the physiological action of drugs. The work is well arranged and carefully indexed. It is admirably adapted to the needs of medical students, and should be of value to any practitioner of medicine.

Interclinical Notes.

The following dialogue is alleged by an esteemed reader to have taken place in a well known uptown medical school:

FIRST MEDICAL STUDENT: I see the literary highbrows are having a good deal to say about the *Rubinet of Omar Khazim*. Do you know anything about the book?

SECOND MEDICAL STUDENT: It is not a book at all, but a Spanish mineral water similar in its laxative effects to Hunyadi Janos. Omar Khazim is the fellow who imports them both and has placed them on the American market.

A correspondent insists that the Russian capital would be a good field for a rectal specialist, because the following passage is to be found in Bayard Taylor's *By-Ways of Europe*: "All the endemic diseases of St. Petersburg showed themselves in force. The city, it is well known, is built upon piles, and most of the inhabitants suffer from them."

Paper for February 23d was a gorgeous issue, with an Indian, the device of the A. P. & P. A., handsomely done in poster effect on the cover. We do not see the nexus, unless perchance the figure is that of an "Honest Injun." If any one of our readers wishes to buy a shredder for reducing dry and partly frozen pulp laps preparatory to beating, he will find a picture of a good one in this issue, which is full of valuable information of the same kind. We had a faint hope of finding something of special interest to our friends when we saw the word "cooking," but it turned out to be a reference to the process of turning wood chips into pulp. To get out 218 pages of a weekly publication, as *Paper* has done, is a remarkable feat.

The Fetish Man's Downfall, a story in the *Wide World Magazine* for February, 1916, by W. H. Adams, ought to interest our friends, since the fetish man is the general practitioner among savages. We read that the local doctor had been trying a little prophylaxis by sacrificing a white fowl to the gods. This is as good a method as any ever devised by civilized man that does not include vaccination. It is certainly curious to note that among the savage races there are, beside the regular local fetish men, traveling practitioners or quacks, who get most of the money and put the local doctors sorely out of countenance. Like our own quacks, they are fond of parading their wealth.

Nothing of Importance is a spirited and significant article in *Leslie's* for January 20th, by Dr. William Anderson. After tremendously exciting experiences in the French trenches, battling with shells, bullets, and frightful gases. Private Samuel O. Smith is seriously wounded. In his hospital cot he looks through the newspaper for an account of the important battle in which he has been engaged; he finds an official communication to the effect that there is "nothing of importance to report on the Western Front."

There is a most entertaining sketch of the famous entomologist, Fabre, in *Current Opinion* for February. He was an iconoclast as far as the theory of evolution was concerned, and it is a great pity that he and Darwin never met to argue the points involved. There ought to be more doubters, of course; even Darwin would have been shocked to hear that his theories had been erected into a creed. Huxley, more than once, discarded a beautifully constructed edifice of theory because one little miserable fact would not fit into it. *Current Opinion* shows its range by proceeding from Fabre to protein in Germany, to a consideration of aluminum, to a review of Mr. Balfour's book, *Theism and Humanism*.

The *Outlook* for February 23d is a double number, twice as handsome and as entertaining as usual. An editorial article on the South and the Child Labor Bill maintains that the general sentiment in the South is against child labor, although that sentiment has not yet been expressed in her legislatures. The Keating bill will put a stop not only to mill labor by children in the South, but to the equally vicious tenement house child labor in New York City. The Knoll Papers continue to make fascinating reading; there is sympathetic comment on Marjorie Sterrett and her battleship and on the late J. T. Trowbridge, author of *Jack Hazard's Fortunes*, a masterpiece, of which with its sequels the *Outlook* makes no mention.

Charles Sarka, the artist who designed the cover for *Leslie's* for February 24th, has made a spirited picture showing Mars appealing to Peace for mercy. Mars's sword is broken and he has the general look of a combatant who has had a hard time of it. The moral seems to be that if you want peace, you must fight for it. *Leslie's* war pictures continue to be attractive; one neat "beat" is a picture of the mysterious German raider which captured the *Appam*, taken through a porthole of the latter.

The *American Review of Reviews* for February, 1916, remarks editorially: "Many readers have been interested in allusions they have seen in the newspapers from time to time to some specific efforts for improved health conditions in Latin America, carried on by Governments through the valuable methods supplied by the Rockefeller Foundation. It was proposed to enter Mexico at once, provided General Carranza cooperated in the requisite manner, for the sake of an organized crusade against the terrible epidemic of typhus that is more dreaded than the bullets of revolutionary armies. Our greatest work at Panama was not the building of the canal, but the conquest over infectious disease. Likewise, our chief contributions to Cuba and Porto Rico have been in the field of medicine and public sanitation. With its medical work in Latin America now well begun, and its vast program for establishing modern medical and health institutions in China, the Rockefeller Foundation has conceived of projects that will save more lives than the European war will destroy."

Meetings of Local Medical Societies.

MONDAY, March 13th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, March 14th.—New York Academy of Medicine (Section in Neurology); Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society.

WEDNESDAY, March 15th.—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medico-Legal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society.

THURSDAY, March 16th.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, March 17th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; University of Virginia Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending March 1, 1916:

Brown, B. W., Surgeon. Granted two months' leave of absence from February 17, 1916. **Fricks, L. D.,** Surgeon. Directed to proceed to Utah, and other Rocky Mountain States, for the investigation of the prevalence of rabies. **Harrington, F. E.,** Assistant Epidemiologist. Directed to proceed to Baltimore, Md., to secure additional data, relating to investigations of rural sanitation in Maryland. **Hughes, Thomas E.,** Assistant Surgeon. Granted seven days' leave of absence from February 24, 1916, under paragraph 193, Service Regulations. **Paine, Liston,** Assistant Surgeon. Directed to proceed to Salt Lake City, Utah, for duty in connection with the investigations of the prevalence of rabies. **Stimson, A. M.,** Surgeon. Granted eight days' leave of absence on account of sickness, from February 12, 1916. **Stoner, George W.,** Senior Surgeon. Granted six days' leave of absence from February 23, 1916, under paragraph 193, Service Regulations.

United States Army Intelligence:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Army for the week ending March 4, 1916:

Fife, James D., Captain, Medical Corps. Relieved from duty at the Army and Navy General Hospital, Hot Springs, Ark., and will proceed to Fort Sam Houston, Texas, and report in person to the commanding officer of that post for duty and by letter to the commanding general, Southern Department. **Fletcher, Harry Q.,** First Lieutenant, Medical Reserve Corps. Ordered to active duty on account of an existing emergency, and will report to the commanding officer, Fort Oglethorpe, Georgia, for duty. **Haverkamp, Charles W.,** Captain, Medical Corps. Reports departure from West Point, N. Y., on fourteen days' leave of absence; address, Post-Graduate Hospital, Second Avenue and Twentieth Street, New York. **Peck, Luke B.,** First Lieutenant, Medical Corps. Granted leave of absence for two months effective about March 10, 1916, with permission to apply for extension of one month. **Robertson, James**

A., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person to the commanding officer, Fort Thomas, Kentucky, for duty and by letter to the commanding general, Eastern Department.

Births, Marriages, and Deaths.

Married.

Campbell—Clift.—In San Francisco, Cal., on Thursday, February 17th, Dr. William Howard Campbell, of Santa Barbara, Cal., and Miss Jean Bowden Clift. **Gren—Nicholson.**—In Muncie, Ind., on Tuesday, February 15th, Dr. George Gren and Mrs. Maria A. Nicholson. **MacAusland—Brayton.**—In Fall River, Mass., on Wednesday, February 23d, Dr. William R. MacAusland, of Boston, and Miss Dorothy Brayton. **McDevitt—Sargent.**—In Worcester, Mass., on Tuesday, February 29th, Dr. James J. McDevitt, of Boston, and Mrs. Augusta Hanff Sargent. **Martin—Bigelow.**—In Boston, Mass., on Wednesday, March 1st, Dr. Frank Martin, of Baltimore, Md., and Miss Elizabeth P. Bigelow. **Runyon—Neilson.**—In New Brunswick, N. J., on Wednesday, February 9th, Dr. Laurence Philips Runyon and Miss Katherine McClelland Neilson. **Stomel—Kolontersky.**—In Minneapolis, Minn., on Tuesday, February 22d, Dr. Joseph Stomel and Miss Ida E. Kolontersky.

Died.

Aldrich.—In Anoka, Minn., on Saturday, February 19th, Dr. Alanson G. Aldrich, aged sixty years. **Baker.**—In Sparta, Tenn., on Saturday, February 19th, Dr. Robert F. Baker, aged seventy years. **Blanton.**—In Kosmosdale, Ky., on Monday, February 21st, Dr. Loomis C. Blanton, aged thirty-three years. **Bowers.**—In Pittsburgh, Pa., on Saturday, February 26th, Dr. Herbert R. Bowers, of Lancaster, Pa., aged forty-eight years. **Bush.**—In Santa Cruz, Cal., on Thursday, February 17th, Dr. Ira C. Bush. **Cochran.**—In Arvada, Colo., on Friday, February 18th, Dr. Clarence F. Cochran, aged sixty-one years. **Cotton.**—In Bentonville, Ark., on Wednesday, February 23d, Dr. N. B. Cotton, of Bennett, Ia., aged eighty years. **Detwiler.**—In Easton, Pa., on Monday, February 28th, Dr. John J. Detwiler, aged eighty-one years. **Dowell.**—In Albany, Ind., on Friday, February 18th, Dr. John A. Dowell, aged fifty-eight years. **Elcán.**—In Los Angeles, Cal., on Monday, February 21st, Dr. Archibald Liebig Elcán, of Memphis, Tenn., aged seventy-two years. **Finch.**—In Europa, Miss., on Tuesday, February 15th, Dr. Lewis W. Finch, aged thirty-eight years. **Ford.**—In Paducah, Ky., on Friday, February 18th, Dr. Henry Ford, aged eighty years. **Greer.**—In Abbeville, Miss., on Thursday, February 24th, Dr. Audrim T. Greer, aged fifty-five years. **Hertz.**—In Zeoring, Iowa, on Saturday, February 19th, Dr. Henry J. Hertz, of Iowa City, Iowa, aged thirty-one years. **Keune.**—In New York, on Monday, February 28th, Dr. Theodore Keune, aged sixty-three years. **Kreider.**—In Prairie City, Ill., on Saturday, February 19th, Dr. William L. Kreider, aged sixty years. **Linn.**—In Rochester, N. Y., on Saturday, February 26th, Dr. Samuel H. Linn, aged seventy-two years. **Longcoy.**—In Lima, Ohio, on Sunday, February 27th, Dr. John M. Longcoy, aged sixty-eight years. **Martin.**—In Springfield, Mass., on Saturday, February 26th, Dr. Luther O. Martin, aged sixty-three years. **Pepper.**—In Los Angeles, Cal., on Saturday, February 19th, Dr. Charles T. Pepper, aged sixty-eight years. **Philler.**—In Minneapolis, Minn., on Monday, February 21st, Dr. Hugo Philler, of Waukesha, Wis., aged seventy-eight years. **Roos.**—In New York, on Saturday, February 26th, Dr. Edward Wolsey Roos, aged thirty-four years. **Scott.**—In Terra Alta, W. Va., on Monday, February 21st, Dr. Buckner F. Scott, aged thirty-eight years. **Stone.**—In Mudlavia, Ind., on Tuesday, February 22d, Dr. D. Burr Stone. **Tannehill.**—In Baltimore, Md., on Thursday, March 2d, Dr. G. Lane Tannehill, aged seventy-five years. **Traford.**—In Middleville, N. Y., on Friday, February 25th, Dr. Charles B. Traford, aged sixty years. **Walker.**—In Washington, D. C., on Monday, February 21st, Dr. Allen Walker, aged sixty-four years. **Williams.**—In Minneapolis, Minn., on Thursday, February 24th, Dr. Charles W. Williams, aged fifty-three years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 12.

NEW YORK, MARCH 18, 1916.

WHOLE No. 1946.

Original Communications.

OBSCURE CASES OF MASTOID INVOLVEMENT.*

A Study of the Diagnostic Signs,

By EDWARD B. DENCH, M.D.,
New York.

Typical mastoiditis is a condition easily diagnosed. There are a comparatively large number of cases of aural suppuration complicated by subsequent involvement of the mastoid, in which the recognition of mastoiditis is frequently long delayed and, unfortunately, sometimes found only at a period too late for successful surgical intervention.

I remember very well, about twenty years ago, having a conversation with a friend who told me that his child had recently been suffering from mastoiditis. He said that they had been extremely anxious; the temperature had been very high for two weeks; the child had had incessant pain, and there had been a profuse discharge from the ear. The otologist in charge at that time was a man of no mean reputation. At the expiration of two weeks the postaural swelling appeared, according to the statement of the parent, and the doctor said that the diagnosis could now easily be made—an operation could be performed and the child would recover. This, perhaps, is not an overstated case of twenty years ago.

At the present time a postaural swelling appears only in neglected cases. The general practitioner of today would feel guilty if he allowed a patient with a suppurative otitis to suffer for two weeks, until cortical rupture of the mastoid collection of pus had taken place.

The report that I make, therefore, will not deal with cases where the diagnosis is so evident that it can be made by a glance at the patient. There are, however, a large number of cases of involvement of the mastoid, in which the development of the inflammatory process is so insidious, and the symptoms of this involvement are so slight, that a diagnosis is made with the greatest difficulty, even by those who have seen a large number of cases.

One case which I might mention, illustrates how an inflammation of the mastoid process may remain latent for many months. The patient was a man seventy years of age, who consulted me for a slight impairment of hearing. Upon examination of the ear, I found a lustreless drum membrane and a canal somewhat narrowed at the fundus. The pa-

tient gave a history of having had a very slight attack of acute otitis, three months before; he had had but a few hours' earache and his medical adviser had been called and, as he had expressed it "a needle had been put into his ear and a few drops of watery discharge subsequently appeared in the canal." He had not been confined to the house for a single day, and his rest had not been interfered with for more than a few hours.

As far as I could learn, there had been no rise in temperature at all, or, only a slight febrile movement. He consulted me while passing through New York, simply to see if he could be relieved of the impairment of hearing from which he was suffering. At the time of examination there was absolutely nothing to enable me to make a diagnosis, except that the hearing was considerably impaired and the drum membrane, although white, had not its characteristic lustre; there was also some sinking of the superior wall of the canal, close to the drum membrane. The man was stout and had a short thick neck, and it was only by the very firmest pressure that I could elicit the slightest mastoid tenderness. I advised immediate operation and operated that same afternoon. A large amount of pus was found in the deep mastoid cells, and the man made a complete recovery.

In a second case, that of a woman aged thirty-four years, an acute otitis in the left ear had developed during convalescence from pneumonia. When I saw the patient there was no pain in the ear, but a slight discharge, which upon microscopic examination was found to contain no pus. The upper portion of the drum membrane was bulging and the canal was somewhat shortened. The x ray plates were negative. The diagnosis here was made simply upon the presence of discharge and the shortening of the canal. The operation revealed an extradural abscess over the sinus; this patient made a complete recovery. The condition in this case might easily have been overlooked, as the woman was having no pain and the discharge from the ear was gradually diminishing.

The third case was that of a woman at St. Luke's Hospital, who gave a history of having had an acute otitis about ten days before admission. Incision of the drum membrane relieved the pain and temperature elevation, as well as the slight mastoid tenderness which was present. The discharge from the ear soon ceased; the patient's temperature became normal; the drum membrane healed perfectly; and she seemed to be absolutely relieved of the acute aural inflammation. At the end of the tenth day she was in such good condition that she seemed about ready for discharge from the hospital. Two

*Read before the New York Clinical Society, December 17, 1915.

things, however, impressed me: First, the drum membrane had not resumed its normal lustre and, secondarily, the external auditory canal was much narrower at the fundus than the canal on the opposite side. The woman was operated upon the next day, and a large amount of pus was found in the mastoid. This case might very easily have recovered from the acute symptoms and the purulent collection within the mastoid remained unrecognized until some subsequent period, when the old condition might have been lighted up by an acute inflammatory exacerbation with involvement of the intracranial structures.

It is interesting in all these cases to observe that the inflammatory process in the mastoid may steadily progress, although the middle ear condition may clear up. One case coming under my observation at St. Luke's Hospital demonstrates this fact very clearly. A man suffered from an acute otitis; his drum membrane was incised and, in the course of ten days, the discharge ceased and the membrane healed. The canal became normal in calibre and all mastoid tenderness disappeared. The drum membrane, however, remained slightly congested and the man complained of a general headache; the case looked like one of delayed resolution in acute otitis.

My associate, Doctor Bowers, who followed up the history carefully, was of the opinion that this headache was due to a purulent collection within the mastoid. An x ray picture showed mere haziness of the mastoid tip. Doctor Bowers opened the mastoid and found the pus in the exact location shown by the x ray plate. The headache disappeared, and the man made a complete recovery. A report of this case will be published by Doctor Bowers in *St. Luke's Hospital Medical and Surgical Reports*.

In still another case, a child suffering from an acute otitis was supposed to have recovered completely; the discharge had ceased entirely, the child had no pain and no fever, and in fact, was in a practically normal condition. On a certain day, while walking with his nurse, a profuse discharge occurred from the ear which had formerly been inflamed, but there was no pain whatsoever. The next day, the child's temperature rose to 105° F.; a smear showed *Streptococcus capsulatus*. At the time of the initial rise of the temperature, there was a suspicious condition in the chest; the physician thought possibly the beginning of bronchopneumonia. This condition disappeared, however, although the temperature still remained high. The mastoid was opened and found to be full of pus; the temperature dropped immediately, but, in another day or so, again went up to 105° and then began regular remissions. I immediately excised the internal jugular vein and opened the lateral sinus. This case made a complete recovery.

In all of the cases enumerated above, the middle ear condition seemed to be improving, and in all but one the drum membrane had entirely healed, and yet at the time of operation, extensive destruction was found within the mastoid.

The actual cessation of discharge is really no absolute indication that the mastoid is healthy. The middle ear inflammation may run its course, the drum membrane heal, and this structure may resume

an absolutely normal appearance, and yet a deeply seated infection may remain in the mastoid; in other words, infection of the middle ear always means infection of the mastoid process. If the mastoid infection occurs in the immediate proximity of the middle ear, it is more than probable that free drainage of the tympanum will relieve the mastoid infection. Unfortunately, however, owing to the varying topography of the mastoid, this differs in various cases. It is perfectly easy for cells remote from the middle ear to become infected. These cells may later become completely shut off from the middle ear by inflammatory exudate. The tympanum may drain perfectly. The drum membrane may heal and all present symptoms referable to the middle ear may practically disappear, yet this patient has possibly a deeply seated infection of the mastoid process, which later may cause serious and even fatal results.

The cases mentioned above are simply used as examples to show the possibilities of such a course; they could be multiplied indefinitely did space permit. I wish to bring out certain points, nevertheless, which may enable us to recognize these possibilities, and to guard against serious results which may follow in cases of this character. How can we tell in a given case of acute aural suppuration that there will probably be serious mastoid involvement, or how can we tell in a given case that any involvement has entirely disappeared, when the middle ear has completely recovered? In the first place, the site of the inflammatory process is important. Inflammations confined to the lower part of the tympanic cavity are much less liable to be followed by serious mastoid infection, than cases in which the upper part of the cavity is involved.

The duration of the discharge is an important factor. After an experience of over twenty years, on careful observation I am inclined to believe that almost without exception, middle ear involvement, which does not resolve very definitely at the end of two weeks, is one of mastoid involvement sufficiently extensive to demand at least exploratory operation. There are, of course, certain exceptions to this rule, but I am perfectly willing to say that in any case of an acute middle ear inflammation where there is a profuse discharge from the middle ear, two weeks after the inception of the trouble, granted that free drainage from the middle ear has been instituted by free incision of the drum membrane, such a patient is unquestionably safer if the mastoid is opened and posterior drainage established, than if reliance is placed upon tympanic drainage alone.

Some of these patients may remain well—I have seen many do so, but, I must confess that even in these cases early operation would have been safer and would have more perfectly conserved the function of the ear.

It is unnecessary to speak of the cases in which we have a sudden cessation of discharge with increased pain and temperature elevation, as in these cases the diagnosis is not obscure. Naturally, with a sudden cessation of discharge, pain, and rise of temperature, immediate operation is indicated. The same cannot be said of local tenderness. Local tenderness is a very valuable sign and appears in a very large proportion of cases. Its presence, however, is

not thoroughly indicative of mastoid involvement demanding operation; I simply mention it in speaking of obscure cases. There is one remark which should be made, in passing, on mastoid tenderness; while not wishing to detract from the value of mastoid tenderness as a sign of mastoid involvement, it must be remembered that in very many cases of acute otitis, mastoid tenderness is present during the first few days of the attack. This is particularly true of cases occurring in older children and young adults. The reason for this occurrence is undoubtedly the fact that, in these subjects the mastoid is very pneumatic in structure and the cortex rather thin. Such tenderness occurring in the early stages of acute otitis is not an indication for operation.

I have seen many cases where the mastoid has been exquisitely sensitive for the first two or three days in an attack of acute otitis, and yet tympanic drainage has been sufficient to effect a complete cure in the course of a week or ten days. Tenderness then, at the beginning of an attack of acute otitis, is of comparative insignificance. Tenderness which appears after the fourth or fifth day of the attack, is of great significance.

Another point which it is well to remember is, that tenderness over the mastoid antrum is of much more value as a diagnostic sign, than tenderness over the tip. In any normal person, by proper manipulation of the palpating finger tip, tenderness can be elicited. This fact should always be borne in mind in considering mastoid tenderness.

Another valuable aid is the nature of the discharge. A staphylococcus infection is usually mild in character and, as I remember it, I have seen only two or three cases of extensive mastoid involvement follow such an infection. With streptococcus, however, it is quite different. With a streptococcus infection we should always be on the alert and open the mastoid process earlier than we should with a milder infection. When we have Streptococcus capsulatus or mucosus infection, unless free drainage has been instituted from the middle ear condition in its very inception, posterior drainage offers the only safeguard for the patient.

The sign upon which I have found the most reliance can be placed, is that dependent upon certain changes in the external auditory canal. In the cases enumerated above, with scarcely an exception, the external auditory meatus showed decided narrowing near the drum membrane. This sign is almost invariably present in cases of mastoid involvement and is, I believe, the most constant and most dependable sign of mastoid involvement. In the first three cases, the diagnosis was practically made upon this sign alone, and I know of many other cases in which opening the mastoid was determined upon from this sign alone.

A very significant canal sign is the apparent shortening of the meatus; by this I do not mean the well known bulging of the drum membrane which naturally occurs in every case of acute otitis with an accumulation of fluid in the tympanic cavity. What I refer to, is the actual shortening of the external meatus; a condition in which the entire drum membrane appears nearer to the entrance of the canal than under normal conditions. This was an exceed-

ingly valuable sign in at least two of the cases mentioned.

In speaking of canal signs, it is not out of place, perhaps, to call attention to the fact that ordinarily the external auditory canals are symmetrical, that is, if a canal is slightly narrow normally on one side, the opposite side will present a similar appearance. This rule also applies to the prominence of the floor of the canal where the bony and cartilaginous canals join. In other words, if the meatus is normally narrow on one side, it will be narrow on the other; if it is normally short on one side, it will be short on the other. If the cartilaginous and bony canals join at a sharp angle on one side, the angle will be sharp on the other. Asymmetry between the two canals is always to be looked upon with suspicion, and with the history of acute otitis a narrowing of the deeper portion of the canal is almost pathognomonic of mastoid involvement.

The diagnosis may also be difficult in cases complicated by the involvement of superficial tissues of the external auditory meatus, that is, in cases complicated by furunculosis. The differential diagnosis between mastoiditis and a simple furunculosis is not difficult, as the narrowing of the canal in furunculosis occurs at the entrance of the meatus, while the narrowing in mastoiditis occurs at the fundus. In some cases, however, the patient will have a furuncle in the canal, which furuncle has been preceded by an acute inflammation within the middle ear.

The narrowing of the meatus at its entrance is due to the involvement of the superficial tissues, and satisfactory inspection of the fundus is difficult or even impossible. Two such cases have come under my observation within the past year. In one the mastoid involvement was so insidious, that the diagnosis was made only after a considerable time. The second case was operated in only because there was a history of a previous discharge and the fact that the canal was exceedingly narrow throughout. In these doubtful cases the x ray pictures are frequently of value, as it was in one of the cases just cited. In a doubtful case, however, with an obscure history, it is very much better to err on the side of radicalism and open the mastoid, even though this is found perfectly healthy, than to regard the case as one of inflammation of the external auditory canal, and find out too late that an error in diagnosis has been made.

Doubtful cases will occasionally be opened up, but I have never seen any harm result from an exploratory operation of this character. Delay in cases where the mastoid is involved, will certainly be followed by the most disastrous results.

The value of the x ray plates has been mentioned and I wish to speak of this again. In certain cases the diagnosis was made chiefly from the x ray plates, or to be more exact, the diagnosis was clinched by the data obtained in this manner. In every doubtful case a radiograph should be taken. Our records at the New York Eye and Ear Infirmary show that the evidence supplied by these pictures is almost never misleading, if taken in connection with the clinical history.

In some cases, however, especially the one operated by Doctor Bowers, information obtained by the radiograph practically clinched the diagnosis. It is

interesting to note that in one case, the radiograph was regarded as unreliable until after the operation. This case occurred a number of years ago, before radiography of the mastoid was well understood. At the present time our operative findings almost invariably agree perfectly with the radiographic pictures, and it is simply by studying the pictures, not only before operation, but in doubtful cases after operation, that the full value of this method of diagnosis can be obtained.

Certain lines and areas in the radiograph may completely fail of interpretation in given plates; only upon operation do we find the exact pathological condition which gave rise to these particular features in the plate. This was particularly true in one case, in which two areas of perisinus suppuration gave rise to two dark spots in the x ray plates. We did not understand the true significance of these, and consequently the plate was read as negative. At operation, however, two small areas of perisinus inflammation were found to correspond exactly to these dark spots on the plate.

One symptom which is of considerable importance and which I have mentioned in only one case, is the presence of persistent headache. Given a patient who is either suffering from acute otitis or has recently recovered from this condition, the presence of persistent headache should always be looked upon with suspicion. This is well illustrated in one of the cases mentioned in my paper.

Another symptom of equal importance is sleeplessness. Some of these patients may not complain of local pain or of localized headache, but simply state that they cannot sleep at night. The occurrence of sleeplessness, either during or immediately following an attack of acute otitis, should always lead us to consider the possibility of mastoid involvement.

I have said nothing so far concerning the temperature or differential blood count. If high temperature is present, it is a valuable corroborative sign, especially in children. The absence of fever, however, in no way militates against the possibility of mastoid involvement. Some cases of the most extensive mastoid destruction that I have seen, have been absolutely afebrile. While, therefore, the presence of fever is a corroborative sign, its absence is of no value whatever in determining the absence of involvement of the mastoid.

The differential blood count can be placed in the same category. We sometimes have an increased polymorphonuclear count in these cases. An increased leucocytosis is only an indication of the patient's resistance. In my experience, the increased polymorphonuclear percentage has not been the rule; in fact, with the polymorphonuclear cells much increased, I am much more apt to think that there is some visceral complication, or that some of the soft structures about the mastoid are involved, owing to a secondary perforation of the cortex. So long as the pus remains enclosed in the mastoid, that is in the bony cavity, the polymorphonuclear percentage is not increased.

The cases cited above and the diagnostic methods enumerated, illustrate perhaps that the diagnosis of mastoiditis is not always simple. One diagnostic sign which I have not mentioned, and which I con-

sider important, is recurrent attacks of acute otitis. I remember one case in my hospital service, during the past year, that of an infant who, every month or six weeks, would have a sudden rise in temperature. The drum membranes would become reddened, and free incision of each drum membrane would be followed by a purulent discharge from the ears and a fall in temperature. After irrigation, the aural suppuration would disappear entirely in the course of two weeks or ten days. This child had several recurrent attacks. As the child also had pyelitis, the medical men were in doubt as to whether the temperature fluctuation was due to the kidney condition or to the recurrent attacks of otitis media. I saw this child on my return from my holiday, after it had had about six or seven attacks. There was absolutely no sign of mastoid involvement, and yet I argued that these attacks would not recur unless a purulent focus existed somewhere in the deeper structures of the middle ear. The child's general condition was exceedingly poor. I advised double mastoidectomy, however, and operated upon both mastoids which were filled with granulation tissue, and the child made an uninterrupted recovery and immediately after the operation became rosy and healthy. This condition is one which, I am certain, needs most careful study.

15 EAST FIFTY-THIRD STREET.

THERAPY AS RELATED TO THE IMMUNOLOGY OF TUBERCULOSIS.*

BY EDWARD R. BALDWIN, M. D.,
Saranac Lake, N. Y.

The striving for specific therapeutic agents for tuberculosis is unceasing, yet fortunately at present no sensational discovery vies with war news in the headlines. It is gratifying that some fundamental knowledge has been gained in recent years that must be taken account of in the usual blind groping for cures. I refer to the study of the natural resistance of the body to invasion by the tubercle bacillus. Without such knowledge—possibly of the very weapons of most importance—we can readily understand that an otherwise rational medicament might be very harmful. It will be well to think of what we know about the immunology of tuberculosis and to consider the relation it bears to some methods of treatment now in vogue as well as to others recently proposed; I am sure that it will aid in judging of their value.

In the first place the focal character of tuberculosis is to be regarded as the chief evidence of natural resistance. The tubercle is its expression, and whatever humoral changes follow infection are secondary to the focal reactions resulting from the presence of the bacilli. The severe miliary forms with bacilli constantly in the blood stream need not be considered for the present. The inflammatory effects found in the recent outbreaks of bacilli into new areas of the lungs or other organs, constitute evidences of resistance, whatever the ultimate explanation of the process may be. The differences between primary infection and secondary invasion

*Read at the Academy of Medicine, New York, February 3, 1916.

are experimentally demonstrable and show that the inflammation can and does accompany the destruction of many bacilli.

These facts have not always been considered in a proposed therapeutic agent, but ought, in my judgment, to be regarded in the light of true physiological functions, not always or wisely to be disturbed by any measures we may invent to treat the disease which may have other merits of a theoretical or practical character. Until we can safely dispense with Nature's control of the disease, we might do well, therefore, to confine our experiments to animals, if the agent in question interferes in one way or another with the tubercle, short of complete removal of the focus by either mechanical or chemical means.

It is unfortunately doubtful if we have as yet any reliable method of measuring the natural resistance to tuberculosis in either a healthy or tuberculous person. The serum and blood examinations do give us reactions such as agglutination, opsonin, complement fixation, and the differential cell counts of Arneft that point to specific humoral substances concerned in protecting the individual. The tuberculin hypersensitive patient has unquestionably a certain kind of protection, even if this may turn out to his harm when overactive. As a measure of immunity, the tuberculin reaction seems to me quite insufficient, but it might be used to advantage in the study of therapeutic agents, and the cutaneous tests have been so employed in some instances.

Many substances have been used in the course of the tuberculin era, that is, a period of twenty-five years, that have had a rational basis as now viewed from the standpoint of immunology. Indeed, compared with tuberculin some have been much safer and by their reacting influence on tuberculous tissue, have a similar capacity for good. Such is cinnamic acid or "hetol" of Landerer; also the nuclein therapy at one time in use quite extensively. Of course the original idea of creating an artificial leucocytosis may or may not have the importance first ascribed to it, yet focal reactions, in whatever way induced, have attained an importance in modern tuberculosis therapy that cannot be questioned. An acquaintance with their nature seems very necessary. I am unable to discuss the intimate nature of the focal reaction here. It will be regarded by some as an increased enzyme action on the tubercle cells, by others as a nonspecific inflammation of a complex nature. The matter is still being investigated.

Beginning with tuberculin as the most powerful and also a truly specific excitant to reaction, it will be of interest to note the effect of intermittent reactions upon tuberculous tissue. It is, of course, best seen in skin tuberculosis, where it is also safer, because of our ability to watch its course. The inflammatory stage subsides and leaves definitely smaller nodules or ulcers. Repetition at intervals produces complete cicatrization and apparent disappearance of the disease. The bacillus appears to have been destroyed, yet we know that some usually escape and relapse is possible. Now it is interesting to note that various methods of treatment which are now of established value also produce more or less focal reaction. The Bier's hyperemic method involves both passive and active hyperemia

in alternation. The different forms of radiation, including heliotherapy, artificial light, radium, and x ray, produce in common an inflammatory reaction of greater or less extent with similar absorptive effects on the tuberculous foci. It is not possible to say that the mechanism is the same in all, but the reaction can be seen to occur where the disease is visible to the eye. It is instructive to read the more recent contributions to the subject of light therapy, both sunlight and artificial, on lupus. Professor Jesionek (1), of Giessen, compares the effects to tuberculin reactions and notes that these reactions follow exposure of other parts of the body, and when the diseased part is protected from light. This in fact is true of the joint and bone cases under heliotherapy where the diseased parts are encased in plaster. Whether the cause of these reactions (which also involve the lungs when they are affected) is the absorbed pigment or other cell products from the skin, as this author suggests, or is some other influence, is a problem that remains to be solved, but the therapeutic results are most gratifying.

It can be seen that graduated doses of light in these surgical cases are necessary as in tuberculin treatment. It is likewise true of graduated exercise for pulmonary cases. Too much inflammatory reaction is dangerous, whether produced by this or any other therapy in tuberculosis. Here it may be added that the danger of all reactive therapy is greater in the very vascular lung than in the external or surgical tuberculosis. Hence reacting doses of any agent during progressing disease in the lungs are contraindicated.

It interested me to look over the literature of chemotherapeutic experiments in tuberculosis to see what influence they exerted on tuberculous tissue. Here again we can say that the substances which seemed to give some promise of value cause focal reactions, or febrile disturbances. This is, for example, true of the gold cantharidin cyanide compound tried by Spiess and Feldt; (2) also for "borcholin," (3) a boric acid-cholin preparation. I have had no personal experience with any of these agents, but cannot avoid the conclusion that the therapeutic results are quite as much dependent on the inflammatory reactions as upon their bacillidal value. It may be otherwise with some future discovery, for we may rest assured the acmé has not been reached in specific medication, and a reactionless treatment would seem to be less capable of harm.

It is by no means certain that there is no choice in the various methods of inducing hyperemia about tubercles. The mechanical or physical means are well adapted for surgical cases and thoroughly quiescent pulmonary disease, when considered from the pathological and immunological standpoint. It is doubtless easier to spread the disease from a lung focus than from a joint, for example; so that marked hyperemia in the lung from any cause cannot but involve risks of spreading the disease to a serious extent in this vital organ. This fact is so important that no method of treatment involving reactions in the lungs should ignore it. Moreover, there is no conceivable treatment for tuberculosis already established that could remove encysted

bacilli which sooner or later might break through and start new disease. The mechanical effects of overstrain or trauma are not always considered in estimating the value of a new medicament for tuberculosis. Such influences can defeat the good effects of a real specific for tuberculosis after healing has apparently been completed.

As to the numerous chemotherapeutic experiments with compounds of arsenic, iodine, and copper, I find little note taken of the serological reactions. Some observers have obtained focal reactions in lupus nodules from each of them, but the studies of Wells (4) and his associates have failed to show any selective action for the bacillus on tuberculous tissue on the part of iodine and copper. It will be interesting to follow the changes in the tuberculin and serum reactions, as well as in the disease foci, when new methods are under trial, for in this way information may be gained as to their specific action. Continual research means progress in therapy in tuberculosis.

REFERENCES.

1. Zeitschr. f. Tuberk. Bakt., 48, 1915. 2. Deutsche med. Woch., 41, 529, 1915. 3. MEHLER and ASCHER: Beitr. z. Klin. d. Tuberk., XXXIII, 221, 1915. 4. Journal of Infectious Diseases, xi, 1912; XII, 1913; XIII, 1914; XIV, 1915.

MENTAL DEFICIENCY.*

Its Medicolegal Aspects,

BY ALFRED GORDON, M. D.,
Philadelphia.

The problem of determining the degree of culpability of an individual who commits an antisocial act is sometimes attended with great difficulties. A variety of factors may enter into the solution of this problem. An illegal act may be committed accidentally or unexpectedly and independently of the individual's will. It may be committed under the influence of unavoidable necessity, as in cases of protection of one's self or one's family. It may be committed under the influence of extreme passion or anger, when consciousness becomes blurred and cerebral inhibition is obliterated. It may be committed by insane individuals whose delusional ideas, accompanied or not by hallucinatory images, develop into morbid impulses or deliberate and well planned criminal tendencies. Finally, illegal acts may be committed by individuals who, though not insane in the strict sense of the word, are nevertheless different from normal individuals by their power of reasoning, by their sentiments, tastes, sympathies, and other faculties. To this class belongs the large category of psychopathic individuals and also mental defectives. The discussion of the underlying psychological moments of each of these groups of individuals is vast. We shall be concerned exclusively with the medicolegal relation of the latter group alone. In order to ascertain the degree of legal responsibility of mental defectives, it is necessary, first, to emphasize the characteristic clinical features of mental deficiency.

In considering all varieties of deviation from normal in the psychic sphere, we find a long scale be-

ginning with mental monstrosities and ending with slight mental feebleness. When the intellectual faculties are involved in their entirety we deal with idiocy. When the arrest of mental development is only incomplete and is, therefore, compatible with the existence of some intellectual manifestation, we deal with imbecility. There are also individuals in whom only certain faculties are apt to reach a degree of development; in whom there is no general defect of intellectual faculties, but only partial. For example, one will show a meagre power of intellectual acquisition, in another the power of judgment is defective; another is incapable of acquiring elementary mathematical knowledge, or natural sciences; in another the power of attention remains elementary; others show a marked poverty in the power of reasoning, or generalizing, of abstracting, of memorizing, of associating ideas. This category of individuals manifests a conspicuous inequality of development of various intellectual faculties, so that alongside the rudimentary faculties normal faculties may exist. The latter, however, are continuously threatened in their normal function in view of the absence of synergic functions of affected faculties. Sometimes these normal faculties may attain a high degree of development. We witness then a sort of hypertrophy of certain aptitudes along with the rudimentary faculties. We see, for example, an extraordinary memory, an extraordinary faculty for calculation, for music, or other special and very limited knowledge. These individuals, in spite of the considerable sum of knowledge in one special direction, which is acquired in a purely mechanical way, show at the same time a remarkable poverty and a striking deficiency in association of ideas, in abstract and scientific reasoning, in generalizations. The marvelous faculty which they possess is exceedingly restricted and, when investigated closely, will fail to demonstrate genuine critical activity. In all of them the power of mental elaboration is decidedly diminished or totally absent. The famous French shepherd, Inaudi, could not write or read, yet at the same time he could figure out mentally the most complicated calculations.

There is still another group of mental defectives which is by far the largest and the most common of all types. Certain individuals, without presenting a partial or incomplete mental development, such as described above, undergo a more or less slow intellectual development. Their intelligence progresses by small degrees in an imperceptible manner, so that they attain their full development at a later age than the average normal person. They acquire general knowledge with greater difficulty. Their intelligence is consequently lower than in normal individuals of the same age. Their development is retarded. This delay in intellectual evolution naturally varies from individual to individual. Thus we have great variations and categories of mentally retarded individuals.

From the standpoint of mental responsibility before the law, it would be superfluous to dwell at length on the idiots. The complete absence of intelligence, of moral conception, of sensibility, places an insurmountable obstacle between idiots and the exterior world. Education has no hold on them,

* Reprinted from the American Institute of Criminal Law and Criminology, Boston, March, 1916.

impressions leave no trace. Instinct alone guides their actions and their relation to others. Their life is reduced to an automatic execution of vegetative functions. It is true that in higher grades of idiocy we may observe some elements of intellectual¹ faculties; we may observe even a certain susceptibility for a physical and mental training, but all these faculties are rudimentary and can never attain any considerable degree of development.

In imbecility we find rudiments of intellectual and moral development. The intellectual niveau is somewhat higher than in idiots, which, therefore, permits certain educative acquisitions. With considerable amount of patience, perseverance, and ingenuity we may succeed in training imbeciles in certain moral principles. However, moral development usually runs parallel with intellectual acquisition. In spite of all efforts we can expect but a slight degree of mental development in an imbecile. His language remains poor in the number of words; his articulation of words is defective; his expressions indicate poverty of thought. The character of his acts corresponds to his manner of thinking. In the sphere of morality he exhibits tendencies showing low instincts and low sentiments. Cruelty, vanity, gluttony, masturbation, sexual perversion, excesses of all kind, cowardice, unusual irritability are all characteristic of imbeciles, and these characteristics lead frequently to all sorts of abnormal acts. Theft, arson, brutality, homicide, are not uncommon in imbeciles. A very interesting feature is the extraordinary tendency to imitation. For this reason we see in them sometimes a remarkable facility of assimilating certain visual and auditory impressions and thus they imitate in a striking manner gestures and acts. This power of imitation is not infrequently utilized by the imbecile in a dangerous direction. The sight of pictures of an adventurous character accompanied by cruel and barbarous conduct produces a deep impression on an imbecile, and he thus conceives the idea of imitating such acts in real life.

Imbecility like idiocy presents gradations according to the extent of mental development of the individual. Thus we consider high and low degrees and between the two extremes we find intermediate types. The transition of one of these types into another is imperceptible.

On an intellectual niveau one step higher than the plane of the imbecile, we enter the domain of the large group of mental feebleness, the study of which is of considerably higher importance from a sociological and legal standpoint than of that of idiocy and imbecility. Here we meet with a great many varieties and subvarieties, and the transition of one into the other is imperceptible. This is the most important chapter in the study of mental deficiency, as the number of such individuals is legion. We find them with us very frequently, we deal with them in innumerable transactions, we find them on school benches, as well as in practical life. Their relation to the community is frequently damaging to the latter.

This group of individuals present, speaking generally, a mentality inferior to the normal in quantity

and quality. Their intellectual development is both delayed and reduced. The slowness of mental evolution and its lesser amplitude are characteristic. Thus, for example, the intelligence of a boy of twelve years resembles that of a child of five. A closer scrutiny will reveal the fact that the intellectual faculties here are fundamentally different from those of a normal child, viz., they are those of a pathological constitution of the brain which distinguishes the mentally deficient quantitatively and qualitatively from the normal individual.

Normally an individual requires for his full development a continuous and uninterrupted chain of new acquisitions. The latter teach him how to orient himself in his relations to the community. Education, therefore, in its broadest sense, by means of intelligence, plays a most important role. Education and intelligence are two great factors in shaping the personality of the individual. Both have an enormous influence on the development of the so called moral personality and on the adaptation of the latter to the requirements of the social environment. Moral conscience is the ensemble of conceptions which are formed in us under the influence of two factors. First, there is a natural emotivity in every individual which renders him responsive to right and wrong or to good and bad. Second, by means of intelligence our appreciation of right and wrong becomes more correct and more perfect. Intelligence brings to the moral ego the necessary elements for its guidance. These two elements intellectual and emotional, are inseparable in a normal individual and have a certain influence on each other and thus shape our moral life. Under the directing influence of intelligence the moral personality becomes established.

If we study the interrelation between intelligence and morality in the last category of mental deficiency, we find the most interesting condition. In the majority of cases the decreased power of both factors runs parallel, although symptoms of one or the other may predominate.

In the preceding pages the character of the intellectual power was sufficiently emphasized. In view of the enormous influence of intelligence upon the shaping of the moral personality, the resulting moral debility is to be expected in the category of individuals which is the subject of the present study. It is a common observation that apart from idiocy and imbecility, one of the chief characteristics of the feeble minded individuals is an obtusion of moral conscience. The elements of the latter are not sufficient or too feeble in the struggle against passions. It may happen that the mentally deficient has some conception of right or wrong; he may feel that he does wrong, but he does not possess the aversion to wrong which is characteristic of a normal individual. The moral sentiments are not powerful enough, the voice of duty is not loud enough to withstand impulse. The cause of this disorder lies in the incomplete development of moral conscience. The want of judgment, of will, the weakness of character render the moral personality of the feeble minded unstable, not resistant, and thus they become an easy prey to their passions.

A more detailed examination of such a moral

personality reveals the following characteristic features: The majority of the symptoms referable to the deviations in the moral sphere gravitate around the ego of the mentally deficient. Thus the ego becomes extravagantly accentuated. Egotism consequently is one of the most conspicuous symptoms of the entire picture. It may sometimes reach an extraordinary development. The mentally deficient individuals have no thoughts but of themselves. Nothing moves them, nothing annoys them, except their own disturbances, which they immeasurably amplify. What others do has no value; only their own accomplishments are important; their own thoughts and acts are alone irreproachable. Such a psychic orientation naturally leads to a dominating attitude and intolerance. Envy or jealousy is another derivative of egotism. It spares none. It may be directed toward strangers as well as toward the nearest relatives, parents included. This anomalous sentiment if intensely developed becomes not infrequently the point of departure of persecutory delusions. If others are preferred to him, the mentally deficient individual believes himself maltreated or intentionally neglected, hence a delusional idea arises. Jealousy creates defiance and doubt. Anger and hatred are the next consequence of jealousy. The mentally deficient may acquire a hatred toward the dearest and the nearest. As egotism is the predominating characteristic, there is absence of altruistic sentiments. Such individuals are almost entirely deprived of all affection for any one. Cruelty and brutality are the natural consequence.

Among other typical features of mentally deficient individuals may be mentioned impulsive phenomena. They are spontaneous and involuntary psychic manifestations. They are observed also in cases of epilepsy, alcoholism, and insanity. Normally our acts are controlled by two factors—desire or an impulse for action on the one hand and reasoning on the other. The latter controls and inhibits the former. When the intellect is impaired or defective, the impulse predominates and the desired act is executed, no matter how deleterious it may be. In such cases we observe frequently sudden impulsive acts in which neither reasoning nor will power intervenes. Murder, assaults, arson, all sorts of heinous crimes may be committed. In some cases the mentally deficient may at first attempt to reflect upon his premeditated act, he may appreciate the immorality and criminality of an illegal act, but the appreciation and meditation are not profound enough to overcome the obnoxious instinctive tendency, and the individual succumbs. In some instances we observe most extraordinary inhuman methods and procedures with which an impulsive act is committed. Morbid impulses may be manifest, not only in criminal acts of a gross nature, but also in minor acts. Theft, kleptomania, incendiarism, passion for episodic vagabondage are very frequent occurrences in mentally deficient persons. The tendency to excesses is commonly observed in these cases. The sexual sphere is particularly involved. The impulse for sexual satisfaction is sometimes so great that it overcomes the voice of reason and terminates in a criminal act. Quite frequently sexual passion is associated with perversion

and the feeble minded individual abandons himself to unnatural acts on animals, cadavers, and on himself. In the domain of sexual perversion we find a great variety of phenomena. Exhibitionism consists of an irresistible impulse to expose the genitalia. Fetishism consists of a voluptuous desire produced either by the sight or contact with certain objects, such as a female skirt, shoes, chemise, etc., or else by an odor. Sadism consists of a sexual excitement produced by inflicting injuries on others, such as pinching, biting, flagellation, etc. In masochism the individual feels a sexual satisfaction in undergoing suffering inflicted by another person. Homosexuality or sexual inversion consists of a sexual passion for the same sex, viz., man for man, woman for woman.

To sum up the entire picture of mental deficiency, except in idiocy and imbecility, we find the following characteristics: There is a profound insufficiency of moral conscience, which may present all degrees. Such a status of moral conceptions enters largely into the formation of abnormal thoughts and acts, and an individual of this category falls easily under undesirable influences. The mode of feeling and reacting deviates fundamentally from physiological conditions.

In the preceding pages the essential features of mental deficiency have been briefly depicted. We have seen that the two important elements of the personality, namely, the intellectual and emotional, no longer preserve the parallelism of the normal individual. The intelligence being feeble, has no more inhibiting power over the moral personality. Struggle against passions does not exist or exists in a small degree. Impulsive acts are characteristic. Mentally deficient individuals possess either an emotivity with exaltation in which great impulsiveness, sudden anger, extreme anger, violence, and brutality are conspicuous, or else emotivity with depression in which they exhibit extreme timidity, extreme shyness, or a tendency to solitude, so that the resemblance with the attitude of a savage is in some cases striking. In some cases these conditions may alternate. In all cases are present morbid tendencies, such as lying, stealing, excesses in all directions, perversions of all varieties, especially of a sexual nature. It is evident that the impulsive acts of the mentally deficient individuals are the expression of lack of control of ideas over passions. As the cerebral centres are the source of ideas and of their association, we observe them here in a state of collapse; they appear to be withdrawn from the chain of mental activities. The impulses are no more under the control of the cerebral centres which ordinarily regulate our actions, but they exercise their influence on the motor sphere by producing an excessive activity. In such cases naturally there can be no choice of action, each movement is the immediate result of sentiment. The acts are unconscious, they must be executed because they are out of the field of struggle which normally exists between conscious reasoning and the claims of passion. The acts are, therefore, mechanical, automatic, and of a reflex nature. Not infrequently mentally deficient individuals complain of having no recollection of certain impulsive acts. As memory

consists not only of the faculty of retaining impressions, but also of reconstructing former ideas and sensations, and as during an impulsive act the latter particularly suffer, it stands to reason that the above mentioned cases of amnesia deserve special attention. This opens an important chapter of the responsibility of mentally deficient individuals before the law.

In the contribution entitled, Medical versus Legal Responsibility (*Journal A. M. A.*, September 18, 1909), mention was made by me of the generally accepted test of "right and wrong" in considering the mental responsibility of individuals who happen to commit criminal acts. I pointed out the injustice and scientific inaccuracy in using that test. I brought forward examples of various mental affections in which, despite a psychic disorder, the conception of right and wrong may well be preserved. A pathological state of mentality is characterized by a more or less marked diminution or even abolition of the power of deliberation, of will, of self control, and yet the ability of understanding that an act is morally wrong or forbidden by law may be present in its integrity. Apart from certain psychoses this view holds good in the large category of mental deficiency which we are considering now. This subject is of a great practical importance, as we deal here, not with insanity or qualitative changes of mind which are acquired in adult life, but with quantitative deficiencies inherent to the individual. The idiot and the low grade imbecile cannot be expected to realize the enormity and the lawlessness of a criminal act but when an attempt is made to apply the classical legal test to cases of milder intellectual weakness, to the large group ranging between imbecility and simple backwardness, we are bound to appreciate its inapplicability. In the description of mental deficiency given on the foregoing pages we have seen, beside a certain degree of intellectual inferiority, a certain inaptitude to acquire knowledge, to perform mental operations of a more or less complex nature, but also and particularly an inherent deficiency of inhibitory power. We have seen that the whole existence of the mentally defective is composed of incidents of an instinctive nature, as instinct predominates in them and, therefore, their actions are invariably the result of impulse. These individuals may be fully aware of the illegality of a certain act, they may fully realize that murder, assault, arson, deception, which they commit are morally wrong and punishable by law, and yet they cannot, by reason of the very nature of their mental inferiority, be held totally accountable for their actions.

When an individual's moral conscience is not completely developed; when judgment and will power are wanting; when egotism is in a pathological state; when envy and hatred are intense and may be directed toward the dearest and nearest; when impulsive tendencies are conspicuous; when a thorough appreciation of acts and meditation is intrinsically not profound enough to overcome instinctive tendencies; when all these phenomena characterize essentially mentally deficient individuals, phenomena which constitute an integral part of their abnormal make-up—the problem of mental responsibility may

be solved without special difficulty. It requires no special stretch of imagination to see that individuals mentally inferior, as depicted above, possess inferior and defective conceptions of right and wrong. The discrimination between the two is naturally faulty. They may recognize the illegality of an act, viz., that punishment by law may follow, but the fundamental and social value of a lawless act is not altogether accessible to their abnormal or defective intellectual and moral personality. It is therefore evident that their responsibility can by no means be total; it must be limited. The established legal test of right and wrong cannot be applied to these cases, and if it is applied, as is frequently done, the results are bound to be disastrous so far as the administration of justice is concerned.

Those who create laws and those who administer justice view, with very few exceptions, only the social side of the law and usually are not at all interested in psychological and medical studies which present a different concept of criminality and of the criminal himself. It is true that penal legislation and legal medicine are distinct and separate sciences, but positive criminology must rely on both branches of human knowledge. An intimate unity of these two sciences is an indispensable and an essential condition of progress. Criminology has for its object the formation of positive laws concerning crimes and the discovery of remedies. With this object in view it searches the truth wherever it can be found, and takes from medical and legal sciences data which it needs to form a scientific foundation. By the union of the two sciences the old and too narrow boundaries of human conception of liberty and mental responsibility will be broken and progress will be assured. Our present knowledge of normal and pathological processes in the psychic sphere, the proper appreciation of abnormal mental operations, enable us to avoid errors in administering justice. To accomplish the latter, responsibility and irresponsibility must be viewed from the standpoint of broader principles than heretofore. Human liberty and responsibility are two most serious elements of life than cannot be dealt with in a purely technical manner. In studying a crime, it is essential to study the criminal and in each crime we must distinguish two factors, viz., the conditions under which it was committed and the psychic characteristics of the author of the crime. The degree of responsibility should be established in accordance with the essential features of the mental status of the criminal. That the conception of limited responsibility is gaining ground, is evident from the modifications which are being introduced in the penal codes of several countries. Thus in Norway, Siam, Russia, Switzerland, Japan, Austria, and Germany, various criminological projects are being considered with the view of giving legal recognition to the idea of partial responsibility. The characteristic psychic elements of mental deficiency as described above are sufficiently conspicuous, and the very nature of these characteristics which constitute an integral part of the special make-up of feeble minded individuals, demands recognition when the problem of mental responsibility presents itself.

STUDY OF DRUG ACTION.*

Fourth Paper,

BY THOMAS J. MAYS, M. D.,
Philadelphia.

ANESTHESIA.

Anesthesia is that state of general narcosis which is induced by the inhalation of large doses of ether, chloroform, nitrous oxide, bromoform, ethyl bromide, etc., with the object of preventing pain in surgical operations, in parturition, and in diseases of a painful nature.

That which is of cardinal value in the study of this subject is the question of ascertaining how anesthetics act on the brain and nervous system, through which they bring about this state of general insensibility. What is the intimate nature of this mechanism? Is it an interference with the brain blood supply; an arrest of oxidation, or of tissue change; a suspension of nerve molecular vibration; a dissolution of the fatlike substance in brain and nerve structure; a swelling of blood cells; or some other physical or chemical modifications which have been held as possible causes of this intoxication?

From all the evidence that can be gathered on this point, it appears certain that the general principles of anesthetic action go deeper than the foregoing indications would lead us to believe, and that, when this proposition is reduced to its lowest physical terms, it is nothing but the inevitable result which follows the action and reaction between two unlike physical forces. When a powerful force like that of an anesthetic clashes with the forces of life like those inherent in the brain and nervous system, the principal functions of these structures are called into temporary abeyance, while at the same time there goes on a tendency which aims toward progressive destruction of life.

Anesthesia is like a windstorm in which the waves, the floods, the uprooted trees, the destruction of property and life are merely the debris of its furious onslaught; so the morbid changes which are wrought and left in the framework of the brain and nervous system simply bear the impress of the destructive power of the anesthetic.

NO HAPHAZARD DISTRIBUTION IN ANESTHETIC ACTION.

Although anesthetics are, in great part at least, directly limited in their influence to the brain and nervous system, there is no reason for believing that these aggressive forces overflow the nervous textures in a random manner, but facts seem to point out that their course of activity is, in a large measure, governed by the biological age-resistance of the different nerve areas affected by them. This is due to the operation of the general biological law, that the older organs of the animal body have greater maturity and possess more resistance to inimical and hurtful influences than organs of later development. Hence, there is every reason for believing that the medulla oblongata, with its richly endowed nerve centres, and which is older both from an ontogenetic and phylogenetic standpoint

than the brain, possesses a much greater degree of resistance than the latter, and that it will withstand assaults of the anesthetic process, before which the brain functions are crippled and overthrown.

NARCOSIS PRECEDED BY STIMULATION.

Before going further, it is important to note the fact that during and directly after inhaling a whiff or two of an anesthetic, there is a distinct increase in the pulse and respiration frequency, associated with a feeling of exhilaration and general well being, which are undoubtedly due to the stimulant action of the small dose first inhaled. That this view is correct is confirmed by the fact that as the inhalation procedure advances and the narcotic stage is fully established, the increased pulse and respiration rate is replaced by a slowing of both of these functions, and the feeling of exhilaration is replaced by irrational talk, irregular muscular rigidity, etc., symptoms which have nothing to do with those that are caused by legitimate stimulation.

NARCOSIS A PARALYTIC PROCESS.

Anesthesia is, therefore, a paralytic and not a stimulant process, which, primarily, involves the cerebral functions; next, that of the medulla oblongata, and finally that of the sympathetic nerve supply. Among its symptoms are the following: Flushing of the face, impaired muscular power in the lower extremities, loss of knee and skin reflexes, voluble talking, contraction of pupils, emotional excitement, spasmodic rigidity of the principal flexor muscles, loss of consciousness, increased salivary secretion, congestion of the face, and slowing of the respiration and the pulse. As the anesthesia becomes more profound, the pupils dilate, the muscular system becomes more completely relaxed, respiration is stertorous or labored, and the skin is pale and cool, although perspiring.

STAGES OF NARCOSIS.

Taken as a whole, the symptoms above enumerated of anesthesia-narcosis chiefly fall into three groups, so far as their origin is concerned.

First: Those which are due to paralysis of the intellectual and emotional functions of the brain.

Second: Those which are caused by a loss of the power of muscular coordination.

Third: Those which are the result of that stage of the narcotic process which tends to impair and destroy the controlling functions of the respiratory and circulatory centres in the medulla oblongata.

The disturbances of the brain which are caused by the anesthetic may be classed among the less serious, although, perhaps, the more spectacular manifestations of all these symptoms; hence, it is of greater moment to draw thoughtful attention to the second and third groups of symptoms, inasmuch as they represent a particular phase of the anesthetic drama.

THE GIST OF MUSCULAR CONTRACTION.

Before we are able to obtain a clear perspective of the rationale of the deranged muscular action which accompanies anesthesia, we must divest our mind of the notion that irregular muscular contraction, spasm, convulsion, etc., are the product of exaggerated or exalted energy derived from the supplying nerve, and that the greater the degree of

*See this JOURNAL, August 11, November 26, 1910, and January 1, 1911.

nerve irritation or excitement, the greater will be the degree of muscular activity. The facts illustrate the very reverse, viz., that under normal conditions the motor nervous system and the muscular apparatus maintain a reciprocal relation. The power of contraction is, of course, vested in the muscle, and the nerve conducts the impulse which incites the muscle to contraction. In other words, the latter regulates and coordinates the function of the former; but, if for any reason the nerve becomes enfeebled or incapacitated to transmit normal impulses, as is the case when it is subjected to anesthetic narcosis, it loses its power of control over muscular contraction to such a degree that the latter is metamorphosed into various bizarre and purposeless manifestations, like spasms, convulsions, etc. Therefore, these abnormal characteristics depict that stage of anesthesia in which the muscle is in large part severed from its normal nerve supervision, while in the still later stage of paralysis, or complete muscular relaxation, there is still enough vitality reserved in the muscle to maintain its circulation, nutrition, temperature, etc., and to preserve its physiological continuity.

BREATHING AND CIRCULATION CONTROL.

In a further analysis of the course and symptoms of anesthesia, there remain to be considered those of the third group, already referred to, which have to do almost exclusively with the centres of circulation and of respiration, and which, like the centre of muscular coordination, are situated within the medulla oblongata, and it is a matter of primary interest fully to appreciate that the responsibility of these centres in the course and process of anesthesia is much more momentous than that of any other, because these functions are more intimately associated and interwoven with the great vital interests of the body.

BIOLOGICAL AGE OF LUNGS AND HEART.

As has already been suggested, a young organ in a biological sense is more immature and more prone to disease and other inimical influences than an older one. This is well shown in the case of the heart, the biological age of which far exceeds that of the lungs. In the lower forms of life the heart and the circulatory organs are among the earliest differentiated structures, and even in mammals it develops and begins its function early in the history of the embryo. The lungs, however, are not seen until in the stage of fishes, when they appear only as swimming bladders, without respiratory capacity. Even in human life the lungs possess no functional activity until the time of birth, and then begin functioning only in the most precarious manner. From Dohrn's observations (*Verhandlung der deutsche Gesellschaft für Gynäkologie*, 3 Congress, 1889, p. 107) the lungs of the newborn remain atelectatic for the first three days of life, and only after the fourth day does respiration become comparatively normal. This also conforms with Glockner's experience (*Centralblatt für Gynäkologie*, 1890, p. 1), who reports the history of three fetuses which were sixteen, seventeen, and twenty-three cm. long, respectively; the first of which had made eleven, the second nine, and the last eight respiratory movements. They lived from half an hour to an hour

and a half, and their lungs were entirely empty of air.

But immaturity of the lungs signifies a great deal more than appears on the surface. It means that their nerve supply, the vagi and their nuclei, are likewise immature. For Holm's investigations show (*Anatomy and Pathology of the Dorsal Vagus Nucleus*, *Virchow's Archiv.*, cxxxi, p. 78) that the respiratory nerves, in common with the lungs, are slow in maturing. He examined eleven human fetuses, six of which were dead at birth, and five were prematurely born. Of the latter, two died of pneumonia, one of convulsions, and two of pulmonary atelectasy. In the six born dead, the dorsal vagal nuclei were undeveloped and devoid of medullated fibres. In the five which were prematurely born and breathed imperfectly for some days, the dorsal vagal nuclei were developed except in the dorsolateral section, but contained no medullated nerve fibres. From these and other investigations, Holm concludes that the vagus nuclei are not fully developed in sucklings for a month or two after birth.

As has already been suggested, it appears that the most hazardous part of the whole anesthetic problem circles around the degree of resistance which the respiratory and the circulatory centres are able to concentrate in the fight against the devitalizing process of narcosis.

SAFETY AND DANGER SIGNALS OF NARCOSIS.

The question, then, that naturally arises in this connection is, What are the safety and what are the danger signals of anesthesia? This may, perhaps, be answered best by first considering in a categorical manner the salient symptoms which arise in the more normal course of this process, and then giving a comparative view of the symptoms which develop when narcosis is pushed to a point approaching the vital limit and at the same time define the related underlying functional changes which give rise to them.

1. *Pulse*. Normally, as previously stated, the pulse is accelerated during the first two or three minutes, and afterward drops to a point at or even below the normal frequency in both ether and chloroform anesthesia. If this order is reversed (i. e., if the pulse, instead of coming to a normal level, becomes accelerated, intermittent, or irregular as the narcosis proceeds) it is evidence that the blood is either saturated too rapidly with the vapor, or that the heart's action is inherently defective. In the former instance it is an indication that the normal controlling impulses which are sent out by the circulatory centre and by the ganglionic nerves are becoming seriously involved in the narcotic process.

In this connection it is very appropriate to quote Doctor Anstie, the illustrious authority on the action of alcohol, ether, and chloroform, who in his work, *Stimulants and Narcotics* (p. 383), says that "when the impregnation of the blood takes place with moderate rapidity, the sympathetic nervous system is the *ultimum moriens*, and death begins at the lungs. When, on the contrary, the circulation becomes very rapidly charged with a large proportion of chloroform, the narcotic effect may fall with such force upon the sympathetic nerves as to extinguish their

vitality at once" and produce "instantaneous paralysis of the heart."

It is probably the serious functional derangement which is impressed by the anesthetic ordeal on the heart and on its ganglia, to which Doctor Anstie refers as being chiefly instrumental in aggravating the danger of narcosis. This is especially true in relation to the ganglionic system, for it has been shown experimentally that if the latter is paralyzed by large doses of chloroform the bloodvessels dilate, the blood pressure sinks, and the heart's action is arrested—a condition from which it is resuscitated, if at all, with the greatest difficulty.

2. *Respiration.* As in the case of the pulse, the respiration, both in ether and chloroform anesthesia, is hurried in the first few minutes and then relapses to or below its normal rate. In some instances, especially in women or nervous men, the respiration is hurried more than ordinarily in the beginning, but becomes more calm as narcosis supervenes.

From all the evidence that can be mustered it must be admitted that chloroform possesses more powerful anesthetic properties than ether; and that, therefore, it has greater attendant evils than the latter; yet, on the other hand, it must be owned that the narcotic processes of both move on similar lethal paths. The danger signals of both, so far as the pulse and respiration are concerned, manifest themselves in a weak, irregular, intermittent, fluttering, or running pulse; and in slow, labored, gasping, or stertorous breathing. These complications indicate a grave peril, especially when they develop in connection with great, sudden, pallor and wide dilatation of the pupil.

Moreover, snoring, or stertorous breathing, while a characteristic and legitimate manifestation of deep ether and chloroform narcosis, is another borderland symptom. Superficially, this phenomenon merely stands for a profound relaxation of the soft palate muscles, which receive their innervating fibres from the respiratory centre in the medulla oblongata, and yet, its deeper significance comes in the shape of a warning through a new channel, that the latter centre is verging toward a dangerous degree of paralysis.

There are several other symptoms incidental to this process which may be regarded as danger signals, although of less importance than those just referred to. Among these are vomiting and involuntary passage of feces and urine toward the end of anesthesia, which are not occasioned, however, by a neglected clearing out of the stomach, rectum, or bladder, in the preliminary preparations, but by a loss of control to a large degree of the involuntary musculature of the body in consequence of a profound depression of the ganglionic nervous system.

SAFETY OF ETHER AND CHLOROFORM.

In spite of all the warring controversies that have been carried on during the last half century over the question of the comparative safety of ether and chloroform, it must be acknowledged that the direct fatal eventualities are much smaller under the use of the former than under that of the latter. However, ether is only more free from fatal complications for the reason that it is less powerful, and not

because it has a "stimulant effect on the action of the heart," not possessed by chloroform, as is held by some authorities. They are both destructive to life by reason of the fact that large and dangerous quantities of these drugs are required to bring about the necessary degree of insensibility, as has already been pointed out. Chloroform is much more potent, because it contains no oxygen, comprises a molecular weight that is one third greater than ether, and a specific gravity and a boiling point double those of ether.

ETHER NOT A STIMULANT IN NARCOSIS.

Parenthetically, and as a measure of precaution, it may be remarked that the theory of the stimulant action of ether on the heart in a state of narcosis would lead to disaster if literally carried out. For if in deep anesthetic sleep the heart's action begins to fail, the stimulant theory would call for the administration of more ether, at a time when the drug should be withdrawn and well defined measures of relief instituted. Deep narcosis, whether produced by ether or chloroform, is a condition the very opposite to that which is caused by stimulation, and there is no more good reason for advocating that chloroform would not be just as good a stimulant in chloroform narcosis than ether is in ether narcosis. Both would be worthless.

HEART MORE RESISTANT THAN THE LUNGS.

In one of the early paragraphs of this article the opinion is expressed that because the heart is biologically an older and, consequently, a more mature and stronger organ comparatively than the lungs, it should offer greater resistance to incidental antagonistic agencies than would be the case with the latter organs, and that the mode of death from ether and chloroform should rather come through an arrest of the breathing apparatus than through the heart. The history of anesthesia shows, however, that this relationship is seriously disturbed, for it is well known that deaths from the anesthetics just named have occurred in which this order was reversed, or at least in which both organs ceased functioning at the same time.

But it must not be overlooked that the fulfillment of a law demands compliance with its conditions, and one of the latter is that a phenomenon like a death from ether or chloroform, involving either the lungs or the heart as an end result, must be compared with similar endings occurring under other and perhaps more normal circumstances. It may be asked, What is the order of implication of those two organs when death supervenes through these channels in the course of natural disease, or when it results from the effects of poisons administered in moderately large, but not in overwhelming quantities?

The literature of medicine possesses abundant evidence to show that, when under ordinary circumstances both of these organs have an even chance of demonstrating their resisting power against the inroads of poisons or of disease, the heart is the last to succumb in the struggle. Thus the narcotic effects of alcohol, ether, chloroform, opium, nicotine, ergot, etc., bring about an arrest of the respiratory function and afterward the heart's action

ceases, provided that these drugs are administered in maximum, but not in overpowering and crushing doses. The same is true in disease in which these organs are particularly implicated as end results. Thus, in apoplexy of the medulla oblongata, in basal meningitis, in tumors of the fourth ventricle, in Landry's paralysis, etc., there always exists a stronger tendency toward arrest of the lungs' movements than those of the heart.

DIFFERENCE IN RESISTANCE BLOTTED OUT BY LARGE DOSES.

In spite of the fact that biological, clinical, and experimental data point out conclusively that the heart centre possesses a greater degree of resistance to hostile forces than that of the respiratory organs, there is no warranty that either of these structures has the power to withstand the assault of ether or chloroform when given in overwhelming doses. Under these circumstances these agents descend with such vigor and power on the impressible nervous system that the naturally endowed difference of resistance between the lungs and the heart is blotted out and disappears in the general vortex of ruin and paralysis that ensues. An ordinary freshet wipes out a wooden building or a hut, but stands helpless before a stone walled house; while a great flood invincibly rushes on and wipes out both without hindrance or restraint.

RESPONSIBILITY IN ANESTHESIA.

One of the vitally important deductions to be made from the foregoing is that no anesthetic should be given in doses large enough to deluge the blood with its vapors to such a degree that there is imminent danger of bringing about a collapse of the respiratory and the cardiac movements at the same time. Another is, that the perilous lethal tendencies of these drugs can only be forestalled by the cautious, well trained, and painstaking administrator. Upon him devolves the responsibility of reading and interpreting the danger signals aright, and of forcing the anesthetic to the limits of expediency, and at the same time steering clear of the promontory of Scylla and avoiding wreck in the whirlpool of Charybdis.

PRECAUTIONS AND RELIEF MEASURES IN ANESTHESIA.

1. Special training of anesthetists.
2. Pure drugs.
3. Accurate doses.
4. Begin with weak vapor.
5. Use four per cent. chloroform vapor, mixed with air or oxygen.
6. Note any sudden change in respiration or circulation.
7. In threatened respiratory paralysis, resort to pulmotor or artificial respiration.
8. In cardiac syncope, employ the pulmotor, massage the cardiac region; and as a final measure opening of the thoracic cavity and compressing and relaxing the heart muscle with the fingers has been advocated.

THE ELECTROCARDIOGRAPH,*

In Diagnosis and Prognosis,

BY EDWARD B. KRUMBHAAR, A. B., M. D.,
Philadelphia.

In the first decade of this century, numerous valuable facts about the anatomy and physiology of the heart were added to medical knowledge. The origin of the normal heart beat in the sinus node of Keith and Flack, its transmission to the ventricle through the auriculoventricular node of Tawara, the bundle of His and the Purkinje fibres, were first appreciated at this time. Pathological and clinical evidence also quickly accumulated to show that these specialized muscles structures were particularly concerned with most of the disorders of mechanism of the heart beat, so that in the past ten years they have occupied a prominent position before the medical profession.

Owing to two instruments of precision, the polygraph and electrocardiograph, we now know that all cardiac arrhythmias may be divided into the following classes: Sinus arrhythmias (juvenile, respiratory, etc.); extrasystoles (auricular, ventricular or nodal, bigeminy, dislocation of the pacemaker, etc.); sinoauricular heartblock; auriculoventricular heartblock (prolonged A-C interval, dropped beats, partial and complete block); block in either branch of the bundle of His, paroxysmal tachycardia (auricular, ventricular); auricular flutter; auricular fibrillation, and pulsus alternans. As the prognosis and treatment of these various arrhythmias differ radically in many particulars, it becomes of the greatest practical value to know with which we are dealing in a given case. This service can be rendered in many instances by the polygraph, which also has the advantage of being portable. It has, however, two serious disadvantages; namely, that from many patients it is impossible to get tracings of any kind and, secondly that, even when satisfactory tracings are obtained, they are frequently capable of several interpretations. The electrocardiograph, on the other hand, once a patient has been connected with a properly standardized instrument, is sure of giving a record that is capable of only one interpretation. Beside being the most accurate analyzer of various cardiac arrhythmias, it also furnishes absolute evidence about the relative size of the different chambers of the heart, about the site of origin of abnormal stimuli, about the time relations of the various events of the cardiac cycle, and about the cardiac response to various drugs, and it bids fair in many ways to give information about the cardiac muscle that is obtainable in no other way. As we are gradually coming to realize that the condition of the myocardium is after all the most important single factor in the prognosis of heart disease, it is hard to overestimate the actual and potential value of this instrument.

PRINCIPLE.

The electrocardiograph as a clinical instrument of precision is due to Einthoven's invention in 1903 of the string galvanometer. This depends on the

*Read, by invitation, at a meeting of the Germantown Branch of the Philadelphia County Medical Society, December 16, 1915.

principle that a conducting silvered quartz string or platinum wire, lying in a strong magnetic field, if sufficiently sensitive, will move vertically to the lines of force when a current passes through it. As every contracting muscle initiates such a current (the part at which the contraction starts becoming electrically negative to the rest of the muscle), the contraction of the cardiac musculature also causes a series of such deflections. If the extremities of the patient are connected with the galvanometer by suitable electrodes, these minute currents may be perpetuated as a graphic record by photographing the shadow cast by the moving string on a moving sensitive film or plate. The galvanometer and registering apparatus are so arranged that a contraction starting nearer the base of the heart and proceeding toward the apex will cause a deflection of the vertical string to the left, or upward on standardized records. The field of usefulness of the electrocardiograph and its limitations will be best understood if it is remembered that it merely registers changes of electrical potential occurring between the two electrodes in use.

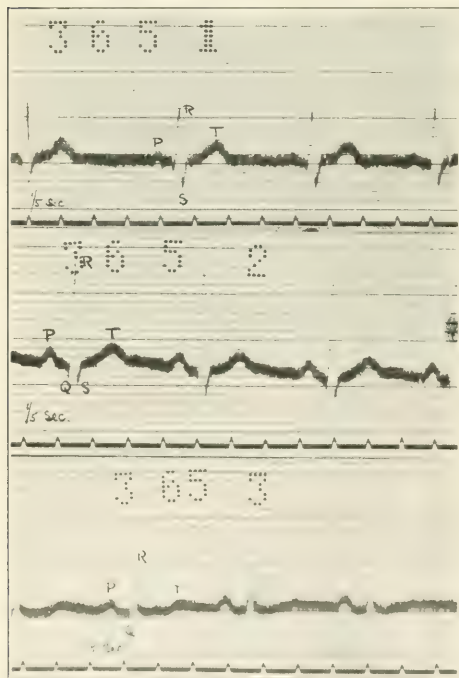


FIG. 1.—Normal electrocardiogram. Taken from the three standard leads. Lead I, right arm to left arm; lead II, right arm to left leg; lead III, left arm to left leg. Note that R is the largest. In this, as in all illustrations, 1 cm. deflection of string (i. e., five of the small ruled lines) represents a change in potential of one millivolt. Time record, $\frac{1}{5}$ second.

Muscle tremor, when present, are consequently recorded as well as the heart beat.

The three leads (places for attachment of electrodes) adopted by Einthoven as best exhibiting the electrical changes caused by the heart beat, are as

follows: Lead I right arm to left arm (horizontal); lead II right arm to left leg (long axis of the heart), and lead III left arm to left leg (vertical). These leads have now come into general

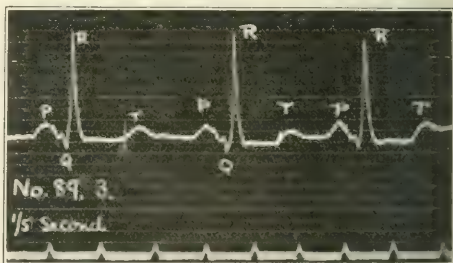
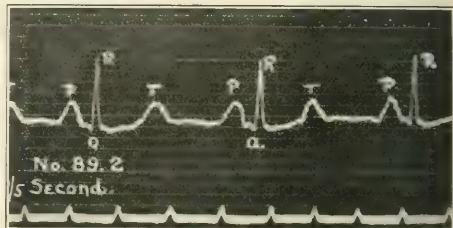
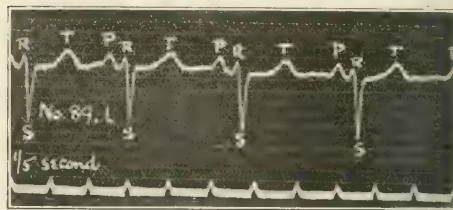


FIG. 2.—Preponderance of right ventricle. Curves from the three leads in a case of mitral stenosis, associated with auricular and right ventricular hypertrophy. In the ventricular complexes R₁ is almost absent and S₁ is very large, whereas R₃ is considerably larger than R₁. Note the unusually large P of auricular hypertrophy. The black background and white string of this illustration are due to the fact that it is taken directly on sensitive paper. In this, as in a few others of the illustrations, some lines have been reinforced for purposes of reproduction. The magnification of the string shadow is less than in Fig. 1.

use, and should always be taken in routine examinations. Leads may be taken in special cases, however, from any part of the body. A timemarker, fifths or twenty-fifths of seconds, allows a computation of the various time intervals.

THE NORMAL ELECTROCARDIOGRAM.

The normal mammal electrocardiogram (Fig. 1), consists of a single summit (P wave), due to contraction of the auricles, and to four deviations (Q, R, S, T) due to contraction of the ventricles. Of these four, R and T are the most constant, and Q and S are of little importance in the normal record. Though no two normal hearts give exactly similar records, the individual peculiarities are retained with remarkable constancy so long as the heart stays normal. Although the factors that cause the individual deviations are not clearly understood,

certain explanations are generally accepted. Thus the monophasic P summit is unquestionably due to the contraction starting at the sinus node and spreading through the auricle toward the ventricle.

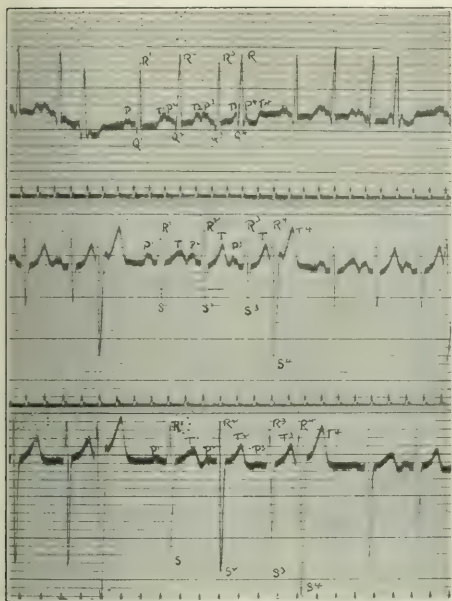


FIG. 3.—Preponderance of the left ventricle. Note that R_1 is here higher than R_2 , and that S_3 is the deepest of all. This case also shows interesting abnormal complexes, recurring in groups of four. It will be noticed that although the first three complexes of each group are rhythmical, yet the corresponding P and T waves of each group show constantly recurring small differences. The fourth complex is always premature, most probably a nodal extrasystole, and the whole represents a recurring "dislocation of the pacemaker."

This is followed by an inactive period, normally of 0.12 to 0.17 second, called the P-R interval and corresponding to the A-C interval of polygraphic tracings. The path followed by the contraction stimulus on entering the ventricle is a very complex one, not lending itself to representation by such deviations. The R deflection is considered as the evidence of the basifugal stimulus conduction in the ventricle. In cases where it is preceded by Q, it is assumed that the impulse has first been distributed to tissues near the apex and the predominating influence is for a short time basipetal. In the isoelectric period preceding T, a balance is maintained by the whole mass of the heart being in a state of contraction. The final deflection, T, is taken by some authorities as an indication of the driving force of the heart, represented by the circular muscle bands at the roots of the great arteries. It is usually upright, but may be diphasic or inverted. In lead III, this inversion is of little importance; in the other two, it is considered by some to have bad prognostic significance. In some cases, however, it is unquestionably a sign of digitalization of the heart.

Later investigations indicate that all upward deflections may be due to activity of the right ventricle,

and downward deflections to the left ventricle. The actual curve is the result of the algebraic addition or subtraction of these two influences. The significance of the presence or magnitude of the S in normal records is little understood.

PREPONDERATING VENTRICULAR HYPERTROPHY.

In hypertrophy of the heart, however, the size of S assumes great importance. Thus when the mass of the right ventricle has become relatively larger than that of the left (Fig. 2), S is extremely prominent in lead I, whereas the R of lead III becomes larger than that of lead II (normally the largest). Conversely, when the mass of the left ventricle has become relatively larger than the right (Fig. 3), as in aortic, arterial, or cardiorenal disease, S is extremely prominent in lead III, whereas the R of lead I has become larger than the R of lead II. These phenomena have been confirmed by experimental, orthodiagraphic, and post mortem evidence, and are considered by Lewis as the most trustworthy means of estimating the relative size of the two ventricles. Recent clinical evidence brought forward to contradict this view has not been sustained, but it is certain that the form of the electrocardiogram is influenced by the position of the heart in the body.

THE CARDIAC ARRHYTHMIAS.

The different types of cardiac arrhythmias are manifested by the electrocardiogram in the following manner:

Sinus arrhythmia.—In sinus arrhythmia, the auricular summit and the ventricular complexes (Fig. 4) are of the normal or supraventricular form; in other words, the impulse arises at the normal site and traverses the normal channels. That it is given

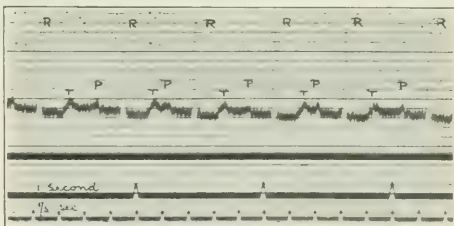


FIG. 4.—Sinus arrhythmia. Note that although all complexes are of normal shape, and the P-R interval is normal and constant, yet the P waves occur at irregular intervals, owing to arrhythmic stimulus production in the sinus.

out from the sinus, however, at irregular intervals, can readily be determined by measuring the varying intervals between the P summits.

Extrasystole.—Extrasystoles or premature contractions appear in the electrocardiogram in very striking guise. The ectopic origin of the contraction is shown by marked changes in the shape of the deviations. Thus in auricular extrasystole, the normal P usually becomes flattened out, or diphasic or inverted (Fig. 5). It is usually followed by a normal ventricular complex, and the pause is very rarely compensatory. Occasionally an auricular extrasystole may alter the succeeding ventricular complex, causing a so called "aberrant" complex.

This may vary considerably or only slightly from the normal.

Extrasystoles arising in the ventricle have been

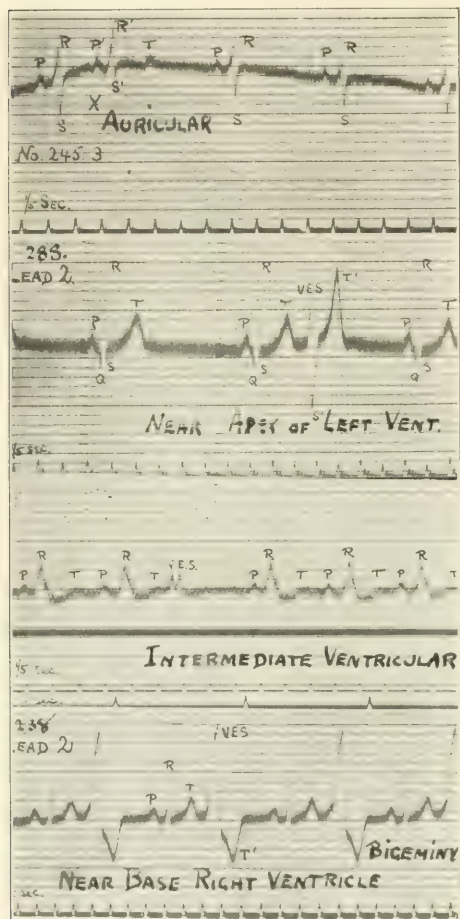


Fig. 6.—Types of extrasystole. A, auricular extrasystole. The normal rhythm is disturbed by the premature appearance of a P wave. In such cases it is frequently found to be of different outline than the normal or inverted. An auricular extrasystole is usually followed by a ventricular complex of normal outline, but may give rise to an "aberrant" ventricular complex, as in the present instance. Note the larger R and relatively small S of the form. The post extrasystolic pause is not compensatory.

B, ventricular extrasystole arising near apex of left ventricle. The deep downward deflection and large T wave indicate this extrasystole near the apex of the left ventricle. In lead III it would probably have had much the same form, and in lead I, resembled those of Fig. 7; although in a few cases the form remains the same in all leads. Note that there is no compensatory pause in this instance; such an extrasystole is said to be "interpolated."

C, ventricular extrasystole arising near base of right ventricle. Note the extreme height of the initial deflection, with the exaggerated inverted T. The deflection time of the extrasystole is considerably longer than the normal. The extrasystolic complex in lead III was identical with this, whereas in lead I it resembled that of Fig. 6. The normal rhythm resumes after each normal beat in the case causes a true bigeminy.

D, ventricular extrasystole (intermediate). Extrasystoles arising near the ventricular septum appear in various intermediate forms, such as seen in the third complex of this illustration. Note that the fundamental auricular rhythm is undisturbed. The post extrasystolic pause would be quite compensatory, were it not for the fact that the next succeeding P-R interval is shortened.

grouped into three main types, according to the site of origin. All are easily recognizable in the electrocardiogram and are characterized by the slowness and great amplitude of the deflections. Those arising near the apex of the left ventricle cause in lead I an unusually large deflection (corresponding to R of the normal) with an inverted T; in leads II and III, the deflection corresponding to S is usually deep with an extra large T. Extrasystoles arising near the basal portions of the right ventricle cause the reverse of this picture, i. e., deep S and large T in lead I, and large R and inverted T in leads II and III. Experimental stimulation of these areas in animals has produced similar electrocardiograms. Extrasystoles arising in the septum or intermediate positions give rise to a variety of anomalous complexes.

Extrasystoles arising in the junctional tissues (Tawara's node and His's bundle) are rare. In such a premature contraction, evidence of auricular activity occurs either very close to the ventricular

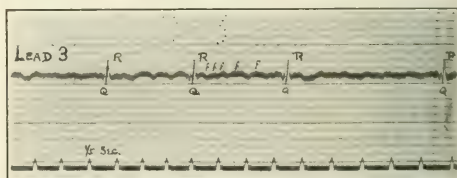


FIG. 7.—Auricular fibrillation. From a case of mitral rheumatic disease of long duration. Note the absence of P waves and the ventricular arrhythmia. The irregular waves of fibrillation occur over 300 to the minute, and obscure the T waves of the ventricular complex.

complex (shortened P-R interval) or synchronously with the ventricular complex, which is of the normal or supraventricular shape. The site of the impulse formation of the premature contraction usually remains the same for long periods. In some cases, however, the anomalous impulse may arise in several locations ("dislocation of the pacemaker") (Fig. 3).

Auricular fibrillation.—Fibrillation of the auricle is indicated in the electrocardiogram by three phenomena; first, the absence of P, the sign of coordinate auricular contraction; second, the presence of low, rapid waves of fibrillation; and, third, the irregular response of the ventricle. The fibrillation waves are best detected in lead III (Fig. 6), or by a special lead from sternum to vertebrae. They may be barely discernible, fine, or coarse. The ventricular complex is of supraventricular type, but may show such changes as those found in ventricular hypertrophy, deficient conductivity, etc. While the condition is usually permanent, undoubted cases of paroxysmal or temporary fibrillation have been observed.

Heart block (Fig. 7).—The various stages of heart block are easily recognizable in the electrocardiogram. In the earliest stage (delayed conductivity), the time interval between P and R is found to exceed the normal limit of 0.2 second. In the next, "dropped beat," the P-R interval gradually gets longer until after several beats, a second P follows before the ventricle has responded to the first

auricular impulse. On account of the varying P-R interval, accurate measurement shows a slight ventricular arrhythmia. Dropped beats may occur, however, without this gradual increase of the P-R interval. In partial block, every second, third, or fourth P (2:1, 3:1, or 4:1 block) is followed by

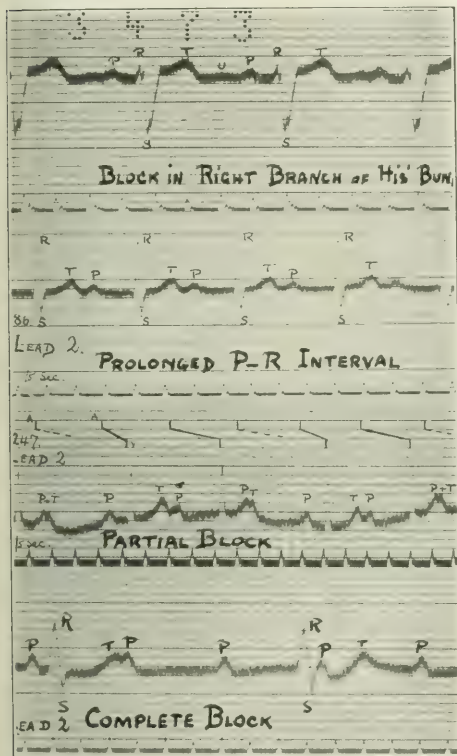


FIG. 7.—Heart block. A, prolonged P-R interval. From a case of paroxysmal tachycardia taken between paroxysms, the P-R interval is prolonged to 0.35 second. At other times, the P-R interval in this case was normal.

B, "dropped beat." From a case of mitral stenosis, taken during the recurrence of acute articular rheumatism. The temporary occurrence of partial heart block in this case indicates an acute rheumatic myocarditis of the junctional tissues. With subsidence of rheumatic symptoms, the rhythm returned to normal, the P-R interval remaining prolonged for several days after the dropped beats had disappeared. Note here the regular recurrence of P, the gradual increase of the P-R interval, until R fails to respond, and the resulting ventricular arrhythmia. In spite of the occasional superposition of P and T, each wave can usually be identified by measurement.

C, complete block. Note that the P wave now occurs quite independently of the ventricular complexes, i. e., there is no simple ratio between auricular and ventricular rate.

D, right branch of His's bundle. From a case of decompensated myocarditis, which has been for two weeks on large doses of digitalis. Note the notching of S and the prolonged deflection time of the R-S group (more than 0.1 second). The P-R interval is prolonged to 0.24 second. As both these signs were only present after large doses of digitalis, they were presumably due to the deficient conductivity caused by that drug. Note also the small U wave that is occasionally seen in normal records.

the ventricular response. In 3:2 rhythm, only one P in three is not followed by the ventricular contraction. The grades of block may change from moment to moment, even while a record is being made. In complete block, P recurs at regular in-

tervals, but bears no relation to the much slower, but also regular ventricular complex. The interpretation of these records is sometimes complicated by the coincidence of auricular and ventricular contraction. Careful analysis of the summation of the electrical effects thus produced will show evidence of each of the individual peaks.

A fairly common type of heart block that is only detectable by the electrocardiograph is that occurring in one of the branches of His's bundle. If one or other is deficient in conductivity, an anomalous complex results, which resembles that of right or left ventricle hypertrophy (*quod vide*), except that the deflection time is considerably lengthened, and notching of the R peak or S depression is frequent. If the right branch is deficient and the impulse reaches the ventricle through the left branch, the picture resembles that of left ventricular hypertrophy; and vice versa if the left branch is deficient. In the rare condition of sinoauricular block, occasional cycles are entirely absent, i. e., there is no evidence of either auricular or ventricular activity. It is assumed in these cases that the sinus impulse has been blocked before reaching the auricle.

Auricular flutter. This relatively common form of arrhythmia was discovered by means of the electrocardiograph, and it is still impossible definitely to diagnose the condition without its aid. The ectopic origin in the auricle of the rapid stimulus production is usually shown by the inversion of P in one or other lead (Fig. 8). If due allowance is made for the breaks caused by R and T, a regular rapid succession of P summits can be traced through the record. As the ventricle cannot respond to all the impulses from the auricle, a state of partial block is present. If two or three to one, the ventricular rhythm will be regular; if a three to two (3:2) rhythm exists, the ventricular response will of course be irregular. This arrhythmia, with the distortion of the succession of P summits by the superposition of occasional T summits, occasionally makes it difficult to diagnose true flutter from the coarse type of fibrillation.

Pulsus alternans. Many cases that show well marked alternation in the arteriogram, fail to show any abnormality in the electrocardiogram, which is evidence that the R peak is not a measure of contractility. Alternation of R may be present, however, in cases that may or may not show alternation in the arteriogram. This is taken to show that alternation may result from deficiency in irritability as well as in contractility, but the question is still quite undecided. Considerable variation may occur in the height of successive R waves (e. g., the changes in R due to respiration), without true alternation. If the respiratory factor can be excluded, this never occurs in the normal heart, and though its presence is not necessarily of grave import, it must be taken as a sign of myocardial trouble.

Paroxysmal tachycardia. Electrocardiographic records taken during a paroxysm of paroxysmal tachycardia, frequently show only two deflections (Fig. 9), R and a combination of T and the succeeding P. If these are separated, however, some abnormality in P usually betrays its ectopic origin (inverted, diphasic, or prolonged), if the paroxysm is

of auricular origin. In some paroxysms, however, if the new site of stimulus production is near the sinus node, P almost or entirely retains its normal

The former are characterized by the anomalous form of the ventricular complex; the latter by the very short or absent P-R interval.

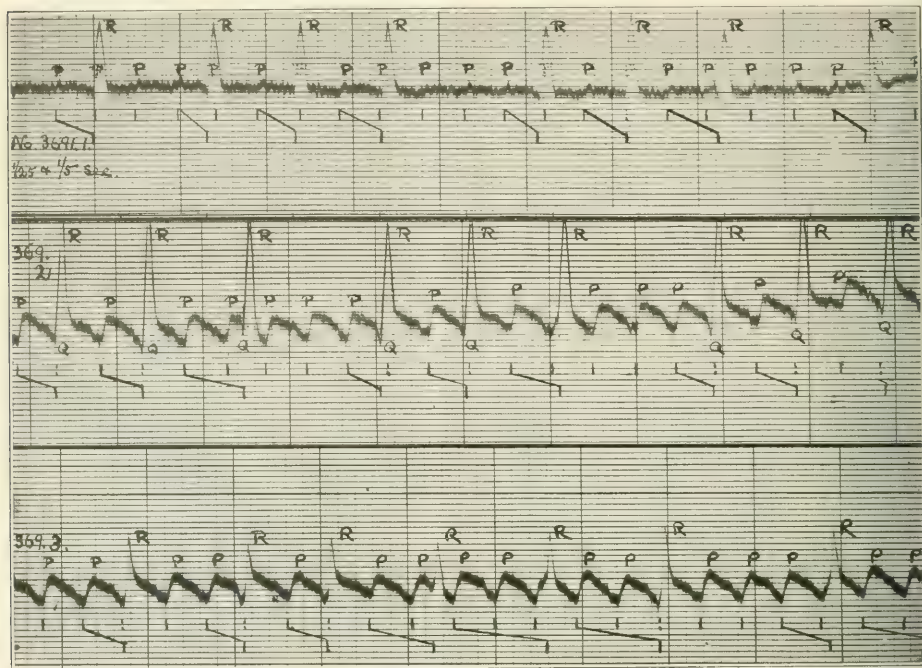


FIG. 8.—Auricular flutter. Curves from the three leads of a case of persistent auricular flutter, under observation for over two years. The marked ventricular arrhythmia is due to a constantly changing degree of heart block (2:1, 3:1, 4:1). For short periods a 3:1 block with regular ventricular rhythm was present. The auricular rate is over 300, the ventricular about 240. Time intervals of $\frac{1}{15}$ and $\frac{1}{25}$ second are recorded by heavy and light vertical lines.

shape. The end of a paroxysm is shown by the sudden slowing of the cardiac rate, with the appearance of a normal P followed by normal ventricular complex. Occasionally isolated auricular extrasystoles usually disturb the normal rhythm for a short

SUMMARY.

1. From the foregoing considerations, it will readily be seen that much of the information given by the electrocardiograph has not yet been properly appraised. In the analysis of cardiac arrhythmias, to be sure, most points have already been settled;

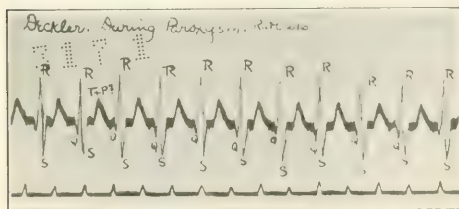


FIG. 9A.—Paroxysm of auricular flutter during an attack of paroxysmal tachycardia. Note the alternating height of R (this is further modified by changes due to respiration). Note also in each cycle that the bigger R is associated with a bigger Q and a smaller S. After the paroxysm was no longer found.

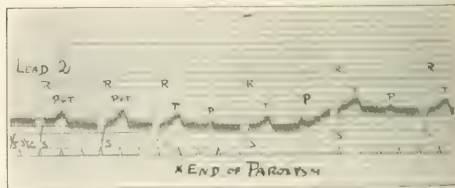


FIG. 9B.—Paroxysm of auricular flutter. Three leads of the paroxysm are reproduced to the left. The P-R interval is prolonged and P and T are superimposed. The rate is about 300, the rhythm suddenly drops to about 70, the P-R interval remaining prolonged. When the P waves of the paroxysm are visible, they are usually found to be of abnormal shape or inverted.

period after the end of the paroxysm. The paroxysm may end in a short transmission period of auricular or ventricular fibrillation.

Paroxysms due to heterogenic impulses arising in the ventricular or junctional tissues are rare.

but as an indicator of the condition of the heart muscle—the most important item in the prognosis and treatment of cardiac disease—the limitations and possibilities of the electrocardiograph have not

yet been realized. Like all other clinical instruments of precision, also, it is at the best but one of several aids to the discriminating physician.

2. Beside being the best analyzer of cardiac arrhythmias, the electrocardiograph furnishes useful and accurate evidence of the relative size of the different chambers of the heart.

3. It also locates the site of origin of abnormal stimuli, and accurately determines the various time relations of the cardiac cycle.

4. It furnishes the earliest evidence of a cardiac response to digitalis, and shows just how long a given heart remains under the influence of digitalis. Its possibilities in the domain of pharmacology have hardly been touched.

5. Repeated records give information in several ways about the progress of the disease, so that in the field of prognosis it is also a valuable aid.

6. With a second galvanometer and phonocardiograph attachments taking simultaneous records, all heart sounds may be registered and timed, thus giving permanent record of the time, duration, and quality of cardiac sounds and murmurs.

LARGE CONGENITAL HYDRONEPHROSIS IN AN INFANT SIX WEEKS OF AGE.

Removal by Transperitoneal Nephrectomy.

By M. S. KAKELS, M. D., F. A. C. S.,

New York,

Attending Surgeon, Lebanon Hospital; Consulting Surgeon, Rockaway Beach Hospital.

Not many cases of unusually large congenital hydronephrosis in very young infants have been recorded, consequently it is fair to assume that it is owing to the rarity of the condition that there is such a paucity in the literature. These tumors, if of fairly large size, can hardly fail of recognition, owing to the prominent physical signs they present.

On account of its rarity, the youth of the patient, the large size of the hydronephrosis, its rapid progress, and its successful removal by transperitoneal nephrectomy, this case seems of more than passing interest. The history, physical signs, and radiogram were typical of a condition in which an exact diagnosis was not impossible.

CASE. The infant, Leo G., was six weeks old when referred to my service at Lebanon Hospital, with the history that it was ventricose from birth. From the time it was born, both mother and the physician who attended her in her confinement, noticed a gradual and increasing swelling of the abdomen, which at the end of six weeks had attained such considerable size as to alarm the mother. At no time had the swelling decreased, but on the contrary it steadily grew larger and larger; otherwise the infant enjoyed unusual good health.

On account of this rapidly increasing swelling of the abdomen the child was sent to the hospital. Examination showed that its abdomen was greatly distended, and by inspection it was evident that the distention involved the whole of the belly. No region was more prominent than another. The swelling bulged from under the costal borders on both sides, and extended toward the symphysis. The surface was smooth and uniform, except toward the right flank, where an elongated nodular mass was felt. Fluctuation could be distinctly elicited. Percussion showed uniform dullness, except at the extreme left, where tympanic resonance was obtained, showing that the intestines were pushed over to this side between the mass and the abdominal wall.

Urine was voided naturally. The amount could not be

ascertained. The child did not look ill, its bowels moved normally, it took the breast well, and except for the enormously large abdomen, seemed in perfect health. The diagnosis was comparatively easy and lay between a malignant and nonmalignant growth of the kidney. Children up to the age of five or six years, are prone to an exceedingly malignant growth of the kidney. These malignant growths, however, do not give definite symptoms of fluctuation, and are attended with marked constitutional symptoms. There was an absence of this last characteristic feature, and the baby was of robust and healthy appearance. The presence of a positive liquid thrill obtained by tapping the abdomen with the fingers, together with the history from birth of a rapidly progressive swelling of fluid consistence, pointed rather toward a nonmalignant cystic tumor. We therefore felt we were justified in making a diagnosis of congenital hydronephrosis, although we were aware of the fact that such fluid tumors, if they are of large size, might be mistaken for an ovarian cyst with a long pedicle, or a pancreatic cyst, or an enlarged gallbladder, or a hydatid cyst situated outside of the kidney. We practically eliminated these because they rarely reach the size they did in this infant, at so young an age. Finally the diagnosis was corroborated by the x ray plate, which distinctly showed the tumor with the intestines pushed in front and to one side, between it and the abdominal wall, showing that we had to deal with a retroperitoneal growth. Even if our diagnosis was only presumptive, from a practical standpoint surgical interference was indicated.

The nature and uncertainty of the result of an operation was explained to the mother, who readily gave consent. On careful consideration, on account of its large size, it was deemed advisable to extirpate the tumor transperitoneally, through the anterior abdominal route, rather than through a lumbar incision, because it seemed more practical and safer, especially as the costocolic space in an infant six weeks of age is rather small for manipulation and removal of a kidney of this size.

On April 3, 1915, the second day after admission, the infant was etherized by the drop method, and an incision beginning at the costal border and extending down almost to Poupart's ligament, through the widely expanded rectus was made. The peritoneum was incised, and beneath it the large bluish sac of the pelvis of the kidney shone through the posterior parietal peritoneum.

The intestines were held to the left by gauze packs, and the anterior layer of the mesocolon of the ascending colon was incised, the large sac being delivered outside of the extensive opening in the abdominal wall. With a trocar and cannula about 900 c. c. of straw colored uriferous fluid was withdrawn. This is an enormous quantity when we consider that in the normal adult the capacity of the pelvis of the kidney is from ten to twelve c. c. (Unfortunately it was thrown away by mistake, and no chemical test was made for urea or uric acid.) There was no anomalous blood supply. The renal vessels did not overlap or compress the ureter, but were spread out in fan shaped fashion over the large sac, characteristic of a congenital condition.

The ureter was found bound down to the surface of the greatly distended pelvis, by very fine adhesions, which did not, however, compromise its lumen. It was dissected from the sac up to its insertion into the pelvis. After the fluid had been evacuated, the sac collapsed and, with the enlarged kidney, was completely severed from the vessels and ureter. There was no loss of blood. The posterior parietal incision was closed, the intestines were replaced in their normal position, and the ab-

domen was closed with layer sutures in the usual manner.

The infant made an uninterrupted recovery without one untoward symptom. After twenty-four hours, it took the breast with avidity, showed no rise of temperature, voided naturally, and had normal bowel movements. It left the hospital on the fourteenth day after the operation, perfectly well, with the wound healed by primary intention.

Judging from the amount of fluid that was withdrawn, together with what was lost, we estimated that the kidney and the sac, with contents, must have weighed at least two pounds. Macroscopic examination of the sac showed that it was continuous with a greatly enlarged kidney (three times its normal size) made up entirely of a distended pelvis, of globular form, and not pear shaped. The ureter was found perfectly normal throughout its whole length, with no dilatation or stricture. Its insertion into the pelvis was at some distance from the vesicles, and seemed to enter the wall of the sac in an



Fig. 1. Radiograph showing intestines pushed aside by hydronephrotic sac.

oblique direction. The ureter lay flat on the surface of the sac. Its obliquity of entrance and its anomalous position might have been an etiological factor in the causation of the hydronephrosis.

If the flow of the kidney secretion is retarded or impeded, there follows a dilatation of the pelvis and its calices, which under continuous back pressure from obstruction of the outflow of urine or pathological secretions, finally leads to the development of cystic tumors, often of enormous size. Should the contents consist only of retained aseptic urine, the tumor is characterized as a hydronephrosis or uronephrosis. If the contents become purulent, pyonephrosis results. The obstruction in any hydronephrosis or pyonephrosis may lie in the upper or lower urinary tract.

The causes of hydronephrosis are congenital or acquired. The term, congenital hydronephrosis, is limited practically to intrauterine conditions, as evidenced in the fetus and newborn child, which, if not absolutely incompatible with life, are at least bound to cut it short within a few months after birth has taken place, or it may include cases which while they had their starting point before birth, continued to grow in some rare instances for years after.

The acquired varieties of hydronephrosis are numerous, and are generally produced by kinks or twists of the ureter, such as occur in connection

with movable kidney, or the hydronephrosis may be caused by pressure exerted on the ureter from without, by abnormal bloodvessels, tumors, etc., or by obstruction of one or both ureters by stone or tumor situated anywhere in its course, and often within the bladder. In rarer instance, enlargement of the prostate, stricture, or even phimosis may produce this condition, while the result of an inflammatory condition in or around the ureter compromising its lumen, may be a potent factor in causing an obstruction to the urinary outflow from the kidney.

Congenital uronephrosis arises principally from anomalies of the ureter due to developmental defects, such as for instance a blind terminal, a narrow outlet in the bladder, an oblique insertion of the ureter into the pelvis, instead of the usual funnel shaped origin, or an abnormally situated origin at a higher point in the pelvis, causing an acutely angular outlet from the pelvis. In congenital uronephrosis, the kidney is generally enlarged, and, what is noteworthy, is that considerable amount of kidney tissue must be functioning. To an anomalous obliquity of the ureteral entrance into the pelvis of the kidney is generally attributed the extreme hydronephrosis seen in the newborn. Some modern pathologists hold the opinion that the collection of fluid within the renal pelvis is the cause of the alteration in the relationship of the kidney and the ureter. They assume that a temporary impediment having caused a hydronephrosis, the kidney becomes displaced, and at the same time the lower half of the distended pelvis compresses the first part of the ureter, or if the pelvis is dilated more on one side of the point of origin of the duct than the other, the ureter is contorted, and a valvular obstruction created which becomes permanent; as the accumulation increases, the kidney becomes pushed outward and backward, while the upper portion of the ureter comes to be situated anteriorly.

In the literature cases are mentioned in which the ureter seemed to run in the wall of the hydronephrotic sac, for a distance of seven to ten cm. (in reality between the wall and a thickened peritoneum) and entered it at a very acute angle, thus forming, so to speak, a valvular entrance. Most extraordinary are cases in which there is a patent ureter, and yet an extreme hydronephrosis exists, as in our case. Virchow has frequently examined such cases and every time found a valvelike obstacle to be the cause, such having been produced in consequence of a typical oblique origin of the ureter from the kidney pelvis, thereby causing a fold in the wall of the sac which acts like a valve. Piersol states that valvular folds at the ureteral orifice, which followed a congenital exceptionally oblique insertion of the ureter into the pelvis, may be the cause of obstruction of the ureter, and result in an hydronephrosis.

At times valvelike formations and strictures in the ureter of unknown origin have been found to be the cause, and at other times an abnormal renal artery or vein running across the ureter compressing its lumen, seemed to have been the impediment. The obstruction in some cases may be so great that at birth infants already exhibit fully developed hydronephrosis, which may have seriously impeded delivery.

The length of time over which congenital hydro-nephrosis extends varies. In many cases the fetuses are born dead, sometimes before the full period of gestation. In other instances children are born alive, but die within a short period after birth, from a few hours to three or four months, and again infants are ventricose at birth, which condition rapidly progresses to such an extent as to make it incompatible with life unless operative procedures are undertaken as in the case reported.

REFERENCES.

1. NEWMAN DAVID: *Lectures to Practitioners on Surgical Diseases of the Kidney*.
2. MORRIS HENRY: *Surgical Diseases of the Kidney and Ureter*.
3. BROADBENT: *Pathological Society Transactions*, xii.
4. SIMON: *Chirurg. der Nieren*, 1876.
5. RAYER: *Traité des maladies des reins*, 1830.
6. J. ENGLISH: *Ueber primäre Hydronephrose*.
7. PERSOL: *Human Anatomy*.
8. AY-SER FRANZ: *Beiträge zur Lehre von der Hydronephrose in Kindesalter*, 1891.
9. VIRCHOW: *Die krankhaften Geschwülste*.
10. COMBY: *Traité des maladies de l'enfance*.
11. VON BERGMAN: *Handbuch der praktischen Chirurgie*.

35 EAST SIXTY-FIRST STREET.

COMPLETE SEPARATION AND ANTERIOR LUXATION OF THE EPIPHYSIS OF THE LEFT FEMUR.

Treatment by the Open Method of Operation.

By ULYSSES S. KAHN, M. D.,

Binghamton, N. Y.,

Assisting Visiting Surgeon and Röntgenologist, Binghamton City Hospital.

CASE. H., Jr., aged ten years, was referred to me by Doctor Beach, of Apalachin, N. Y., September 3, 1915. Ten



FIG. 1.—Epiphysis is pushed forward. Lateral view.

days previously, the boy had fallen from an automobile. When examined, the patient could not use his left limb; the knee joint was swollen and very painful. The röntgenogram showed that the epiphysis of the femur was separated

and pushed forward and upward (Figs. 1 and 2). An attempt was made under narcosis to reduce it, but without avail.

I decided to operate, and the next day I made a curved incision above the patella, cut the tendon quadriceps, and opened the articulation. As the röntgenograph shows, the epiphysis was jammed



FIG. 2.—Shows displacement of epiphysis. Anterior posterior view.

against the lower end of the femur. A large clot of blood was removed, and with a blunt elevator I made the epiphysis slide into place.

A hole was drilled at the interior and lower part of the shaft of the femur in order to pass a kangaroo stitch, which was fastened to the periosteum of the epiphysis and held it in place. The quadriceps tendon was sutured with chromic gut and the wound closed up without drainage. Dry dressing and a plaster cast were applied. The boy made an uneventful recovery. The cast was taken off after six weeks, and after two more weeks, under ether the knee was made to do all movements required. Figs. 3 and 4 (page 550) show a perfect anatomical result and were made November 20, 1915, six weeks after the operation. There is no shortening of the limb compared to the other one. I think this is a good illustration and a good point for the recommendation of the open method in case of fracture or in cases like the one described, as it restores the most vital articulation of the body to its initial aspect.

NATURAL RADIOACTIVE WATERS.

By WILLIAM H. DEADERICK, M. D.,
Hot Springs, Arkansas,

Visiting Physician, Leo N. Levi Memorial Hospital.

From the earliest times it has been recognized that drinking and bathing in certain waters was followed by relief from ailments. Before the advent of the white man to the Hot Springs region, we are told by tradition, the Indians, believing that the essence of the Great Spirit dwelt in the hot waters, declared



FIG. 3. Anteroposterior view six weeks after operation. Compare with Fig. 2. (Kahn.)

a truce whereby the benefit of the waters was imparted to the sick of all tribes. More recently, explanation of the remarkable effects of most of the natural waters has been sought through chemical investigation. This was disappointing, and today it is known that the value of the waters lies in their radioactivity.

There is still a great difference of opinion among the members of the profession regarding the value of a stay at a watering place. There are those who, accepting the ancient and fallacious reasoning of Woods Hutchinson, that the chemical constitution of almost any mineral water can be duplicated out of hydrant water, plaster, and a few salts, deny the efficacy of any spa. Others who are aware of the recent results of radium therapy, and have perhaps actually seen the effect to be obtained by such means after all else has failed, realize that in certain selected cases treatment by radium emanation at suitable watering places has a field of usefulness.

With a view to determining if the waters of the Hot Springs of Arkansas are radioactive, the Department of the Interior had an investigation made by Professor Boltwood, of Yale University, in 1904,

an epitome of whose report was published in the *American Journal of Science* for August, 1905. This document reports radioactivity in the water of all the springs, one spring having an activity of 265.6 Maché units, the strongest in the United States and probably the fourth strongest in the world. Boltwood reported that tufa deposited by the springs which he examined did not contain appreciable evidences of radium, but Schlundt, of the University of Missouri, found some of the tufa exceedingly active; in fact, in one case the sediment in a spring was one of the most radioactive in the world.

The methods of administration of radium emanation at this resort are:

1. *Baths.* These are rarely given hot, the average temperature being from 97° to 99° F. and the duration ordinarily from five to fifteen minutes. Unless contraindicated, rubbing is practised in the tub. While some observers maintain that little emanation is absorbed by the skin, the experience here is that many patients who do not receive the radioactive water in any other manner than by baths are benefited. This is in keeping with the experience of Engelmann, Lazarus, Strasburger, Kemen, and Newman. It is



FIG. 1. Lateral view six weeks after operation. (Kahn.)

doubtful if enough emanation can be inhaled during a bath to account for the full effect.

2. *Packs.* This is a form of treatment consisting of the local application of cloths saturated with the water as hot as can be borne. It is doubtful if any radium emanation can be absorbed as a result of these applications, and while they usually give prompt relief in certain conditions, it is probable that

this is due to the heat and moisture. The pack room is usually sufficiently warm to start profuse diaphoresis.

3. *Vapors.* The patient sits in a small vapor cabinet, into which the hot water rushes without touching him at a temperature of about 148° F. Experience and observation have shown that the "head in" vapor, in which the patient's entire body is enclosed and in which he breathes the emanation, a miniature emanatorium, is one of the most valuable methods of administering radium emanation. In the "head out" cabinet, while some emanation is doubtless absorbed by the skin, the chief factor is the diaphoresis produced.

4. *As a drink.* There are numerous drinking fountains along the Government reservation where the hot water is constantly flowing. There is a cold spring also which is strongly radioactive, containing 106.8 Maché units. Patients are encouraged to drink freely from these fountains, and ordinarily radioactive water is administered during the bath. It is well established that emanation is readily absorbed from the gastrointestinal tract.

The physiological action of radium emanation is varied and interesting. Certain cells of the body seem to have an affinity for this force. These are particularly the cells of the blood and blood making organs, liver, lymphatic glands, ductless glands, kidneys, brain, and serous cavities; upon these cells it exerts a stimulating influence.

While radium is powerfully destructive of bacteria, radioactive water is more feebly so, and the conquest of bacteria under emanation treatment is probably due more to the stimulation of phagocytosis than to any direct antiseptic effect.

The influence upon metabolism is decided. More air is breathed and more carbon dioxide expired. It is diuretic, the excretion of uric acid is increased, urea metabolism is promoted, and body temperature is raised. Many years ago, the elder Keyes observed here that his temperature was raised to 103° F., while merely attempting to take a foot bath at 110° F., which he found impossible to do. To sum up, all the complex chemical changes known as metabolism are stimulated to increased rapidity.

One of the most firmly established observations in radium therapy is the fall of blood pressure after emanation treatment. The burden upon the overloaded heart is correspondingly lessened.

The blood making organs are stimulated, and an increase in red cells and in hemoglobin is a frequent result of this therapy. The changes in the white cells consist chiefly of stimulation of phagocytic activity, though some observers have recorded an increase in the eosinophiles. Coagulation of the blood is accelerated.

Most writers assert that radium therapy is laxative. This, however, is not the experience here. It is possible that the increased elimination by other routes, particularly by the skin and kidneys, which is usual at this resort, prevents the usual laxative effects of radium emanation.

All the digestive ferments are stimulated, particularly by the administration of the radioactive water by mouth. Normal function of the ductless glands is promoted. The changes produced in the nervous

system are chiefly vascular. Thus one of its most valuable actions is the reduction of cerebral hypertension. Radium distinctly relieves pain. Emanation has a decidedly stimulating effect upon the sexual organs, provided that these are still functioning. The menstrual function is regulated and menstruation has returned after the menopause.

Experience and careful observation have shown that the medical conditions most benefited are those in which the disturbance is due to a toxemia of either bacterial or metabolic origin. Under the first heading may be classed the infectious rheumatic diseases (gonorrheal, acute articular, and following the acute infectious diseases), syphilis, and malaria. The second group includes gout and chronic arthritis, neuralgia, all forms of nephritis, chronic skin disease, especially the squamous varieties, and chronic cardiovascular renal diseases with increased arterial tension. Benefit may also be expected in anemia and other diseases of the blood and blood making organs, diseases of the ductless glands, and catarrhal conditions of the gallbladder, bile passages, and gastrointestinal tract.

Tuberculosis and malignant growths are contraindications. Pregnancy, while not an absolute contraindication, demands caution in the use of the water.

It is well to forewarn patients using emanation treatment of a certain effect which, for want of a better name, may be termed a provocative reaction. This is analogous to the Herxheimer reaction after beginning treatment for syphilis, and consists of a temporary aggravation of the patient's condition. This reaction may consist of an increased inflammatory activity in a gouty or rheumatic joint, increase of pain in an affected nerve, etc. The provocative reaction is of favorable prognostic import and does not require an interruption of treatment. It usually subsides within ten days.

Another common observation, which may be a phenomenon of the reaction already mentioned, is the delayed or belated result. Many patients who leave considering themselves no better will write or return to report that improvement did not begin until some days after they reached home.

While the use of emanation should not be postponed until it is the last resort, the following quoted from the manual for the Medical Department, U. S. Army, 1911, shows the confidence this organization has in its power to handle belated cases at the Army and Navy General Hospital here: "Admission to the hospital of all the above mentioned cases, regardless of their severity, is not, however, contemplated. Its facilities will not be extended to mild and transient cases which should yield to ordinary ambulatory treatment, but are reserved for those cases of serious and obstinate character which, though resisting ordinary methods of relief, promise a rapid and permanent recovery from the use of the waters of Hot Springs."

Infection of the Epididymis.—Irvin S. Koll (*Medical Fortnightly*, December 15, 1915; *Illinois Medical Journal*) advises rapid incision with drainage in acute cases. In the treatment of tuberculous epididymitis, early operation followed by prolonged treatment with tuberculin is recommended.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVII.—How do you treat rickets? (Closed.)

CLXVIII.—How do you treat cyclic vomiting of infants? (Answers due not later than March 15th.)

CLXIX.—How do you proceed in post partum hemorrhage? (Answers due not later than April 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXVI was awarded to Dr. Howard S. Anders, of Philadelphia, whose article appeared on page 459.

PRIZE QUESTION CLXVI.

TREATMENT OF CONSTIPATION IN SEDENTARY MEN.

(Continued from page 509.)

Dr. Tom A. Williams, of Washington, D. C., observes:

Exclusive of such obvious causes as marked enteroptosis, chronic appendicitis or ulcer, mechanical obstruction of the rectum or sigmoid flexure, the most important causes of constipation in sedentary men are an incorrect dietary, faulty attitudes, and breathing, and overintense and long mental application. The cases with which we are concerned are those where the kind of work done is a necessity and where hours for open air exercise cannot be spared.

The proper dietary for sedentary men should contain a minimum of proteins, not much over fifty grams a day; and the calories should be secured by abundance of carbohydrates and enough fat, about fifty grams. The bulk of the intestinal bolus must be maintained by an adequate residue of cellulose. This is secured by a regular taking of coarse vegetables, such fruit as apples, and the pericarp of grains, more especially wheat bran, best taken as whole flour bread. To these agaragar, one to two drams, may be added at dinner.

Osmosis may be promoted by the vegetable salts of the alkalies, best taken in the form of fruit and vegetables; and enough fluid must be taken. A good regimen would be: A glass of hot water before rising. Grapefruit or two oranges in the morning with abundance of cereal, milk, and whole wheat bread with syrup. An ample lunch about the middle of the day, taken leisurely in pleasant surroundings, and a meal at night, preferably without meat, fish, or eggs, taken in a leisurely fashion. One or two apples might be eaten just be-

fore retiring. One to two glasses of water during the morning and in the afternoon.

Good respiratory habits must be acquired. Ten minutes in the morning while dressing spent in taking slow abdominal muscle exercises with deep breathing should begin the day. They should be repeated for two or three minutes before luncheon, in the evening, and before bed. A correct posture in a comfortable chair should be adopted at the desk, especial attention being given to prevent sagging of the abdominal muscles.

These precautions in themselves will diminish the drag upon the attention in work; but in addition, the attitude of mind has a great deal to do with the draining of energies from the vegetative powers toward the brain. The fret and stress of over eagerness to do quickly what necessarily demands a certain time is more exhausting than the work itself. The mental attitude should be one of studied deliberateness with unruffled serenity. This, with the periods of relaxation at luncheon time and in the evening, should amply prevent that overtension which breeds hustle and inefficiency.

Defecation should be attempted at a regular hour, and nothing should be allowed to interfere with the duty.

The aftermath of drugs is greater constipation; so they must be sedulously avoided. At one time, cascara was the fad, on the ground that it had no aftereffects. That this was an error, we now know. The present fad is mineral oil. Let us be chary of this too, until we have learned more of its ultimate effects upon the body. My experience shows it to be unnecessary when the measures outlined above are adopted; for these are successful even in markedly asthenic individuals.

Dr. H. M. Gardner, of Brooklyn, New York, writes:

A patient presenting himself for the first time is thoroughly cleaned out with calomel and a saline. The dose is regulated according to the statement of the patient concerning the ease or difficulty of attaining a movement with his favorite cathartic, which is ascertained. This is a mere beginning and is followed with a combination prescription based on the condition found. For simple atony of the bowel cascara with nux vomica in tablet form at bedtime may be sufficient.

If with his constipation there is biliousness or sluggish liver with its symptoms of dizziness, headache, lethargy, chilliness even in a warm atmosphere, sour stomach, tenderness over the gallbladder, often subnormal temperature, etc., then the following combination is given with the usual doses:

Podophyllin;
Sodium glycocholate;
Strychnine sulphate;
Extract cascara;
Extract hyoscyamus,
Extract gentian.

This is given in capsules just before meals, otherwise the bile salt upsets the stomach if it is a fresh preparation.

In some cases it is necessary to add to this compound extract of colocynth. If flatulence is asso-

ciated, salol is indicated. It may be substituted for one of the others.

If the appetite is poor or the patient is run down, some of the others, especially gentian, may be omitted, and arsenic, mercury, and iron added. If the whole system is inactive so will the bowel be. Treating constipation should mean more than daily flushing out the bowel.

This combination capsule gives at once an appetizer, blood builder, and liver stimulant, increasing the flow of bile so needful in the intestine. It softens the stool and stimulates the bowel to do muscular work. If modified to suit the case, it works, and if properly gauged, it does not work too hard.

If the case is one with very hard, dry stools, mineral oil is indicated, with cascara or a combination prescription as the cathartic after the calomel and salts.

Occasionally a mucous colitis is associated with such cases of constipation, causing sudden diarrhea with pain and griping. Here the abdomen should be kept warm and internally phenolsulphonate of zinc or salol should be given until effective as an antiseptic and astringent with enough cathartic to prevent hardening of the stool, which aggravates the catarrhal condition.

Cascara is the best cathartic for steady use, or the old a. b. and s. pill with ipecac is good unless there is associated a sluggish liver, which calls for more.

Having established regular movements with drugs, there now begins the harder part of establishing regular habits and proper eating. By regular habits I mean three things:

1. Attending to the bowel at a regular time.
2. Attending to the bowel whenever there is a desire for evacuation, instead of putting it off until a more convenient time. These things are impressed upon the patient.
3. Exercise. It should become a habit to exercise. The kind is that which doubles and bends the abdomen as the so called tree swaying, wood chopping, grand bend, etc. Then exercises which call into play the abdominal muscles so as to compress the abdomen, as lying on the back and lifting both legs while the arms are folded across the chest. Walking and running and jumping are good. All these exercises mentioned require no apparatus and can be done in one's room. Walking from business gets one into the open air.

By proper eating I refer to four things:

1. Regular eating and not eating between meals. The full meal starts up a better peristalsis and exercises the musculature of the digestive tract.
2. Proper mastication of food. Bolting a meal means undigested food with fermentation and accumulation.
3. Eating the proper amount of food. By the full meal I do not mean stuffing, but there should be sufficient quantity, so that out of it there will be sufficient waste to form bulk for the intestine to work upon.

4. The proper kind of food. The modern diet is too refined. Reversion to the coarser foods is good. Also avoidance of too much coffee and especially

tea. If the liver is sluggish it is well to limit quite considerably tea, coffee, sweets, fats, and pastry foods such as bananas and warm bread, etc., also tomatoes (and the slops of the confectionery stores). On the other hand, prescribe cereals, fruits, especially juicy fruits, and vegetables leaving a large amount of residue, such as string beans, cabbage, cauliflower, turnips, spinach, kale, celery, etc. These foods leaving a large amount of residue help the bowel to work. It is easier to squeeze a ball than a marble. Apples are especially good in some cases.

The cathartic is gradually reduced as the bowel is found to act of itself, and is finally omitted altogether.

Theoretically, organotherapy would seem ideal by restoring the normal secretions of the gastrointestinal tract in treating constipation, but the mechanical factor cannot be eliminated altogether and to the exercises may well be added massage.

Dr. Jesse D. Friedman, of New Kensington, Pa., remarks:

Constipation in men of sedentary habits can usually be ascribed to one of two causes or to both: 1. Errors in habit; 2, errors in diet. To eliminate constipation, we must eradicate infringements and violations of the laws of living. Probably the most efficient causes of habitual constipation are sedentary indoor habits (as in clerks, salespeople, lawyers, physicians, ministers, etc.), which induce inefficiency of respiration and lessen the internal distribution of oxygen, thereby lowering the tone and activity of the body structures generally. The lack of outdoor muscular exercise diminishes tissue metabolism. Sedentary habits induce a failure to adopt and persistently maintain a regular time for daily defecation, such as pressure of social and business engagements; in this way the nerves of the rectum become habituated to the contact of the feces and cease to renew the desire to evacuate except at long intervals. Active cathartics should be avoided as far as possible, for their habitual use causes congestion and affords only temporary relief; moreover, they leave the natural functions of the intestines more exhausted than before.

The desire to go to stool should always be granted. Have a regular time each morning after breakfast, whether the desire is present or not, so as to train the rectum to evacuate itself at regular intervals. Do not read in the bathroom, but concentrate the mind on moving the bowels.

Sedentary habits should be abandoned, and for them substituted open air exercise, morning and evening. This causes full oxygenation and decarbonization of the blood. Practise exercises that will strengthen the muscles of the abdomen. Exercises in the open air of benefit are walking, riding, golfing, rowing, baseball, and tennis.

In stout persons, the support of a bandage for the abdomen will help.

Eat regularly and slowly, and chew the food well. Eliminate the coarse diet, which leaves too much residue, or a diet which leaves too little.

Drink plenty of water, a tumblerful before each meal, and one more on rising and on going to bed.

I have found this very efficacious in many cases of constipation; the next day, the patient has a free fluid evacuation.

Apples, oranges, pineapple, prunes, figs, dried stewed peaches, cabbage, onions, spinach, tomatoes, rhubarb, olive oil, butter, coarse graham bread are permitted. Avoid milk, cheese, eggs, sweets, pastries, pickles, fried foods, tea, and alcoholic drinks.

Some cases are benefited by some form of abdominal massage or rolling of a metal ball over the parietes every morning for five to ten minutes.

If we must use drugs, we should resort to the milder saline laxatives or compound licorice powder. Olive oil injections at night, three or four ounces, are of benefit. The agar agar compounds are useful as agar phenolphthalein or agar rhubarb. Of late mineral oil has gained prominence in the treatment of constipation; it acts by lubricating the walls of the intestine. A very useful prescription in my practice has been:

R Fluidextracti rhamni purshianæ aromatici..... $\frac{3}{4}$ ss;
Glycerini..... $\frac{3}{4}$ i;
Misturæ rhei et sodæ, q. s. ad..... $\frac{3}{4}$ vi.

M. Sig.: Teaspoonful in water three times a day before eating.

All in all, our aim in the treatment of the constipation of sedentary men is to regulate their habits and modify their diet.

Dr. Frederick P. Lowenstein, of Springfield, Mass., recalls that:

Constipation is generally due to deficient action either of the small intestine or of some part of the large intestine. Deficient action on the part of the small intestine is due to either deficient secretion, want of innervation, or want of muscular action.

The contents of the intestines act in three ways to produce a normal stool: 1. Irritation of the automatic centres within the bowel; 2. secretion and production of osmotic conditions; 3. hypertonic or hypotonic conditions.

Constipation of men of sedentary habits is different from mere costiveness; as a rule it includes deficient nerve action as an accompaniment. The treatment, therefore, should be directed not alone to increasing peristaltic action, but also to increasing the general nerve power of the secretory apparatus. Ordinarily constipation can be overcome by persistent dieting along well known lines, exercise, massage along the colon. It will be found necessary, in the meantime, to secure evacuation of the bowels.

In the first place, the habits of the patient have a tendency to keep up the constipation, and the means to overcome it differ from those used in other classes. While in ordinary cases we use plenty of water, in these cases much water is not well borne, but weakens digestion, and the patient soon complains of loss of appetite. Besides, it does not excite peristalsis as much as in decreased secretions.

Where possible, change the occupation of the patient—send him to a mineral spring, though this is not always possible. The best thing, therefore, is to use water externally either in form of a sitz bath at night in as cold water as patient can bear, or a poultice bath along the spine and over the bowels

with salt water, or dashing cold water against the abdomen while the patient is in a standing position. All this is done with the same idea as in using cold over the abdomen to produce uterine contraction or in other words benefit is obtained through sympathy of the nerves of the surface with the viscera underlying them. The Faradic current, one pole over the spine and the other passing up and down over the abdominal walls, secures similar results.

Exercises such as the "setting up" exercises are very efficient; such movements as bending backward and forward from the hips, rotating the body from the hips, rising when lying on the back with the lower limbs fixed to a sitting posture, mean strengthening the abdominal muscles and restoring the tone of the intestinal muscularis. Golf, tennis, and riding are recommended. Medicines are used as little as possible, but occasionally we must use a mild laxative, like the following, for its tonic effect upon intestine as well as laxative power:

R Tincturæ nucis vomicæ..... $\frac{3}{4}$ j;
Fluidextracti rhamni purshianæ..... $\frac{3}{4}$ j del $\frac{3}{4}$ j;
Misturæ rhei et sodæ, q. s. ad..... $\frac{3}{4}$ j.

Of which I direct the patient to take a teaspoonful after meals in water, and to reduce to twice a day when the effect is reached.

[Excellent contributions were received also from Dr. C. Berenda Weinberg, of Atlantic City, N. J.; Dr. Augustus Stanfield, of Orange, N. J.; Dr. C. C. Henin, of Springfield, Mass.; Dr. W. L. Wilson, of St. Joseph, Mich.; Dr. J. Otis Carrington, of Malden, Mass.; Dr. John H. Douglas, of Baltimore; Dr. McG. W. Sutton, of Brooklyn, New York; and others. We regret greatly not having the space at our disposal to publish these essays.—EDS.]

Abstracts and Reviews.

SOME PHASES OF THE NEPHRITIS PROBLEM.*

By HENRY A. CHRISTIAN,
Harvard University.

It was Bright who first gave us the stimulus to study diseases of the kidneys by pointing out the relationship of renal disease to certain clinical symptoms. From his day down to the last century practically all of the investigations concerned themselves with the attempt to correlate changes in renal structure, as found post mortem, with the clinical evidences of the disease observed during life. Such studies did not lead very far, for it became evident that there was no very definite structural relation between renal disease and symptoms. Beginning in 1900, this problem was approached experimentally by the production of acute renal changes in animals, and among the earliest results of such experiments was Schlayer's division of renal lesions into tubular and vascular. Schlayer sought to show the relation of each of these types of lesion to definite clinical phenomena. Further work along such lines soon showed that in man the renal lesions which produced definite symptoms were never strictly confined to one or the other of the two types, but that each

*Summary of a lecture delivered before the Harvey Society, Academy of Medicine, New York, March 11, 1916.

was present to some degree in every lesion. O'Hare and I reached the conclusion from work on animals and man that there was little relation to be made out between changes in renal structure and renal function.

Then came the era of study of renal functional changes by following the excretion of certain substances, either normally present in the urine or introduced from without. These included the determination of analyses, urea, water and salt excretion, the excretion of phenolsulphonaphthalein, potassium iodide, and lactose, and retention of nonprotein nitrogen in the blood. Efforts were also made to induce in experimental animals conditions of chronic nephritis, since the acute ones did not resemble sufficiently closely the common conditions found in man. The most successful method was perhaps that of simultaneously damaging the kidney with uranium nitrate and colon bacilli worked out in our laboratory. This produced a condition closely similar to that found in man, but not identical with it. For the identity to have been satisfactory we should have been able to produce the associated symptoms such as elevated blood pressure, edema, dyspnea, etc. Studies on induced nephritis in animals did lead to one observation of considerable importance to man, namely, the observation that the administration of various diuretic substances always tended to shorten the life of the damaged animal and never seemed to be beneficial. This indicated the need for a reconsideration of the clinical therapeutic use of these diuretic measures, and some remarks on this subject will be made subsequently.

Our attention was then turned to the subject of functional renal tests and their evaluation. Schlayer advocated the use of potassium iodide to determine tubular function and lactose excretion for vascular or glomerular lesions. Our work with these tests convinced us that they were of little use, since in man both tubes and vessels are simultaneously involved. We also found that sodium chloride excretion and nitrogen retention gave very little in the way of definite results in human cases of nephritis. We found that the excretion of both these substances was distributed in most cases of acute nephritis and not, as Vidal reported, that there was a delayed nitrogen excretion with normal salt output. Other cases were found in which there was some degree of salt retention, but these were not cases of nephritis.

Such studies, again, led us to the belief that it is improbable that we can correlate closely the post mortem renal changes with the clinical conditions seen during life, since we did not find any definite relation between function and anatomical change, and since, as we have mentioned, human cases of nephritis do not fall into distinctive functional groups. Functional tests seem, however, to be of service in discovering the presence and extent of renal disturbances rather than the class of lesion.

The most valuable and satisfactory tests are those of rate of excretion of a dye, water, salt, and nitrogen. Of these the phenolsulphonaphthalein test is perhaps the best and has the advantages of simplicity and ready applicability without the need of complicated apparatus. Determinations of excretion

or retention of water, salt, or nitrogen demand absolute control of diet for longer or shorter periods of time and are therefore often not applicable, particularly in very ill patients. Ambard worked out the laws of excretion of urea and other substances, which have been reduced to a calculable numerical index by McLean. They are of value, but are not readily applicable except under hospital conditions.

Our observations have shown that the several functional tests usually run more or less parallel. For example, where phthalein excretion is defective it is usual to find delayed excretion of salt and nitrogen. As diagnostic methods the tests are of limited value, since where they are indicative of renal disturbance there is usually definite clinical evidence from which a diagnosis can be made with ease and certainty. In very early cases the phthalein excretion is usually nearly normal and the blood nitrogen is not disturbed. In some such cases the dietary tests may show a delay in salt excretion which suggests a nephritis, and there may also be slight albuminuria with some casts and a lowered urea excretion. It is still too early, however, to make any positive statement regarding the relation of such findings to the subsequent development of a chronic nephritis. There is great danger of over enthusiasm. We cannot yet state the relative value of the several tests from a diagnostic point of view.

In prognosis the tests are of much help. By them we can determine with considerable accuracy the degree of renal damage, but are not much aided in the estimation of the probable duration of life. This latter failure of the tests is due in large measure to the fact that most renal lesions progress in an irregular manner with exacerbations and remissions. For the tests to give any help in forecasting the rate of progress of the condition they should be repeated at intervals over a long time. It is also necessary to bear in mind that the influence of circulatory disturbances on the results of the tests may be considerable and may lead to errors in estimating the severity and rate of progress of the renal disturbance. There is a great tendency for many physicians to base their conclusions on the results of laboratory tests rather than to weigh the latter in the light of observed clinical evidences. This tendency is strongly manifest in the case of these new renal functional tests and must be guarded against if we are to avoid serious errors. We have not as yet enough information collected for long periods of time to warrant laying much stress on the indications given by these tests, and we must continue to use judgment based on close clinical observation of the cases. All of the tests should be applied in conjunction with such close clinical scrutiny and the ultimate histological examination of the kidneys in a large number of cases studied for years if we are to reach a correct evaluation of the diagnostic or prognostic worth of these new laboratory methods.

These functional tests have a third field of usefulness which is in need of further cultivation. This is their relation to the management of our cases of renal disease. It seems logical to base our dietary regulations on the results of the dietary excretion tests and to restrict the intake of those substances which are faultily excreted or retained in the body.

The rationality of such restriction lies in the known value of rest in restoring a disturbed function to a higher level of efficiency. Its rationality is also supported by the empirical restriction of salt and nitrogenous substances which has long been practised with favorable results in many cases. Certainly we know that restriction of salt is beneficial in cases with edema and salt retention. Where there is nitrogen retention the restriction of nitrogen intake has led to improvement, but we do not yet know the degree of such improvement, or whether the function of nitrogen excretion is improved by such rest. In the case of water we know that its restriction is of value in edema, but we need more extensive observations to determine its ultimate value.

In the management of cases there is also the question of the value of the common supposed diuretics. This problem needs much further careful study, but we can state that it is possible to increase the water output in edematous cases with theocin or theobromine sodium salicylate. But in such cases we have met with effective diuresis only when the heart showed some degree of inefficiency. If the renal damage alone is great enough to cause edema, diuretics are generally ineffective so far as increasing water output is concerned. Where we have been able to induce an active diuresis we have observed a period of greater decrease in renal function lasting for a few days after its cessation. We have little evidence that diuretics actually increase the elimination of the hypothetical toxic substances. From our animal experiments and from some observations on man it seems possible that diuretics may actually do harm, and we have little or no means of determining the extent of the harm done. In fact, our knowledge of diuretics is very slight and fragmentary, and apparently our conceptions of their value need extensive revision.

Contemporary Notes.

The Grippe Epidemic.—Last month, observes the *Medical Standard* for February, 1916, we commented briefly on the prevailing epidemic of influenza, which, as we remarked at that time, is one of the most extensive from which our country has suffered for many years. Bacteriologists seem to be almost unanimous in the conclusion that the influenza bacillus has very little to do with this visitation, in which various strains of streptococci and pneumococci seem to be playing the stellar roles, with a scattering of staphylococci, Friedlander's bacillus, and *Micrococcus catarrhalis*, large enough to make the study of these cases interesting.

There are an unusual number of cases of pneumonia, due to the almost universal presence of the pneumococcus in the secretions of those affected. Some idea of the importance of this complication can be appreciated after a study of the mortality reports from our different cities. In Chicago, for instance, the deaths rose between December 1st and January 1st from approximately fifty a week to 300 a week. In New York city, the records showed exactly the same condition.

In this epidemic, bacterins are being used very extensively, and with alleged good results. Naturally, vaccination with cultures of streptococci and pneumococci is most popular, though various mixtures are employed by those having a leaning toward the stock vaccines.

The medicinal treatment is much the same as that always employed in these respiratory affections. Rest, protection from extremes of cold and heat, thorough elimination by bowels and skin, and such defensive medicaments as quinine and iodine seem to cover the outline roughly.

Personnel of an American Base Hospital in War Time.—The experience of some of the nations now at war should serve as a solemn warning to us to see that injured soldiers do not lose their lives or their limbs for want of competent surgeons. Adequate organization should be made in times of peace, insists the *Journal of the Michigan State Medical Society* for January, 1916. Supplies and instruments, owned by the government, should be stored in accessible locations. Units should be organized and should meet annually. Crile suggests the following unit adequate to serve a base hospital of 500 beds: Chief surgeon; five associate surgeons, each in charge of 100 beds; three assistant surgeons; orthopedic surgeon; three anesthetists; pathologist and assistant; internist; neurologist, oculist; two dentists; two roentgenologists; secretary and record clerk; two stenographers; fifty nurses. Would it not be well for the profession of this State to take the necessary steps to organize several such units?

Important Judgment of a Canadian Court.—Some time ago, a patient received a burn in the Smith's Falls Hospital by a hot brick, which was placed in the bed to warm it, when the patient was taken from the operating room. When the case came up for trial before Mr. Justice Britton, says the *Canada Lancet* for January, 1916, he dismissed the action. From this judgment the patient appealed. The appeal was heard before Chief Justice Falconbridge and Justices Kelly, Riddell, and Latchford. These four judges came to a unanimous finding in favor of the patient and granted the appeal, awarding damages of \$900.

The court held that when a hospital furnishes beds, foods, and nurses for patients it enters into a contract with them, and becomes liable for acts of negligence on the part of its nurses. This is a most important decision so far as hospitals are concerned. It will have the effect of compelling them to lay down rules for doctors and nurses so as to avoid, as far as possible, the occurrence of accidents for which the hospitals could be held liable.

The judgment will do good, as there has been much doubt in the past regarding the liability of these institutions in this matter. The hospitals will, no doubt, welcome the decision, for the simple reason that they know now their responsibilities, and can take proper measures to protect themselves.

An application for an appeal in this case has been refused, as it is a matter of express contract, and no matter of public interest is involved.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,

Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 18, 1916.

THE MILLS HEALTH INSURANCE ACT.

It would be hard to conceive a measure giving more plenary and arbitrary power to an appointive political commission or to imagine a means by which the public treasury might be more thoroughly and efficiently looted than through the Health Insurance Act framed by a committee of the American Association for Labor Legislation and introduced into the Senate and Assembly of the State of New York by Mr. Mills. It is a bill loosely drawn, crude, incomplete, and vague, yet comprehensive in opportunity for the worst political practices. Nor is it a measure proposed for New York alone; the same bill has been introduced in the legislatures of seven other States and is threatened for every State in the Union. It is a measure so admirable in intention that superficial thinkers might easily be deceived into giving it their approval; in fact, we must believe that even some of its advertised sponsors have failed to become aware of its implications of political graft.

At the present time we would draw attention to the specific crudities and autocratic tendencies of this New York Senate Bill Number 236, known as the Mills Bill or Health Insurance Act, in the hope of inducing our readers to become familiar with its provisions and register their judgment upon its

enactment with their representatives at Albany. It is a measure which threatens, if passed, to lower the self respect of every worker, debase medical standards, promote litigation, foster the vices of simulation and perjury, and impose enormous and useless expense upon the State. It can bring about no improvement in public health, because it places a premium on low grade medical service and medical place hunting. It puts in the hands of three political appointees vast and uncontrolled power over employees and employers alike by establishing a commission responsible to no one, a commission with autocratic authority to regulate the affairs of individuals and corporations by taking depositions, issuing subpoenas, and by compelling the attendance of witnesses and the production of books, accounts, papers, records, documents, and testimony. It may adopt its own rules and regulations, and do all things necessary to put into effect the provisions of the law. Its hearings shall not be bound by common law or statutory rules of evidence. Information acquired by the commission shall not be open to public inspection; a prohibition which would make its hearings star chamber proceedings. Appeals from dispute committees may be made only to the commission itself. No control is to be exercised over its contracts with physicians, nurses, hospitals, dispensaries, pharmacists, institutions, associations, and other persons. The act is discriminatory as applying to all persons employed at manual labor and all other employed persons earning less than one hundred dollars a month. Space does not permit further enumeration of the detailed eccentricities of this bill, which would be vicious if it were not ridiculous. Nevertheless it needs a protest from every intelligent citizen in order that it may be defeated. It is a distinct menace to the public welfare and to the public purse

FEDERAL AND STATE QUARANTINE.

At a dinner of the Bronx Board of Trade, held in New York on March 11th, Governor Whitman put in very clear language the advantages of placing the quarantine station in New York harbor under Federal control, a step which the NEW YORK MEDICAL JOURNAL has advocated from the beginning. In the first place, the Governor remarked, the station cost the State over \$200,000 annually and it was not conducted as efficiently as would be the case under the National Government, with its vast experience. Through treaties with foreign governments, the United States was able to examine the physical condition of intending immigrants before they embarked, and it was conceded that the Public Health Service, directed by experts like Colonel Gorgas and Surgeon General Rupert Blue, with

their men specially trained in the recognition of diseases which raged in foreign lands, were better able to cope with them than physicians without such experience. Yet when those with yellow fever, typhus, and cholera were discovered on board ship, they were turned over to the State, while patients with measles and the like were transferred to the care of the National Government. The latter passed upon the mental status of the immigrant, upon his moral record, upon his ability to support himself in this country, and, the Governor added, as to whether he had measles or chicken pox. Was it not absurd, therefore, for the State to take upon itself an inspection to determine whether he suffered from serious contagious disease, and if so to treat him at the State's expense?

If a division of jurisdiction was necessary, it seemed to the Governor that the foregoing order should be reversed. If the Federal Government was equipped, however, to perform all these functions, and the Governor believed that it was, it was not equitable nor right that the expenditures necessary to maintain such a quarantine station designed to protect the whole country should be defrayed by the State. Uniformity in the administration of quarantine throughout the whole United States would be made practically complete by the transfer of the quarantine station at New York to Federal control, since at present, with the exception of New York and Baltimore, the quarantine functions of every port of the United States, its possessions and dependencies, were under the control of the National Government. Such a transfer would be obviously to the advantage of the industries of the country as well as to the maritime interests, yet New York was the last port to recognize that fact.

The Governor had recommended to the Legislature the transfer of the port to the National Government and had submitted to the Senate the name of Dr. L. E. Cofer, assistant surgeon general, Public Health Service, to be appointed health officer thereof. In its issue for February 10, 1912, the *NEW YORK MEDICAL JOURNAL* reported in full Doctor Cofer's address to the New York Academy of Medicine on the quarantine laws and their working and made editorial comment on the thorough training of the personnel of the Public Health Service, which was probably even more rigid, as Doctor Cofer said at the time, than that of surgeons in the army or navy. The Governor stated that Doctor Cofer was recommended by the Federal authorities as one of its most capable and efficient officers. The Governor looked for favorable action by the Legislature on the bill and was confident of the great benefit which would accrue to the State when it became a law.

Governor Whitman also spoke of the necessity and value of nautical training schools and said that New York State should not abandon one of them unless the National Government agreed to carry it on; New York, however, should not be forced by the indifference of the Federal authorities to bear a disproportionate share of the cost of government.

CANCER AND THE STATE DEPARTMENT OF HEALTH.

The New York State Department of Health devotes the entire March number of *Health News*, its monthly bulletin, to consideration of cancer. "There is nothing that any one of us can do to prevent the occurrence of cancer except to avoid certain specified causes of local irritation," says Commissioner Hermann M. Biggs, in an editorial article. "On the other hand, there is incontrovertible testimony as to the probability of its cure in a large percentage of cases if taken in time. That cure consists in the complete surgical removal of the growth at the earliest possible moment. Early diagnosis, early removal—there is not now nor has there ever been any other successful method of curing the disease."

It is made perfectly plain that cancer is comparatively easy to cure if it can be taken in time. Dr. John A. Hartwell, of the Cornell division of the Bellevue Hospital, declares that if the simple truth is thoroughly established, that cancer begins in a comparatively innocent form and in most instances in a recognizable form, it can be successfully combated. Dr. Francis Carter Wood, of Columbia University, puts stress on the declaration that if it can be diagnosed in its early stage, cancer can be removed with very great probabilities as to permanent cure.

Summarizing the work done by the State Institute for the Study of Malignant Diseases, Dr. Harvey R. Gaylord calls attention to the fact that the institute and the department of health are now working in cooperation in making examinations of specimens of tissues suspected to be of a cancerous nature. All health officers in the State now have the necessary equipment, so that there is no reason why any physician should not take advantage of the opportunity to have laboratory diagnosis of tissue specimens.

Commissioner Biggs, in anticipation of a popular demand for information regarding cancer, has had printed a large edition of the *Health News* for March. Any one who desires the full information contained in the magazine may secure a copy of the publication, free of charge, by addressing the State Department of Health at Albany.

THE NEGLECT OF GERIATRICS.

It is unfortunately true that not enough attention is given, either in medical schools or elsewhere, to physical disorders of the aged, especially to measures which will promote their comfort, protect them from disease, and prolong their lives. The foundation, in June, 1915, of the New York Geriatric Society, which held its inaugural meeting last December, gave us the only organization in the United States devoting its whole time to the study of the diseases of the aged, while there are but two textbooks on the subject well known here, one in French and one in English. Excellent opportunities are constantly being offered to young graduates to study the peculiarities of disease in the aged, when they obtain such positions as resident or assistant physician or intern in some insane asylum, home for the aged, or almshouse. The tendency seems to be, however, to look upon an institution of this kind as a sort of home where the young doctor can live and save money until he has enough to launch him smoothly into private practice. His duties are then likely to degenerate into a perfunctory daily walk through the wards, and his therapeutics becomes confined to the administration of purgatives and the prescription of strychnine when a patient seems likely to pay man's immemorial debt.

There are potentialities, however, in geriatrics which are hardly considered by the average practitioner. From the narrow, but necessary viewpoint of expediency, has it never occurred to our young men that it might pay to specialize in this branch? Think of the aged and ailing millionaires who have been accustomed during their long and successful business lives to pay experts for expert work, and think of their gratitude at finding a doctor able to relieve them because he is an expert at geriatrics.

Again, from the viewpoint of scientific interest, there are diagnostic difficulties, functional and pathological anomalies, and therapeutic indications in the disorders of the aged enough to arouse the enthusiasm of the most exacting young physician. For instance, let him ask himself the following questions: Is there any objection to an aged person sleeping in his chair? What do you know about the secondary effects of drugs in the aged? What do you know about diphtheria in the aged? Are there any constant constituents of the urine in the aged which are usually considered pathological in earlier life? How would you differentiate between an arteriosclerotic psychosis with its possibility of recovery, and a senile dementia with its unfavorable prognosis in a man of seventy years whose peripheral vessels were sclerosed?

The French and the Germans have contributed

to this subject more than any other nations. The profession in this country might profitably follow their example, not only for the reasons given, but because doctors themselves grow old and suffer from the ills they spend their lives in relieving, so that a greater diffusion of a knowledge of geriatrics among their fellow practitioners might often be instrumental in prolonging their own usefulness in the scheme of things.

VITAMINE THERAPEUTICS IN DISEASES OF NUTRITIONAL DEFICIENCY.

It has been understood for some time that food, beside the ordinary elemental constituents, proteids, carbohydrates, and fats, must contain other materials in order that there may be orderly metabolism and proper nutrition of the body. This other material has been named *vitamine*. Although its exact nature has not been determined, it has been amply demonstrated that unless it is present in the food in sufficient quantities gross nutritional disturbances of an ultimately rapid fatal character may develop. In such specific nutritional diseases as beriberi and pellagra, and in the experimentally produced polyneuritis of animals, there is little room to doubt that the conditions are produced by restricted diets of poor *vitamine* content.

All food products contain *vitamines*. Some are rich in them, others very poor. In others the *vitamine* is abstracted or destroyed in the various food preparation processes. In a mixed diet there is enough *vitamine* to keep up the nutrition. It does not matter, therefore, that large quantities of food are consumed: unless the food has sufficient *vitamine* principles there will be starvation. This is the case among the poor who, while they consume large quantities of food, do not have sufficient mixture to give them an adequate amount of *vitamine*. Hence the reason for so many malnutritional conditions among them.

Pellagra is an example of nutritional disease caused by feeding on foods poor in *vitamine*, while beriberi is an example of a disease caused by the abstraction of the *vitamine* in the rice polishings which contain them. The ill effects of the many prepared and treated foods are the result of the destruction of the *vitamine* principles in preparation.

Little progress had thus far been made in the isolation of the *vitamine* principle in sufficient quantities to be of value therapeutically because most of the *vitamine* was lost, destroyed, or rendered inert in the processes of isolation. But the recent experiments carried out in the Hygienic Laboratory (*Bulletin*, February 18, 1916) on the *vitamine* content

News Items.

of brewer's yeast gives hope of great results. Heretofore the great difficulty had been to isolate the vitamine in sufficiently concentrated amounts to make it practically of use as a medicament. This problem was solved by the use of Professor Lloyd's prepared hydrous aluminum silicate, which has a very high selective absorptive power. It was found that 0.05 gram of this solid vitamine product would keep in health a 300 gram pigeon fed exclusively on polished rice, or would cure in a very few hours pigeons that had already manifested polyneuritis on this diet. Control pigeons fed on polished rice and untreated with vitamine soon died with polyneuritis.

It would seem that a proportionate dose of vitamine to a man weighing sixty kilograms would not exceed ten grams and could easily be taken in capsule or other form for therapeutic or preventive purposes. It is now to be hoped that the isolation of vitamines from other food products rich in them will soon be accomplished.

THE CONNOTATIONS OF PSYCH-ANALYSIS.

In a letter to the *Lancet* for February 19, 1916, David Forsyth, of London, draws attention to a remarkable phenomenon, a survival of the mid-Victorian fear of words. He writes: "It is becoming more than a little amusing to notice how you have only to whisper the word, psychanalysis, and certain people at once see red. How strange it is that those who still reprobate psychanalysis and the sexual etiology of the neuroses can remain blind to what must long have been recognized by every thoughtful reader of your paper—namely, that the sexual instinct is clean and pure. It will not do nowadays to dress it up in mid-Victorian prejudices as a repulsive and disreputable bogie to affright our intelligence."

Obituary.

WISNER ROBINSON TOWNSEND, M. D.,
of New York.

Doctor Townsend was killed by a fall from a window of his residence, 125 West Fifty-eighth street, on March 11th. He was born on Staten Island in 1857, and received his education at Columbia University, obtaining the A. M., as well as the M. D. from the College of Physicians and Surgeons, in the same year, 1880. He had practised medicine in New York ever since graduation. His practice was confined mainly to orthopedics and he was connected with the Hospital for Ruptured and Crippled, the Orthopedic Hospital, the French Hospital, and others. He was at one time vice-president of the American Medical Association and had been secretary of the State society since 1896. He is survived by a widow and two sons.

Woman's Hospital of Philadelphia.—A special operating room for diseases of the ear, nose, and throat has been equipped by graduates and friends of the Woman's Medical College of Pennsylvania at the College Hospital, in memory of Dr. Emma E. Musson.

Dermatological Research Laboratories to Be Incorporated.—On March 1st, application was made for a charter for the Dermatological Research Laboratories of Philadelphia, the object of the corporation being, as set forth in the petition, for the promotion of scientific research into the causes and care of skin diseases and all other diseases of cognate character. The founders are Dr. Jay F. Schamberg, Dr. John A. Kolmer, Dr. David Reisman, and Dr. Albert D. Ferguson.

Alien Insane in New York State.—According to the annual report of the State Charities Aid Association, on October 1, 1915, the alien insane in the New York State hospitals numbered 9,208, or one in every four. It costs about \$210 a year to maintain each of these patients in a State hospital, making a total of nearly \$2,000,000. None of these patients is a citizen of the United States, and the report urges that the Federal Government assume responsibility for the maintenance of these patients.

Promotions in the Medical Faculty of Columbia University.—Among the promotions in the faculty of Columbia University, announced by the board of trustees at a meeting held on March 6th, are the following in the faculty of the College of Physicians and Surgeons: Dr. Frank Henry Pike, from assistant professor of physiology to associate professor; Dr. Walter A. Bastedo, from associate in pharmacology and therapeutics to assistant professor; Dr. Horatio B. Williams, from associate in physiology to assistant professor.

Hygienic Aspects of the Gary Plan of School Instruction.—The Public Health Committee of the New York Academy of Medicine has taken an interest in the health possibilities which the so called Gary system of school instruction affords, and has held two conferences with Mr. William Wirt, originator of the plan. As there have been no studies made of the effect of the system upon the health of the school children, the committee suggested to the department of health the desirability of making a study of the hygienic aspects of the system and offered its cooperation in such a study.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, March 20th, Philadelphia Clinical Association, Medical Society of the Woman's Hospital, Society of Normal and Pathological Physiology, Blockley Medical Society; Tuesday, March 21st, West Branch of the County Medical Society, Physicians' Motor Club (midwinter smoker); Wednesday, March 22d, County Medical Society; Thursday, March 23d, Pathological Society, Northwest Branch of the County Medical Society; Friday, March 24th, Northern Medical Association, Neurological Society.

The Yorkville Medical Society of the City of New York will hold a stated meeting on Monday, March 20th, at the Aschenbroedel Club, under the presidency of Dr. Joseph Weiner. The program will consist of a symposium on infections of the biliary system. Papers on the subject will be read as follows: Bacteriology and Pathology, by Dr. Emil Schwarz; Etiology and Diagnosis, by Dr. G. A. Friedman; Complications, by Dr. R. Cronson; Treatment, by Dr. I. Kornbluh. A general discussion will follow. The subjects selected for discussion at the April meeting of the society is the Obstetric Patient.

Military and Naval Courses at the Long Island College Hospital.—Arrangements have been made for courses in military and naval medicine and surgery at the Long Island College Hospital, Brooklyn. Major J. H. Ford and Captain P. W. Huntington, of the Medical Corps, United States Army, have been detailed by the surgeon general to deliver lectures at the college on these topics. In addition to these two army surgeons, Surgeon Charles M. Oman, United States navy, who is stationed at the Brooklyn navy yard, and Dr. W. G. Bissell, of Buffalo, formerly a surgeon in the New York State militia, will also deliver lectures.

Medical Association of the Greater City of New York.

—A state meeting of the association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, March 20th, at 8:30 o'clock. The program will consist of the following symposium on Grippe and Allied Infectious Conditions: Bacteriology, by Dr. James Garfield Dwyer; From the Standpoint of the Community, by Dr. Haven Emerson; Complications and Sequelae in the Nose and Throat, with Suggestions for Preventive Treatment, by Dr. William L. Culbert; Aural Complications, by Dr. Edward Bradford Dench; Pulmonary Complications, by Dr. Harlow Brooks; Medical Treatment, by Dr. Reynold Webb Wilcox. A general discussion will follow.

The Care of the Newborn.—A joint meeting of the Sections in Obstetrics and Pediatrics of the New York Academy of Medicine, which will be held on Tuesday, March 28th, will be devoted to a symposium on the care of the newborn infant considered from the obstetric and pediatric standpoints. The following papers will be presented: Correlation of the Pediatric and Obstetrician, by Dr. Roger H. Dennett; The Value of Systematic Prenatal Care of the Parturient Woman, by Dr. Ralph Waldo Lohent; Accidents and Diseases of the Early Weeks, by Dr. Linnaeus E. La Fetra; Comparative Value in Methods for Treating the Umbilical Stump, by Dr. John O. Polak; Care and Feeding During the First Month, by Dr. Godfrey R. Pisek; Remarks on the Occurrence of Syphilis in Mother and Infant, by Dr. J. R. Losee (by invitation). There will be a general discussion of the subject, among those taking part being: Doctor Koplik, Doctor Cragin, Doctor Holt, Doctor Edgar, Dr. H. L. K. Shaw (Albany, N. Y.), by invitation; Doctor Kerley, Doctor Painter, Doctor Dickenson, Doctor Baker, Doctor Downes, Doctor Van Ingen.

Federal Control of Quarantine.—As a result of the representation of the Public Health Committee of the New York Academy of Medicine, Governor Whitman recommended the transfer of the quarantine station at the Port of New York to Federal control in his annual message to the Legislature. Following the death of Dr. Joseph J. O'Connell, the Governor notified the President of the United States and the Surgeon General of the United States Public Health Service that he desired to have a Public Health surgeon appointed health officer of the port pending the final action of the Legislature with reference to his recommendation concerning the cession. After the consent of the President had been secured, the Governor appointed Dr. L. E. Cofer, assistant surgeon general of the United States Public Health Service, Health Officer of the Port. The appointment has not as yet been ratified by the Senate Committee on Finance to which this, as well as the bill transferring the quarantine, has been referred.

In order to bring pressure to bear upon the Senate committee letters have been sent to all those persons who, on a previous occasion, signified their approval of the project urging them to address the Senate committee endorsing the Governor's recommendation. As a result hundreds of such communications have reached Senator Henry M. Sage, chairman of the committee, showing the wide extent of popular approval of the measure.

Belgian Scholarship Committee.—This committee, organized by Dr. Nevil Monroe Hopkins, of Washington, D. C., about a year ago, has for its object the furnishing of practical assistance to destitute scholars and artists in Belgium and aiding in the work of reconstruction, especially in the educational field, after the war is over. The committee is planning to make a collection of American books, which will be offered to Belgium as an American library, and an appeal for books is made to publishers, authors, and libraries all over the country. An appeal is also made for money, which is needed to help Belgian scholars and artists now and to carry on the activities of the committee. A huge reconstruction fund, to be used for educational purposes only, is also to be sent to the Belgian people after the war is over. The membership of the committee is made up of leading men in America, among them being the presidents or chancellors of the following universities: Johns Hopkins, Princeton, Michigan, Missouri, Leland Stanford, Pennsylvania, George Washington, State of New York, and Nebraska. Dr. George Sarton, 309 Wilkins Building, Washington, D. C., is secretary of the committee, and will be glad to furnish full information regarding the work of relief and reconstruction planned by the committee.

Gifts and Bequests to Hospitals.—By the will of the late Robert R. Rhodes, of Cleveland, Western Reserve University, through its medical school and affiliated institutions, is a beneficiary to the amount of about a half million dollars. There was given to Lakeside Hospital, \$250,000; to Charity Hospital, \$50,000; to St. Alexis Hospital, \$50,000; to the School of Medicine, \$50,000; to the Babies Dispensary and Hospital, \$25,000; to the Tuberculosis Free Dispensary, \$25,000; and to the Maternity Hospital, \$25,000.

The Manhattan Eye, Ear, and Throat Hospital will receive \$125,000 from an anonymous giver, provided that the hospital is able to raise an equal amount by December 1, 1916. The money will be used to erect a new building.

By the will of Patrick H. Cooney, who died in Natick, Mass., on December 15th, the Leonard Morse Hospital, Natick, will receive \$5,000, and Carney Hospital, Boston, \$1,000.

United States Army Medical Reserve Corps in Philadelphia and Vicinity.—A meeting was held in Philadelphia, on February 16th, to form a permanent organization of those members of the Medical Reserve Corps of the United States Army residing in Philadelphia and the adjacent territory, including Pennsylvania and New Jersey. A number of members of the reserve corps were present, including Dr. William L. Rodman, Dr. Charles B. Penrose, Dr. J. S. Rodman, Dr. Seneca Egbert, Dr. J. B. Carnett, Dr. T. H. Weisenberg, Dr. W. H. Thomas, Dr. A. C. Abbott, Dr. G. W. Norris, Dr. G. A. Knowles, Dr. J. M. Anders, Dr. L. D. Frescoln, Dr. G. C. Kieffer, Dr. John A. Murphy, Dr. E. H. Siter, and Dr. John H. Jopson. An organization was effected, the officers elected being Dr. John H. Jopson, president, and Dr. E. H. Siter, secretary.

Dr. A. C. Abbott delivered an address dealing with Some of the Problems in Sanitation which are met with in the Every Day Work of the Medical Department of the Army. The plans of the organization include the holding of meetings at regular intervals.

Doctor Pilcher's Semicentennial.—During the second week in May, the semicentennial of Dr. Lewis Stephen Pilcher will be celebrated by the physicians of Brooklyn. Dr. William Francis Campbell is chairman of the committee, and the honorary committee is composed of the following members:

Rev. Charles Carroll Albertson, D.D.; Dr. George E. Armstrong, Mr. Charles D. Atkins, Col. Andrew D. Baird, Prof. Dr. Raphael Bastianelli, Rev. John L. Belford, Hon. William Berri, Dr. Arthur Dean Bevan, Surgeon-General Rupert Blue, Mr. Edward C. Blum, Rev. Nehemiah Boynton, D.D.; Right Rev. Frederick Burgess, D.D., LL.D.; Rev. Joseph D. Burrell, D.D.; Rev. S. Parkes Cadman, D.D., LL.D.; Hon. William A. Calder, Sir Watson Cheyne, Hon. Frederick C. Crane, Dr. George W. Crile, Hon. William D. Ditch, Dr. Charles D. Donit, Dr. Percy S. Dudley, Dr. William H. English, Mr. E. Erickson, Hon. John H. Finley, Mr. Crighton B. French, Dr. W. Stanton Gleason, Dr. Frederick H. Gerrish, Dr. Arpad P. Gerster, Surgeon-General William C. Gorgas, Prof. Dr. Henri Hartmann, Mr. Frederick E. Heilmann, Rev. St. Clair Hester, D.D.; Rev. Newell Dwight Hillis, D.D.; Rev. James E. Holmes, D.D.; Dr. Thomas W. Huntington, Dr. Henry M. Hurd, Dr. Abraham Jacobi, Mr. Henry C. Jabne, Dr. Walter E. James, Hon. Walter H. Jaycox, Dr. William W. Keen, Rev. W. K. Key, D.D.; Prof. Dr. Theodor Kocher, Rev. Nathan Krass, D.D.; Dr. Robert G. LeConte, Dr. Frederick B. Lund, Very Rev. Monsignor E. W. McCarty, D.D.; Very Rev. Monsignor Joseph McNamee, D.D.; Sir William Macewen, Dr. Ralph M. Mayo, Dr. William H. Mayo, Dr. Henry Lloyd J. Mott, D.D.; Dr. Robert T. Morris, Sir Berkeley Moynihan, Dr. John B. Murphy, Sir William Osler, Hon. Lewis H. Pounds, Hon. William A. Prendergast, Dr. William L. Rodman, Prof. Dr. Thorikord Rovsing, Dr. E. Frederick R. Shannon, D.D.; Dr. William D. Sibley, Hon. L. D. Stapleton, Dr. Victor L. Vaughan, Rev. N. McGee Waters, D.D.; Dr. William H. Welch, Dr. J. William White, Rev. Andrew C. Wilson, D.D.

The following named physicians are members of the executive committee:

Dr. L. Grant Baldwin, Dr. Calvin F. Barber, Dr. Elias H. Bartley, Dr. Bruce G. Blackmar, Dr. Silas G. Blaisdell, Dr. Arthur B. Bogardus, Dr. Bion H. Boyd, Dr. William J. Brader, Dr. William B. Brinsmade, Dr. Samuel S. Brown, Dr. Glenworth R. Butler, Dr. William Francis Campbell, Dr. Charles N. Cox, Dr. H. Beekman Delatour, Dr. John G. Dickert, Dr. Robert D. Dickinson, Dr. Charles L. Duffield, Dr. Roger Durham, Dr. Charles Eastmond, Dr. Henry A. Fairbairn, Dr. Mathias Figueira, Dr. Edwin H. Fiske, Dr. James W. Fleming, Dr. Henry P. DeForest, Dr. Russell S. Fowler, Dr. Thomas R. French, Dr. Charles P. Gliderleeve, Dr. Charles H. Goodrich, Dr. Onondio A. Gordon, Dr. Burr D. Harrington, Dr. O. O. P. Humpstone, Dr. John E. Jennings, Dr. Albert M. Judd, Dr. James C. Kennedy, Dr. J. Richard Kevin, Dr. John A. Lee, Dr. William Linder, Dr. John A. McCorkle, Dr. John C. MacEvilly, Dr. William H. Madren, Dr. Paul M. Mayne, Dr. Henry B. Minton, Dr. Burr B. Mosher, Dr. Earl M. Pilcher, Dr. John Osborn Polak, Dr. Ralph H. Pomeroy, Dr. John F. Ranken, Dr. William H. Rankin, Dr. Dudley D. Roberts, Dr. John D. Rushmore, Dr. John H. Schall, Dr. Walter A. Sherman, Dr. H. M. Smith, Dr. Thomas B. Spence, Dr. John D. Sullivan, Dr. Raymond P. Sullivan, Dr. Henry A. Wade, Dr. James P. Warhouse, Dr. Cassius H. Watson, Dr. Henry G. Webster, Dr. Richard W. Westbrook.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,
Department of Biology, Olivet College.

Eleventh Communication.

DIGITALIS (*Continued*).

Another source of discrepancy in our experimental pharmacodynamics, especially as studied on the human subject, lies in the inattention thus far paid to the percentage content of the several glucosides, and their relative potencies individually and collectively. Our exact knowledge of the specific pharmacology of these individual glucosides is lamentably inadequate, owing possibly in part to the present vigorous hunt for the elusive synthetic, but more to the actual inconstancy of available preparations. Cushny asserts that digitoxin acts most powerfully on the bloodvessels, and that a related glucoside, erythrophloeine (not found in foxglove, however), acts most powerfully on the medulla. But the extent of these actions, as well as the relative selective action of the other glucosides, or if each has a compound action, has not as yet been adequately determined. Yet how are we to obtain a basis for scientific comparison of our experiments until we are provided with reliably uniform experimental material?

A review of the various opinions regarding doses of the individual glucosides but adds to our uncertainty. The doses range from what B calls utterly inadequate to what A calls dangerously toxic. In all probability, the reason for these wide divergencies of opinion resides in an equivalent discrepancy in the pharmacological potency of the various commercial preparations. We have no satisfactory standard; until we do, we certainly shall not obtain anything approaching uniformity in our experimental work.

Resulting from factors already discussed, there is a yet further difficulty encountered by clinician and pharmacologist alike. Digitalis action is far from being definitely predictable. In some cases the full therapeutic effect is elicited by toxic doses only; and in some cases not even then. Overdoses of digitalis will usually produce the same symptoms of irregularity, cardiac arrhythmia, and auricular fibrillation that in diseased cardiac conditions yield readily to small doses of the drug; and overdoses may easily be the outcome of accumulated small doses, inasmuch as the continued effect of a single dose in a normal individual has been registered for a period of seventy-two hours.

Yet in the midst of so much uncertainty digitalis has had wide use—and abuse. Introduced first as a diuretic of wonderful potency in selected cases, it has since become a well accepted modifier of heart action. Its chief field of usefulness is in cases of positive cardiac incompetency. In such

cases, small doses, very discreetly repeated, prove in most cases highly satisfactory. A similar mode of attack frequently gives equally desirable results in later stages of cardiac weakness accompanied by auricular flutter and fibrillation. But these comprise most of the positive indications. Digitalis is a distinctly dangerous drug to administer in cases of fatty degeneration of the heart muscle, or in marked degenerations of the arterial coat. Its use in functional disturbances of a transitory nature ought not be countenanced; and it is not to be recommended as a diuretic, except in cases where anuria and edema are sequels of cardiac incompetency.

Antityphoid Vaccination and Paratyphoid Fever.—Labbé (*Presse médicale*, January 17, 1916) presents a diagram consisting of curves comparing the vaccinated and nonvaccinated cases of typhoid and paratyphoid fever received at and cared for in the military hospital under his direction. At first, the majority of the soldiers being unvaccinated, typhoid fever was rife and the paratyphoid infections exceptional. Later, as more were vaccinated, typhoid cases became less, and paratyphoid cases more frequent. In the period when the numbers vaccinated and unvaccinated were about even, the number of typhoid and paratyphoid cases received were likewise equal. Finally, the troops consisting almost entirely of vaccinated men, the cases received were practically all paratyphoid. The replacement of typhoid by paratyphoid fever is not, however, to be viewed as showing that antityphoid vaccination predisposes to paratyphoid infection. The results are explained by the fact that, where both infections prevail, unvaccinated subjects acquire typhoid fever, while the vaccinated have paratyphoid. As the vaccinated subjects can become infected only with the paratyphoid organisms, their chances of acquiring either infection are greatly reduced, the curve showing a marked drop in combined typhoid and paratyphoid infections as vaccination was more generally enforced. The mortality was reduced even much more than the morbidity, the paratyphoid infections substituted for the typhoid being, as a rule, less severe. The mortality among unvaccinated paratyphoid cases in the author's hospital was but five per cent., while that among unvaccinated typhoid cases was 25 per cent. Among paratyphoid patients previously vaccinated against typhoid fever the mortality was practically nil, showing that antityphoid vaccination is of some value even against paratyphoid disease. The life saving effect of antityphoid vaccination in general was shown by the fact that, in the beginning, when the subjects treated were unvaccinated, the mortality was 16.9 per cent., whereas recently, most of the patients admitted having been vaccinated, the mortality has fallen to 8.3 per cent.

Ringworm of the Hands and Feet.—J. E. Lane (*Boston Med. and Surg. Jour.*, February 24th) removes the superficial layers of the skin by soaking and then scrubbing with a moistened cake of pumice stone or coarse sand soap. Sabouraud says that on the hands this treatment is more useful than antiseptics, and that the lesions can be cured by this treatment alone in most cases. As an antiseptic application a one per cent. solution of iodine in alcohol, sixty per cent., may be used. A similar treatment may be used on the feet, but the solution of iodine is used from the start. If this is not successful a one per cent. chrysarobin ointment is applied. An ointment suggested by Whitfield is composed of three per cent. salicylic acid and five per cent. benzoic acid. After an apparent cure the treatment is suspended for a week and then resumed for a few days to destroy any fungi that may have escaped. If dermatitis is caused by the antiseptics used, they are replaced by a soothing ointment until it has subsided. It may be wise to try such treatment when ringworm is suspected, but fungi cannot be demonstrated, for it will continue indefinitely if treated as an eczema, or if untreated. Ringworm of the nails is exceedingly difficult to cure. The best treatment seems to be to scrape the affected parts of the nails frequently, and to keep an antiseptic ointment applied as constantly as possible.

Aftertreatment of Infantile Paralysis.—A. H. Freiberg, in the *Lancet-Clinic* for February 26, 1916, discusses the general technic and indications for tendon transplantation in the treatment of the paralyses following acute poliomyelitis, emphasizing certain special features which have not as yet received due recognition. Mistakes have been made in the past in using for transplantation muscles not closely enough related, functionally and morphologically, to those supplanted. Attempts to substitute for a paralyzed tibialis anticus a posteriorly situated muscle such as the flexor longus hallucis result only in failure. As pointed out likewise by Stoffel, transplanted muscles, if good functional results are to be obtained, must not be fixed to new points of insertion under abnormal tension, and must not be required to maintain a corrected position of the limb. On the contrary, the paralyzed muscle itself may be used as a temporary ligament (sewed under some tension to periosteum and deep fascia) to maintain position, and by the time it stretches, the transplanted muscle will be efficient enough to render it unnecessary. Freiberg, following Stoffel's dicta in these matters in the last two years, has obtained greatly improved functional results in muscle transplantation. In equinovalgus of the foot, for example, he first does a subcutaneous plastic tenotomy of the tendo Achillis, exposes the tibialis anticus tendon just above the annular ligament; pulls the tendon out of the wound with enough tension to overcorrect slightly the position of the foot (now in supination and dorsal flexion), and sutures the tendon above to the tibial periosteum and deep fascia, to maintain this position. The tendon of the extensor longus hallucis is then exposed low down, cut, drawn out above from its compartment in the annular ligament, passed under the

ligament again with the tendon of the tibialis anticus, and finally fixed to the periosteum in company with the insertion of the latter. From this operation, properly planned and with suitable aftertreatment, the foot may well become entirely normal in function and appearance. Where such a simple and direct operative plan is not available owing to the extent or character of the paralysis, tendon transplantation can no longer be considered the operation of choice. This is the case, for example, in varus deformity, in which both peronei and sometimes the common extensor are paralyzed. Here Freiberg believes we must be content with an imperfect restoration of equilibrium, for more complicated procedures aiming at more perfect results are doomed to failure. Stress is also laid on delay of tendon transplantation operations until thorough preliminary treatment by fixation of the limb in a corrected position, supplemented by the application of local heat, skillful massage, and later, with muscle training by means of graduated exercises, has been applied.

Pernicious Anemia Treated by Splenectomy.—M. Bruhn-Fahrous, in *Svenska Läkarsällskapet's Förhandlingar* for April 20, 1915, reports three cases of his own, together with forty-four collated from medical literature, making forty-seven in all. Case I was of a woman of thirty-nine years, in whom the diagnosis of pernicious anemia had been made at her first sojourn in the hospital two years previously, and as she failed to benefit by medical treatment, splenectomy was performed in the Sabbatsberg Hospital in Stockholm. Recovery was tardy owing to the complication of thrombi in both legs, but the blood picture gradually improved, as did her general condition, and when she left the hospital, five months after operation, she showed some increase in weight. Fourteen months after the splenectomy the report came that she had died of cerebral hemorrhage after three days' illness.

Case II was of a man of fifty-seven years, in whom the typical blood picture and symptoms of pernicious anemia had appeared five years previously. As he no longer responded to treatment, the spleen was extirpated, with fatal result three days later.

Case III was of a woman of forty-eight years old, whose pernicious anemia, dating five years back, had been controlled by arsenic, so that she had enjoyed long periods of comparative health and activity, but as she failed to tolerate or improve by medication, splenectomy was decided upon and accomplished with some difficulty owing to adhesions, but with the result that a cure was effected which still persists, fourteen months after operation. The blood picture before operation was typical: Hemoglobin 30, red blood cells 1,550,000, color index 1, white blood cells 5,400, anisocytosis, polychromatophilia, five normoblasts to 300 white blood cells, nine megaloblasts. On leaving the hospital, eleven weeks after operation, her hemoglobin was sixty, red blood cells 1,960,000, white blood cells 9,900, fifteen normoblasts to 100 white blood cells. Fourteen months later, her health is excellent, hemoglobin ninety, red blood cells 3,900,000, white blood cells 7,550; no megaloblasts, no polychromatophilia.

In weighing the merits of splenectomy as a cure for pernicious anemia, thereby eliminating from the organism the site of a pathologically exaggerated hemolysis—a procedure first undertaken by Eppinger and Decastello independently of each other in March, 1913—the author calls attention to the satisfactory, often brilliant results obtained by arsenic. Organotherapy also has its advocates, as well as the radioactive substances, vanadium and thorium, and even direct blood transfusion. Moreover, the malady often runs its course with remissions, and spontaneous improvement for periods of time may occur. Nor may we ignore the beneficent effects of hygienic measures, good food, and rest in bed. Also, as pointed out by Umbino, there is a greater liability of the organism to infectious processes during the period immediately following splenectomy, before the lymph glands and bone marrow have assumed the role of the spleen in forming antitoxic and bactericidal substances. These considerations notwithstanding, the author believes that we have in splenectomy an added therapeutic resource of value, when other remedies are no longer efficient, the more so that the collated cases show improvement in sixty-three per cent., and seemingly hopeless cases are not excluded, notably, for example, Decastello's first case, where death seemed imminent before the operation, but a cure resulted.

Experiments in Typhoid Immunization.—Emmerich and Gerhard Wagner (*Medizinische Klinik*, January 16, 1916) immunized a series of guineapigs to a very high degree and then introduced typhoid organisms directly into the gallbladder. The infection proved successful in practically all of the animals and was not effectively combated by the previous high degree of immunity. These animals continued to excrete living organisms in their stools for months after infection. Several different strains and univalent and multivalent vaccines were used for immunization, but the results were the same in all cases. Doubt is cast by these experiments on the effectiveness of typhoid vaccination either as a prophylactic or as a means of curing chronic typhoid carriers.

The Gynocardates in Leprosy.—The long maintained reputation of chaulmoogra oil in the treatment of leprosy and the great difficulties inherent in its administration induced Leonard Rogers (*Lancet*, February 5, 1916) to investigate the effects of gynocardic acid and the gynocardates. Pronounced improvement was observed in three patients with leprosy who were able to tolerate large quantities of gynocardic acid by mouth. The treatment in these extended over a year or two. Nastin was also used in these cases, but this drug has been proved to be nearly useless. It was found that gynocardic acid could be given by mouth in doses up to forty grains a day, but, owing to its insolubility, could not be administered hypodermically. For this latter purpose the sodium and potassium salts were prepared and tried. Doses of one or two grains were given twice weekly over long periods and the results were extremely favorable. Within as little as two months anesthesia was greatly diminished, heat, cold, and

tactile sensation returned, muscular power improved, and the nodular skin and nerve lesions almost completely disappeared. It is yet too early to state definitely the degree of beneficial action of the gynocardates or the permanence of their effects.

The Treatment of Hand Infections.—Emma Maki Wickstrom (*Medical Sentinel*, February) says, when a dirty, grimy, lacerated hand comes for treatment, first give attention to cleansing—it is impossible to make such a surface aseptic, and vigorous efforts to scrub and cleanse are mentioned only to be condemned. The hand is soaked for five or ten minutes in hot saturated boric acid solution, using the greatest care and gentleness in handling. While the hand is immersed, a dressing is prepared. To a pint of saturated boric acid solution add twenty grains of salicylic acid, ten minims of five per cent. phenolated glycerin, and half an ounce of alcohol. Into this solution put several layers of gauze and cotton of the proper size to envelop the hand in a dressing two inches thick, boil the dressing in this solution until evaporation leaves the dressing thoroughly moist, but not dripping wet. Apply several layers of the gauze and one of the cotton just as hot as the patient will bear, pour into this dressing one ounce of glycerin, and apply the remainder. The whole hand is now covered with rubber tissue and, if the case is ambulatory, wrapped in a woolen cloth to retain the heat, and supported by a sling. The dressing should be changed every twelve hours in severe infections. Streptococcal infections are treated also with anti-streptococcus serum in twenty c. c. doses, every third or fourth day, tonics are given, and the food is looked after.

Treatment of Fibrositis.—T. Grainger Stewart in the *West London Medical Journal* for January, 1916, recommends passive movements and massage, active movements and exercises, combined with electrical stimulation of the muscles. Hydrotherapeutics, hot air, electrothermal treatment, and ionization are used as adjuncts.

Conjunctival Flaps in Cataract Extraction.—Lieutenant Colonel Henry Smith (*Indian Med. Gazette*, January) describes the various forms of conjunctival flaps that have been recommended, and thus sums up his objections to all of them: 1. The time spent on the operation is quadrupled, thus rendering a good patient a troublesome one before the operation is finished; 2, the amount of astigmatism with conjunctival flaps is often very marked; 3, the traumatism in flap operations is trebled; 4, the difficulty of making the incision the correct size; 5, the field of operation is obscured by blood and loose conjunctiva; 6, the increased difficulty in extracting the lens; 7, the increased difficulty in replacing the iris; 8, in intracapsular extraction the practical impossibility of dealing with burst capsules and other complications. Exceptions are granted in favor of Stanculeanu's flap to 4, 6, 7, and 8. It is stated that conjunctival flaps are followed by less sepsis, but this has not been proved. It is held that the conjunctival and sclerocorneal wounds

heal more rapidly; the conjunctival wound does unite quickly, but in some cases it actually prevents the sclerocorneal wound from uniting. No flap can prevent prolapse of the iris, which is due to pressure on the exterior of the eye. A prolapsed iris under the conjunctiva is more difficult to deal with than one which is exposed.

Vaccine in Sciatica.—F. C. Zapffe, in *West London Medical Journal* for January, 1916, reports a case of sciatica occurring some weeks after an attack of gonorrhea. The urine showed staphylococci and a diphtheroid bacillus. A mixed autogenous vaccine was made and injected in doses of from 500,000 to 5,000,000. Seven injections were given and the patient recovered.

Mothers as Donors in Transfusions in Infants. Thomas H. Cherry and Edwin G. Langrock (*Journal A. M. A.*, February 26, 1916) determined by carefully controlled tests that there was no danger from either hemolysis or agglutination when mothers were used as donors for the transfusion of their own infants. This fact materially increases the therapeutic possibilities of transfusion in hemorrhagic disease, since the mother is always immediately on hand and the loss of time in testing for compatibility is eliminated. Further, the cost of voluntary donors is done away with, a matter of great importance in hospital practice.

Treatment of Facial Paralysis.—Morestin (*Presse médicale*, January 20, 1916), at a meeting of the Société de chirurgie, Paris, asserted that in cases of established facial palsy in which nothing can be hoped for from nerve anastomosis, the appearance of the face can be markedly and permanently improved by surgically reducing the subcutaneous soft tissues on the affected side. This is accomplished not only by excision of portions of tissue, but by tucking up the tissues and fixing them to the underlying hard framework by means of buried sutures. Three patients were presented in whom reduction of the flaccid half of the face in this manner had so far succeeded as to render the deformity unnoticeable and the face at rest practically symmetrical.

Anticoagulants in Blood Transfusion.—Henry S. Satterlee and Ransom S. Hooker (*Journal A. M. A.*, February 26, 1916) found that toxic symptoms, varying from mild to severe and even fatal, occasionally followed transfusion after favorable results had been obtained from all of the usual serological tests for hemolysis and agglutination. Three theories are offered to explain such phenomena; of which the most plausible is that there may be some toxic disturbance in the circulation of the recipient produced by the introduction of blood which may be undergoing incipient coagulative changes due to physical influences acting in the process of its transfer. The other theories are also based on the possible occurrence of adsorptive phenomena affecting the colloidal substances of the blood. The rational function of an anticoagulant should be to restrain such incipient coagulative changes rather than completely to prevent coagulation for a long time. Experi-

mentation with many suggested substances led the authors to the choice of a ten per cent. solution of sodium citrate and the modification of the pipette technic of transfusion so as to use as little of the anticoagulant as possible, thus avoiding its own toxic actions. The citrate solution should be flowed carefully over the whole interior surface of the pipettes just before use and then allowed to drain out as fully as possible. This leaves only about one c. c. of the fluid adhering to the walls. Not more than thirty-eight mgm. of sodium citrate is thus required to the 100 c. c. of blood transfused, and most of this is retained in the blood which adheres to the walls of the pipettes. Excellent results have been secured by this technic. Other anticoagulants fail in one or more respects.

Treatment of Obesity by the Bergonié Method.—Mariano Maneru in the *Revista Clínica de Madrid* for November 30, 1915, strongly advocates this method as giving uniform and marked weight reduction. The main feature is a faradic exercise of muscles, while it acts indirectly on the weight through the muscular system with no direct action on adipose tissue. It is harmless even when weight reduction is rapid and can be used in all classes of cases. From fifteen to twenty kilos may be taken off in a month or six weeks without depressing action. Of course dietetic measures with special attention to caloric values are also important.

Treatment of Oriental Sore.—George C. Low, in the *Journal of Tropical Medicine and Hygiene* for November 15, 1915, reports the case of an Englishwoman of thirty-three years who, after a year's stay in India, presented two small sores on the face and, some months later, after returning to England, another sore on the middle finger of the left hand. Over a year after their first appearance the sores were still present, and cultures revealed *Leishmania tropica*, or parasite of Oriental sore. A salicylic ointment and the following methylene blue preparation, recommended by Cardamatis and Melissidis, were tried:

R	Methylthionine hydrochloridi, }	
	Petrolati, }	...aa 3iss (6 grams).
	Adipis lane hydrosti, }	
M. Fiat unguentum.		

Later, washing with a one in forty phenol solution, followed by the application of boric ointment, was substituted, but the local condition continued to grow worse and lymphatic involvement in the forearm, with enlargement of the epitrochlears, was noted. Mindful of the results obtained in the Leishmanian sores of South America by Machado and others with intravenous injections of tartar emetic, Low next advised the application of a two per cent. ointment of this antimony compound to the sores morning and night. A remarkable change took place in the sores within a month, and a few weeks later all had healed, leaving thin, pigmented scars. Temporary discontinuance of the ointment at one time became necessary during the treatment owing to an antimonial pustular eruption. Similar treatment, however, is advised in all cases of Oriental sore.

Diphtheria.—M. L. Wilbanks, in the *Texas Medical Journal* for February, 1916, recommends as the dose of antitoxin not less than 5,000 units for a child under two years of age; in older children, 500 units per kgm. of weight.

Pituitary Extract in Diabetes insipidus.—G. Maranon, in the *Revista Clínica de Madrid* for December 15, 1915, states that as the hypophyseal origin of diabetes insipidus is now established, the disease should be treated with pituitary extract, which in fact gives brilliant results. Other associated ductless glands may be affected, and when such is the case their extracts should also be administered.

Skin Affections in Childhood.—Dr. Henry Heiman, in the *Pennsylvania Medical Journal* for February, 1916, recommends:

R Zinci oxidi,	20 parts;
Talc,	20 parts;
Glycerini,	25 parts;
Liq. carbonis detergentis,	5 parts;
Lactis magnesi, q. s. ad.....	120 parts.

M. fiat lotio.

For Gastric Flatulence. A. P. Luff (*Penn. Med. Jour.*, Feb., 1916) recommends:

R Arom. sp. of ammonia,	℥xxv;
Spirit of chloroform,	℥xv;
Spirit of peppermint,	℥xii;
Spirit of cajuput (B. P. oil of cajuput 1, alcohol 9),	℥viii.

M. fiat mistura.

This makes a teaspoonful dose and should be taken in a wineglassful of water whenever the flatulence becomes troublesome.

Treatment of Laryngeal Tuberculosis.—James Joseph King, in the *International Journal of Surgery* for February, 1916, makes, during the stage of infiltration and early ulceration, an intratracheal injection of a twenty per cent. solution of menthol in liquid alboline. For the relief of pain the insufflation of orthoform powder has been recommended. The ulcer may be cauterized lightly. The patient should be out in the open. A moderately dry climate is more suitable than a damp or warm climate. An altitude of 2,000 feet seems to be the best. The diet should be suitable to maintain nutrition and strength. If the cough is troublesome, codeine is indicated. In general, the constitutional treatment is identical with that of pulmonary tuberculosis.

Treatment of Intestinal Stasis.—E. L. Eggleston in the *Medical Record*, March 4, 1916, advises a bulky diet to stimulate peristalsis, with a reduction of proteins to a minimum to lessen putrefaction. Massage and manual or mechanical movements are serviceable in developing the abdominal muscles and thus increasing intraabdominal tension. Hydrotherapy is beneficial in improving the general nervous condition, equalizing the circulation, and preventing visceral congestion, as well as stimulating secretory and excretory organs. Lactic acid forming bacteria do much to check the growth of anaerobic putrefactive bacteria, while mineral oil and bulky substances as agaragar and bran are of use as laxatives. A decided colitis calls for bowel irrigations with physiological saline solution, mild alkaline solutions, or oil, which not only re-

move offensive material, but provide much needed lubrication. Surgical intervention is rarely advisable unless there is definite organic obstruction, as malposition of the intestinal tract may have little bearing on its function. Eggleston condemns short circuiting operations, or removal of any portion of the colon in the absence of organic obstruction, as the majority of cases are made worse by these operations.

Rice Diet in Skin Diseases.—L. Duncan Bulkley in the *Medical Record* for March 4, 1916, insists that this diet should be carried out with exactness in all its details in order to obtain results. The diet consists exclusively of rice, butter, bread, water, and nothing else, three times daily, for a specified time which depends on the nature and severity of the case. The rice must be well boiled in water, not soggy, and must be eaten hot with a fork, not a spoon, to secure the action of the saliva during thorough mastication. Water should be taken freely, but not when food is in the mouth, and a pint of hot water should be taken before the morning and the evening meals. In acute eczema five days make a marked improvement, while psoriasis requires long periods. Milk must not be taken with the rice nor must the patient take coffee or chocolate.

Evacuation of Postpharyngeal and Tonsillar Abscesses without the Knife.—Comby, in *Bulletins et mémoires de la société médicale des hôpitaux de Paris*, October 21, 1915, lays stress on the dangers and occasional failures in the use of the scalpel for the evacuation of throat abscesses in young children. Unnecessary loss of blood and even serious injury to large vessels are distinct possibilities in small, struggling children, especially in the hands of the practitioner without special surgical training and experience. In the last five years, Comby has opened all abscesses of the throat in children with an ordinary sterile grooved director and hemostatic forceps, with uniformly good results. With the grooved director the physician feels free to explore all parts of the inflamed area and finally discovers precisely the chief point of softening, which the blunt extremity of the instrument then breaks through without difficulty, a gush of pus following at once. The opening being insufficient, a hemostat is introduced to enlarge it, and the abscess is thus thoroughly evacuated. The opening may close later, but this is true also in cases of abscesses evacuated with the bistoury. Comby recommends the grooved director-hemostat procedure for tonsillar, posttonsillar, postpharyngeal, and lateropharyngeal abscesses both in children and adults. He reports twenty-eight cases in children in which the method was constantly successful and devoid of untoward consequences. There were twelve cases of postpharyngeal abscess, eight in children less than two years old and four in children between four and a half and fourteen. Four cases required but one evacuation, the remaining eight, two to five evacuations. In each of the sixteen cases of tonsillar abscess, except one, which required two sittings, a single opening was followed by recovery. Of these sixteen patients only two were less than eight years of age.

Pith of Current Literature.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

January 18, 1916.

Brown-Séquard's Epilepsy, by A. Mairé and H. Piéron.—The first case of epileptoid seizures due to peripheral nervous irritation met with in military practice in the present war is reported by the authors. The patient, aged thirty years, had sustained a compound fracture of the ulna, followed by supuration and extensive cicatricial deposit. Four months after the injury, headache and vertigo appeared, soon followed by short periods of unconsciousness and later frank convulsive seizures. Examination showed undoubted compression of the peripheral parts of the musculocutaneous and internal cutaneous nerves. Hyperalgesia was widespread, extending to the circumflex, brachial plexus, superficial cervical, and posterior cervical distributions. Pressure on the musculocutaneous trunk was sufficient to bring on a paroxysm of pain radiating to the head, indistinct vision, tinnitus, and tremor. Electric treatment and excision of the scars caused only temporary improvement, but immersion of the arm in water at 40° C. for two (and later three) hours twice daily gradually brought almost complete relief.

PRESSE MÉDICALE.

January 20, 1916.

Complications of Paratyphoid Fever, by J. Minet.—Experience with a series of sixty cases of paratyphoid fever in a hospital close to the front for typhoid cases or suspects led to conclusions entirely different from the ordinary statements in textbooks as to the relative infrequency and mildness of the complications in paratyphoid fever. Later observation of over sixty more cases only served to confirm previous deductions. In all cases the diagnosis was established by a blood culture. Intestinal hemorrhage occurred in three out of sixty cases—a ratio about the same as that found by Homolle in 10,000 cases of typhoid fever (4.65 per cent.)—and in all three cases was copious, though not entailing ultimate death. In one instance a down and up fluctuation in the temperature curve accompanied the onset of bleeding, as in typhoid fever. One case of infection with the B paratyphoid organism developed an early angiocholecystitis soon associated with hepatic colic and later, sudden death, probably from circulatory failure. Nineteen cases showed more or less grave involvement of the circulatory system, one developing femoral phlebitis, another brachial phlebitis, and all myocardial impairment, manifested in weak pulse and frequently in embryocardia, impaired heart sounds, tachycardia, disappearance of the apex beat, arrhythmia, etc., without, however, any murmurs, true intermittences, or edema. The treatment found most effective in these cases included sparteine internally; injections of five c. c. of camphorated oil when the rectal temperature exceeded 39.5° C., increased to twenty-five or thirty c. c. as soon as signs of actual cardiac weakening appeared, and injections of epinephrine and strychnine in severe cases. Pleuropulmonary complica-

tions were met with in seven cases, ranging from an evanescent bronchial reaction to pleurisy, lung congestion preceding the intestinal symptoms, and bronchopneumonia. Such complications as neuralgia, peristitis, peritonitis, obstinate vomiting during apparent convalescence (ending fatally), and a marasmic condition, all suggesting typhoid fever, were also met with. On the whole, the complications of paratyphoid are as severe as those of typhoid, though their incidence is somewhat less.

Tests of Circulatory Function, by A. Martinet.—The static test employed by the author consists in having the subject first lie down, the pulse rate being then counted until two successive counts give the same result. The systolic and diastolic blood pressures are next taken, and finally the subject assumes the standing posture and the counting and pressure estimations repeated. The dynamic test immediately follows the static. The subject executes at a rate of sixty to seventy to the minute twenty deep flexions on the lower limbs. Pulse rate and pressures are thereafter ascertained every minute for three to five minutes. Finally, the subject returns to the recumbent posture and the same estimations are again made. Observations in large series of normal as well as of abnormal subjects showed that the functional curves thus obtained remain practically the same in a given individual when repeated at long intervals. In the normal subject the pulse rate rises from 4 to 8 beats when the standing posture is assumed, and both pressures increase by about 5 mm. of mercury. The twenty deep flexions cause an acceleration of sixteen to twenty beats, a rise of forty mm. in the systolic pressure, and one of ten mm. in the diastolic. Rest restores the findings to their original level within three minutes. In cases of myocardial weakness, the pulse rate at first rises by sixteen to twenty-four beats, rises as much as thirty mm. more after the flexions, and may remain accelerated five, ten, or more minutes after return to recumbency. The systolic pressure is little or not at all increased (or may be lowered) by standing up and the flexions, while the diastolic pressure, on the contrary, is distinctly raised. Insufficiency of reserve power of the heart is disclosed by these tests, performance of which is, on the other hand, both unnecessary and inadvisable in cases of heart involvement manifest symptomatically. Neurotic heart affections, as in cardiac neurasthenia or Graves's disease, are recognized by exaggerated positive response in the pulse rate and pressures, followed by an undelayed return to normal. In combined neurotic and organic heart disturbances, the tests are of peculiar value in drawing attention to the coexistence of two abnormal states.

REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

January 21, 1916.

Experimental Cataract, by F. M. Urra.—From experimental injection of alcoholic and glycerinated solutions of naphthaline into the anterior chamber of frogs' eyes with the object of producing cataract of the lens, Urra concludes that the subcapsular epithelium of the lens has under its control the preservation of the transparency of the lens. The capsule itself cooperates in this function.

February 14, 1916.

Serous Apoplexy and Lumbar Puncture, by R. del Valle y Aldabalde.—It is extremely probable that an intermittent excess in the production of cerebrospinal fluid causes symptoms of cerebral compression whose nature has heretofore been obscure. One grade of this compression shows cephalalgia with vomiting and slow pulse. A second grade called by Quincke acute intermittent hydrocephalus, is merely a more intense form of the first type. The third or most severe grade is called serous apoplexy and is characterized by comatose loss of consciousness, exaggeration of reflexes, vomiting, rigidity and dilatation of the pupils, and slowness of the pulse. In this last severe category of cases the symptoms are markedly relieved by lumbar puncture.

BRITISH JOURNAL OF CHILDREN'S DISEASES.

February, 1916.

Congenital Word and Letter Blindness, by T. R. Whipham.—This condition, known as alexia congenita, seems to be more prevalent among boys than among girls. At times it is found in more than one member of a family. The case reported is that of a girl eight years old, who presents some curious deficiencies. She cannot repeat the alphabet, but can write it perfectly on rare occasions. She cannot write a given letter, excepting, occasionally, the letter A. Her acquaintance with figures is limited. She cannot read simple words like "is" either from print or writing. She can write her own name and the name of the school correctly, but not her first or last name separately, always writing them together. After an interval she cannot read words she has written. She can copy correctly anything written or printed, which is quite common in cases of this kind. The Wassermann reaction is positive. As the patient in question is word and letter blind, and also letter deaf, the defect must be situated around the posterior extremity of the left fissure of Sylvius. Why the corresponding areas on the right side do not take on the functions of the impaired senses cannot be explained. The outlook in these cases is not altogether hopeless; systematic and sympathetic training usually help.

Obesity, Epileptiform Attacks, and Recurrent Jaundice, by E. G. Fearnside.—The case reported is that of a girl, thirteen years old, who has been too large since seven years of age. She has been subject to fits during the past two years and for three months has had attacks of jaundice in which the scleræ became yellow. Her weight at the present time is 157 pounds. From May to November, 1915, she has taken daily thirty grains each of the bromides of potassium, sodium, and ammonium, and two and a half grains of thyroid extract. During this time her health has been fairly good, there have been no further attacks of jaundice, but she has had repeated epileptiform seizures. No evidence of pituitary involvement can be demonstrated and pineal disease is never associated with obesity. This may be an example of a severe obesity of the type which falls into the class known as "normal abnormalities."

The Cure of Squint, by N. Bishop Harman.—In the treatment, the following must be considered:

1. Balancing the vision of the eyes; 2, the awakening of the fusion faculty; 3, operation. To secure an equal balance two courses must be followed: 1. Refraction under atropine with constant wearing of the glasses. When necessary, they should be prescribed for children under one year of age; 2, adoption of measures to revive the vision of the squinting eye. The sound eye should be bandaged for several weeks and the squinting eye made to work; or atropine should be instilled into the sound eye. The fusion faculty can be trained by stereoscopic exercises. As soon as it is ascertained that certain conditions exist, operation should be advised. If glasses have not helped after being worn for a period of six months; if fair vision is present in the squinting eye, 6/18 or more; and if there has been a definite recognition of the two images presented by any form of stereoscope, operation is indicated, and should be performed as soon as possible.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

February 26, 1916.

Modes and Periods of Infection in Tuberculosis, by Mazzyk P. Ravenel.—All modes of infection other than by inhalation and ingestion play too small a part in infection to be considered. Clinical and experimental evidence bearing on these two modes only is therefore reviewed and analyzed by the author, who reaches the following conclusions: The respiratory tract provides the route for infection in the majority of cases of tuberculosis, although the alimentary tract is a frequent portal of entry for the tubercle bacillus. This organism can traverse the mucosa of the alimentary canal without leaving a lesion at its point of entry. Such passage takes place most readily during the digestion of fats, and the organisms enter the chyle and pass into the blood stream by way of the thoracic duct. Thence they are carried to the lungs, where they are largely filtered out. The alimentary mode of infection is particularly frequent in children, and infancy and childhood are the periods of life at which the human being is specially susceptible to infection with tuberculosis. Therefore no campaign against the disease which omits the protection of children can be successful. Tuberculous infection may occur at any age, but it is less frequent in adult life than is commonly believed.

Syphilis of the Vertebrae, by C. C. Wholey.—Syphilitic spondylitis has not often been reported. The symptomatology of the disease is extremely varied and is due essentially to neural involvement. The case here reported occurred in a man fifty-two years old, who was admitted to hospital in an alarming condition due to loss of sensation about the larynx, pharynx, and esophagus. There was also loss of sensation in the bladder, rectum, and lower extremities. There was ulceration of the pharynx and an obstinate paroxysmal cough. There was complete inability to swallow. Bronchoscopy and esophagoscopy were performed easily without anesthesia, since the regions were already anesthetic. The Wassermann reaction was negative, but the spinal fluid contained an increased number of lymphocytes and gave a heavy globulin precipitate. Röntgenography revealed an osteoarthritis of the lumbar and sacral vertebrae with many small bony

spicules projecting from the lips of the bodies of the vertebrae. The diagnosis was largely established by this examination. Treatment with mercury and potassium iodide promptly gave relief and only a few months later the patient returned to his usual work and has remained in good condition ever since—a year and a half. The multiplicity of the nerve lesions in this case suggest the cause of them being the involvement of the several nerves in the acute inflammatory exudative process of the osteitis.

Overactivity as a Factor in Nervous Disease, by Alfred Gordon.—Seeking to find some explanation for the selection of given portions of the body for the manifestation of certain nervous diseases, the author made a careful analysis of the habits and occupations of a large series of patients with lead poisoning, tabes, general paralysis, poliomyelitis, pernicious anemia, occupation neuroses, and progressive muscular atrophy. There emerged important evidence connecting the particular distribution of the lesions and their phenomena with functional overactivity of the affected parts. Thus, among lead workers those with left handed wrist drop were left handed men, those with right, right handed, and those who had bilateral drop used both hands about equally in their work. The overactivity of the lower extremities in children seemed to account in large measure for the great frequency of the involvement of this portion of the body in poliomyelitis, while in adult life the upper extremities were often affected, corresponding to the greater use of these in occupations. General paresis was far commoner among brain workers than among those whose occupations were more purely laborious, and in this latter group the first symptoms of tabes were found to appear in those extremities which were most used in work. Evidences of spinal cord degeneration were present in three cases of pernicious anemia in men, while in one case in a woman no such signs were present. Many other instances are given to establish the importance of functional overstrain as a potent factor in the localization of the effects of systemic diseases and intoxications.

Diphtheria Carriers, by J. C. Geiger, Frank L. Kelly, and Violet M. Bathgate.—The isolation of carriers is one of the most important measures to be adopted in the control of epidemics of diphtheria and the discovery of the carriers can be made only by the results of cultures. The importance of taking cultures from the nose as well as from the throat and the danger of trusting to the latter source of cultures alone is emphasized. The proportion of positive cultures among suspected carriers was over forty-two per cent. when the nose was examined and only slightly under eight per cent. from the throat. Only twenty-eight per cent. of all positive cultures were derived from the throat. A second important matter was the use of the Schick test to distinguish contacts from carriers. It was proved in one epidemic that all contacts harboring diphtheria bacilli in their throats or nasal passages were immune to the disease, and it was, therefore, not necessary to detain such persons for the full incubation period. On the other hand, where the test was not employed, a number of the carriers acquired diphtheria. If the test had been employed at once,

it would probably have been possible to have prevented many of the cases from occurring by prompt administration of immune serum.

MEDICAL RECORD.

March 4, 1916.

Radium, by Douglas C. Moriarta.—The physiological action of radium is remarkable. It often increases the red blood count 250,000 in forty-eight hours with rapid increase also of the hemoglobin. It stimulates all cell life, increases elimination of carbon dioxide, urea and uric acid. It diminishes the viscosity of the blood and increases the secretion of urine, stimulates the appetite, aids digestion, dilates the bloodvessels and invariably lowers blood pressure. Cardiovascular cases require small doses, while arthritis cases require large ones. It may be given intravenously or internally and in radioactive waters. Nephritis is greatly benefited by its use, while both in malignant and benign growths the results are startling.

Concerning Rubber Gloves, by Robert T. Morris.—The sense of touch is impaired by the use of rubber gloves, and operations are lengthened, although they may be worn with advantage in external operations such as amputations, excisions, and herniotomy.

A Sign in Fracture of the Pelvis, by G. P. Copenail.—In practically all cases there appears in from one to three days an ecchymosis of the perineum and scrotum in men and of the perineum and labia in women. It is present in a larger percentage of pelvic fracture than is Battle's sign in fracture of the base of the skull.

Proceedings of Societies.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Special Meeting Held at the Imperial, Brooklyn—New York, December 6, 1915.

The Chairman for the Borough of Brooklyn, Dr. ROBERT E. COUGHLIN, in the Chair.

Percussion; Technic and Theory.—This paper, by Dr. Bernhard A. Fedde, of Brooklyn, was published in our issue for January 15, 1916.

Dr. GLENTWORTH R. BUTLER said that it was often asserted that members of the profession placed too much reliance upon laboratory methods and too little upon their senses and the recognized methods of physical examination. Doctor Fedde's was one of the best papers of the kind that he had heard. The acoustics of the chest were extremely complicated. The study of acoustics upon a vibrating string, or rod, or column of air within cavities of a definite shape and size was a comparatively simple matter, for the nodes and internodes, the tones and overtones could be definitely determined; but when it came to the variety of overtones from the more or less solid organs of the body, the matter became more complicated, and he had not been able to work them out to his own satisfaction. The explanation offered by Doctor Fedde was one of the

most reasonable and satisfactory of the many that he had heard. There were two conditions to be considered—the airless body and the body containing air. If they percussed a solid airless body, they obtained no resonance; there was absence of vibration; whereas when an air-containing substance was percussed, such as the lung where the air was distributed in myriad sacs and tubes, or the intestines, or the stomach itself, where the air was in mass, they had resonance of a definite character. Practically, the object of percussion was to determine whether or not there was air under the point percussed—whether it was solid or was an air-containing tissue. In order to do this, the method so ably described by Doctor Fedde, the Goldscheider method of threshold percussion was the best. He had adopted it himself, and of late altogether for delimiting the organs, particularly the heart. At first glance it looked as if a man was simply touching the chest, but if it was done in an absolutely quiet room and the percussion touch was of the right strength, it was almost startling to pass from one point to another one eighth or one quarter of an inch away and note the difference. In one place they got a sound, and in the other over the heart they got no sound; the contrast was so startling at times that it gave them a mild shock.

In regard to threshold percussion, the suggestion had been made by Doctor Smith, of Johns Hopkins, to establish the proper strength of stroke by first percussing over the dull or airless area. For instance, in the heart, they should start at that point which was ordinarily in contact with the chest wall and would give no resonance, and ascertain the strength of the stroke which produced no sound; then, starting from the outside, they should pass slowly inward toward the edge of the heart, using the same strength of stroke, and the moment they touched the edge of the heart there would be a dull sound in keeping with that over the airless area.

It was interesting to hear again of the Sansom pleximeter, for a number of years ago he had had some which had a way of breaking very easily. It was used on much the same basis as the threshold percussion—of employing a very light stroke. As a matter of fact, Sansom's pleximeter method was a less satisfactory method than that devised by Goldscheider.

Running percussion was helpful. Many men had used this to a considerable extent, especially over the abdomen, in vertical and transverse lines, thus rapidly finding out which areas were filled with air. It was a time saver and an excellent and accurate way of finding out the regions of dullness and air containing regions.

Auscultatory percussion had always been disappointing to the speaker, perhaps because of the personal equation, but he had never been able to get satisfactory results, though some friends said they had been able to delimit organs accurately. On the other hand, he had tried it out with some of his friends blindfolded, and incongruous results were obtained.

Doctor Butler had had no experience with so called "drop" percussion, but in order to employ it satis-

factorily it would seem necessary to have the percussion surface horizontal, otherwise they could not get the drop of the hammer. That was sometimes not practical, if the patient could not be put in all positions. The examiner ought to train himself to get the proper even strength of stroke, and it would make no difference in what position the patient was. Some years ago there was an apparatus devised for this same purpose—a little artificial finger with a percussor actuated by a trigger, but it proved unsatisfactory.

Dr. TASKER HOWARD regretted that owing to having arrived late he had missed much of the paper and was unable to discuss it intelligently, beyond saying that it must have been very satisfactory to have the principles of the mechanics explained so clearly as Doctor Fedde could do it. Percussion had always been a discouraging subject, particularly in regard to delimiting the organs until threshold percussion had been tried. Doctor Butler had spoken of blindfolding his colleagues' eyes. The speaker said that he closed his own eyes in going over an organ, to avoid being influenced by what he saw.

Threshold percussion was not so valuable in going over a tuberculous lung. There light percussion was more valuable and, except in cases of recent hemorrhage, something might be learned by using heavier percussion too. Pottenger described a method of percussion by which he could find areas of consolidation in the lung—by feeling very gently with one finger on the chest. Doctor Cornwall used a somewhat similar method. This required a great deal of practice, but the speaker hoped some day to be able to tell by the sense of touch something of the condition of the tissues beneath.

Dr. EDWARD E. CORNWALL said that in these days, when the laboratory dominated and even sometimes, perhaps, intimidated the clinician, it was a pleasure to listen to a serious discussion of one of the older methods of diagnostic procedure, which depended on the cultivation of a special sense: the laboratory was a wonderful aid in diagnosis; had revolutionized it, in fact; but the brilliancy of its performance should not blind them to the value of the diagnostic methods which depended on the use of the cultivated special senses in the examination of the body. The latter, too, the examiner could always carry about with him. Percussion was one of the methods of examination which the beginner did not appreciate as much as the more experienced practitioner. He had two methods of percussion, which he had employed with much satisfaction for a number of years, modifications of palpatory percussion, which depended entirely on the sensation of feeling and not on that of hearing. He called them "feel percussion" and "punch percussion."

"Feel percussion was performed as follows: With the tip of middle finger of the right hand held in the position for playing the piano, a series of rapid, very light touches or taps were made along a line on the skin. In these touches or taps the finger was barely raised from the surface, and the impression was given to the onlooker that the examiner was feeling for something. That was exactly what he was doing; feeling for a sensation of

a difference in density. This feel percussion he considered of particular value in mapping out the heart, liver, spleen, stomach, and colon. Punch percussion took advantage of the fact that the pressure sense responded to a sudden stimulus more readily than to a slowly applied pressure of the same degree of tension. It was performed by the middle finger of the right hand held rigidly straight, and thrust suddenly and with considerable force into the region to be examined; with a motion very similar to that used in ballottement. This method of examination he had found convenient in examination of the abdomen for deep seated hard masses. The suddenly punched in stiff finger could appreciate the presence of a neoplasm or displaced kidney which might escape the slow pressure of ordinary palpation.

Dr. L. C. AGER said that the point which always troubled him about percussion was the interpretation of what he found. None of them percussed very long, if they did it carefully and accurately day after day in the same way, without finding marked differences, and to a certain extent also in the feeling of the tissues percussed; but when it came to the interpretation of what these changes meant they were often much at sea. He did not have the same confidence that some men seemed to have in saying what was under a particular spot. Certainly the reports that they got in comparing results with the orthodiagraph were discouraging. Experienced diagnosticians were often far out of the way. The differences obtained, particularly in children, in the different areas of the chest, and in the same child at different times, were confusing rather than helpful.

Dr. E. R. VAN GIESON, as usual, felt impelled to refer to a little ancient history. He was surprised that in collating the authorities for this very able paper Doctor Fedde had not referred to Dr. Alonzo Clarke, and Doctor Camman, who, in 1860, by a method of auscultatory percussion mapped out the heart with a degree of accuracy that was absolutely astounding. As the preacher said, there was nothing new under the sun!

Doctor FEDDE had often tried to map out heart areas by ordinary percussion with only indifferent satisfaction, as had doubtless most of the men in their younger days. Replying to Doctor Van Gieson, he had not examined the literature further back than fifteen years, thinking that would cover all the main points. As for "drop percussion" he had mentioned that mainly to call out a discussion. He had tried it himself, and thought that the author claimed too much for it. He said he was able to map out the kidney with the greatest distinctness. As had been stated in some of the later German papers, threshold percussion had its limitations, it was not much recommended in pulmonary disease. It distinctly failed in the presence of emphysema. In using threshold percussion the outlines secured were not always the usual ones. Goldscheider had frequently found bizarre forms of heart area, entirely unlike the usual block shaped form. He had found the area much enlarged in the transverse diameter, and in other instance thin pyriform outlines.

It would seem that Doctor Cornwall's feel and thump percussions were only modifications of Ebstein's. Ebstein did not assert that he gave the exact silhouette of the heart; for he mapped out the heart area and then thrust needles in two ways, perpendicular to the tangent and in a sagittal direction, and the needle missed the heart by one or two cm., while the radial needle struck the cardiac border, so that in using the touch percussion they should bear in mind that they obtained an enlarged and not a true, unenlarged, and undistorted projection.

The Surgical Treatment of Bronchiectasis.—This paper, by Dr. EARL L. MAYNE, was published in the issue of the JOURNAL for March 4, 1916.

Dr. R. W. WESTBROOK had been much interested in Doctor Mayne's description of his case and the final outcome. The surgical outlook of these cases of bronchiectasis was not good at present, but in the course of time with the advances that were being made in diagnosis and technic, it seemed probable that they would be able to accomplish more than had been done in the past. They could bring about relief, but rarely cure. Had Doctor Mayne's patient survived he might have had a permanent fistula, which would have been about as bad as it was at the start. The speaker's own experience had been mainly with one patient, the exact origin of whose condition was in doubt. The man had come from a Home for Consumptives, and was referred to him as having an unhealed empyema sinus. Bismuth paste injected into the cavity, the patient coughed up. An effort was first made to close the opening by the means usually employed. Accordingly, the Paquelin cautery was used and in two or three weeks the fistula was closed, but the patient immediately became septic, complained of headache, cough, and expectoration, and was generally miserable. Accordingly it was thought best to open up the chest under general anesthesia and employ thorough drainage. This was done, and various substances and escharotics were injected in the endeavor to contract the cavity. This went on for a month or two, and then the tube was taken out, and the same difficulties presented themselves again. Then it was decided to do a plastic operation, and a large resection of the ribs was made, but to no avail. As long as drainage continued, the patient was comfortable, but when the wound was closed she was miserable; so she was advised to go on with the sinus for the rest of her life, but she said she would not live that way. She was warned of the danger of an extensive operation, but said she would take any risk if she could only be relieved. Accordingly, about two years ago a very extensive resection was made of the fifth, sixth, seventh, and eighth ribs, taking out large portions, and going into the lung with the Paquelin cautery, exposing a bronchiectatic cavity as large as an egg, into which, on all sides, opened dilated bronchioles. The operation was similar to that preceding it, only on a larger scale, destroying as much of the cavity as possible and allowing the chest to fall in, hoping to get a cure by granulation, but the result was disappointing. The patient got through the extensive operation very well and was afterward in somewhat

better condition, but she was not cured. Later, she returned and said that she was not willing to live as she was. She was told there was nothing to do but to remove part of the lung, to which she agreed, and was sent to Dr. Willy Meyer, who performed an extensive resection of the chest wall, exposing the pericardium and the diaphragm, etc. The upper lobe, however, was found to be in such a condition that he could not do a lower lobectomy, so he did a partial resection of the left lower lobe and wisely did not attempt more. After the remaining bronchioles and vessels were closed so that there would be no leakage, the patient was returned to bed. She recovered, and was considerably improved, and after a year returned to Doctor Westbrook and stated that she still had a sinus. Doctor Westbrook had hoped to present this patient before the society, but found that she had returned to the German Hospital. It was possible that the woman might be able to stand another operation and perhaps she might be cured if Doctor Meyer could go into the chest again and complete what he planned to do at first. If they attempted such an operation as a primary procedure, there was danger of losing the patient, because of the difficulty of the cardiac and respiratory apparatus to adopt itself to such changed conditions. If such patients consented to live with an open fistula, they would usually get along fairly well, but they seemed to look upon such a condition as intolerable, very much as other patients looked upon an artificial anus.

The sum of the whole matter was that if they expected to cure a chronic, long standing condition of this kind, they must do a resection of the lung, and it was better to do it as a late or secondary operation than as a primary procedure. Getting the case early did not mean a radical procedure right away; though it had been done. If the patient was carried along by stages there was a fair chance of curing by operation many of these miserable patients, who seemed to suffer as much as any one could.¹

Dr. J. P. MURPHY, in looking over the literature, had found in the *Annals of Surgery*, 1914, articles by Doctor Meyer and Doctor Murphy, and in all these articles combined there was not so much as in Doctor Mayne's paper, just read. It was difficult to differentiate bronchiectasis from abscess of the lung. If these cases were divided into the medical and surgical conditions, they would have in the medical cases first those due to congenital conditions of the bronchi, or a defect in the bronchial wall. Cases had been reported in which the patients lived to be sixty-five years old. Nearly every one has seen such cases, perhaps a fat, pasty looking elderly woman, who was emphysematous and coughed up a large quantity of particularly fetid pus. That was bronchiectasis, and was due to a dilatation of the bronchi, but the size of the bronchi had no comparison with the amount of pus coughed up. For such a condition very little could be done. Surgical bronchiectasis, as usually understood, was a secondary condition. Dr. Willy Meyer considered the x ray infallible in diagnosing these cases. Diag-

nosis was also made on the history and the amount of foul material coughed up. That, in connection with other symptoms, would differentiate bronchiectasis.

For the medical cases, lung decompression had given relief, but as soon as they took the pressure from the lung, on account of the peculiar epithelial lining of the bronchi and their vessels, they got the same conditions as existed before. The only treatment for the acute febrile case was excision and drainage. It was difficult to differentiate a bronchiectasis from a lung abscess where the pathological conditions extended into the tissue of the lung. Doctor Murphy said that some time ago a patient came into his service at the Coney Island Hospital with tetanus. After the administration of antitoxin, he got better; but then he acquired a bronchiectasis or lung abscess, or both. The diagnosis was easily made, on account of the foul odor, making it necessary to put him into a special room of the hospital. An x ray picture was negative. Then, with the aid of the fluoroscope, a diagnosis of abscess of the lung on the left side was made. The man was operated upon and got better. Another case was that of the wife of a physician, who was operated upon for appendicitis. A month later, she showed signs of bronchiectasis, with foul, mucopurulent expectoration. An x ray gave negative results. In June, 1909, she was given an autogenous vaccine, which was then new, but the results were negative. An internist from Manhattan saw her in consultation, and made a diagnosis of abscess of the lung on the left side, and thought it was pointing back. She was operated upon, two ribs being resected, revealing pleurisy of the lung with adhesions at that point. As fools rushed in where angels feared to tread, an effort was made to explore the lung extensively with a needle, but without any avail. She was then referred to Doctor Willy Meyer, who operated on her at the German Hospital. She wore a tube for three years, and ultimately got a good result. Another case was reported at St. Mary's Alumni Society, that of a patient who had had a tooth pulled the week before. She had pain in the left chest and all the objective signs of pneumonia. The lung failed to clear up and she was later removed to the Jewish Hospital, where she was x rayed and had biological examinations, with negative results. She was admitted to the hospital with a bad prognosis, and in a fit of coughing she brought up a tube. From these cases Doctor Murphy had deduced his classification of the two varieties, the congenital cases and the traumatic due to aspiration.

Doctor YANKAUER said that nowadays when a surgeon wished to make a diagnosis of any of the hollow organs, he looked into their interior. In the same way, in making a diagnosis of chest disease, they were beginning to look into its interior. Although the bronchoscope and esophagoscope were first devised for the purpose of removing foreign bodies, they were becoming more and more extensively used for diagnosis. That had not been done in the past, for the diagnosis of the interior of the lung had been impossible. The skill and ability of the surgeon must be such that he would be able to identify the openings of the branches of the

¹ The patient presented a very remarkable case of a long standing opening into the chest cavity, which was closed up by the use of the rubber tube, and the lung was removed, with a good result.

bronchi with ease and accuracy. In the matter of bronchiectasis the bronchoscope had taught them a number of things. First, that every case of bronchiectasis should be examined for a foreign body. If they studied the history of the numerous cases of foreign body that had remained in the bronchus for a long time they would find that the history, physical signs, and symptoms of a foreign body transparent to the x ray, were identical with the cases of bronchiectasis that they had been discussing. Sometimes a foreign body was inhaled and was not disintegrated. The removal of such a foreign body would result in the complete cure of the bronchiectasis, and therefore diagnosis was important.

Sometimes the patient had forgotten that he ever inhaled a foreign body, or he might have told the doctor, who disregarded it, or thought it a mere coincidence. In one instance the spasmodic cough and other conditions suggested diphtheria, and the child was given antitoxin and treated accordingly for some weeks until a correct diagnosis was made. The first cause to be considered was a foreign body, and there was no other way of determining it except by bronchoscopy. The next thing was to eliminate the possibility of a malignant growth. The speaker had bronchoscoped four patients with such growths, one of them a child with physical signs of consolidation of the entire left chest. The radiograph showed a shadow in one place which was thought to be a foreign body. Upon entering the left upper lobe bronchus, a thick plug of mucus was removed, and underneath was granulating tissue, which proved to be a sarcoma. In two other cases specimens were removed which proved to be carcinoma.

The next thing the bronchoscope could do was to differentiate the conditions in the lung itself. Sometimes in introducing the bronchoscope there was a gush of pus. Now, with the proper suction apparatus, the bronchus could be emptied, and in one class of cases it would remain emptied, and each bronchus could be examined. Furthermore, it could be seen that the bronchus was considerably dilated—not only the main bronchus, but the several branches. In another group of cases, the bronchus was not dilated, but the pus came from one or more of the secondary branches. If the main bronchus was emptied, it did not remain empty, but the pus continued to ooze out during the entire examination. If the pus came from numerous bronchi, they must recognize that the infection had extended over a considerable area. In one case the pus came from every bronchus in sight, and the autopsy confirmed this. In another case, the pus was coming from only one bronchus, and it was determined that there was an abscess cavity. From these cases it was evident that they could differentiate cases which involved the entire lung from those which were localized. The pus did not indicate whether it was from a large abscess cavity or from a cavity outside the bronchus in the lung tissue; whether it was from a localized empyema or from a general empyema; but it did show that it was coming from one definite part of the lung, and the existence of the local condition could be recognized and treated surgically and success-

fully. In cases in which pus had come from numerous bronchi and were operated in, the outcome had been poor; while in cases where it came from only one branch of the bronchus the result had been more successful.

The diagnosis as made by the bronchoscope did not always correspond with the radiograph picture, for the lobes of the lung were not separated by horizontal, but by oblique lines; so that when a radiograph was taken with the rays passing through the chest in an anteroposterior direction, the middle lobe overlay the lower, so that it was difficult to see, particularly if the shadow was near the hilus, whether the shadow belonged to the middle or to the lower lobe. On the other hand, with the bronchoscope, they could distinguish whether the pus came from the middle, lower, or upper lobe. In one instance of carcinoma of the lung, the patient was an elderly man who had had a cough for some time, and one day he coughed up a piece of tissue which proved to be carcinoma. He had no physical signs or symptoms. The carcinoma was located with the aid of the bronchoscope, which showed the extent to which the growth had involved the bronchial mucous membrane. This was confirmed by a subsequent radiograph.

With the bronchoscope they could not only exclude and remove foreign bodies, but locate foreign growths and differentiate between local or general conditions in the lung, and it seemed probable that indications for surgical interference would eventually come largely through the bronchoscope. In cases where surgery was not admissible, an effort had been made to find a way of relieving these cases; and something had been accomplished in some of these intractable cases by introducing a tube through the bronchoscope, or rather, two tubes, through the smaller of which a solution could be injected into the bronchiectatic cavity and removed by suction, through the larger one. This irrigation could be carried out with a pint or two of fluid in each lung, and the result of such irrigation was striking. If the bronchus was examined before the irrigation, it would be impossible to see the bronchial wall clearly or to note its details, for it would be covered with a thin layer of pus; whereas after the irrigation every detail came out with great distinctness. Furthermore, even after the patient had coughed out as much pus as possible, they could still wash out a considerable amount of secretion by this means. After two or three irrigations the odor disappeared and the secretion was much reduced. These irrigations had been carried out once a week, and the patients tolerated it well. The treatment was conducted under local anesthesia, and the patients felt the injection going in and coming out, but they did not object, and returned for the treatments. As yet none of the cases so treated had been cured. Doctor Yankauer had been using normal solutions, but intended in the next case that came under his observation to begin early with antiseptic solutions, hoping to accomplish still more striking and satisfactory results. At any rate, the patients had been relieved of the odor and expectoration had been much reduced.

(To be continued.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Diseases of the Throat, Nose, and Ear. By WILLIAM H. KELSON, M.D., B.S., F.R.C.S. (Eng.), Surgeon, London Throat Hospital, Golden Square; Hon. Surgeon (In Charge of Throat, Nose, and Ear Department), City Dispensary; Lecturer on Diseases of the Ear, Polyclinic, London; Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. Pp. xv-270. (Price, \$3.)

Kelson's textbook was written for the student and general practitioner and naturally dilates on points which are of importance to them, while it omits interesting questions which are still *sub judice*. Many have tried to accomplish the same purpose, but only few have succeeded. Indeed it seems almost easier to write a voluminous textbook than to give, in a concise form, to the beginner just what he may need occasionally and give it in such form that it may be profitable. Has the author succeeded? Partly; in some portions we are somewhat disappointed.

In the chapter on instruments the author tried to enumerate those which the general practitioner may require any day. Among others he brings Schech's (not Scheck's) galvanocautery handle and points. Considering the great harm that has been done by the injudicious "burning of the nose," some authors hold that in the interest of the patient it may be advisable for the inexperienced to keep his hands off the galvanocautery.

The chapters on the throat and ear are well written in parts. Certain portions, again, are too short to give the reader an idea of what the author wishes to convey. Several of the illustrations are exceptionally good. Is it necessary, however, to give a whole page colored illustration of a nasal polypus and another whole page picture of tonsils and adenoids after removal?

It is a wise plan, which Kelson has followed, to give the reader a brief outline of the anatomy.

Beiträge zur Pathologischen Anatomie der Hirnsyphilis und zur Klinik der Geistesstörungen bei Syphilitischen Hirnerkrankungen. Von Dr. KARL KRAUSE, Oberstabsarzt in Berlin. Mit 42 Abbildungen im Text und 12 Tafeln. Jena: Verlag von Gustav Fischer, 1915. Pp. 592.

An idea of the scope of this book may be obtained from the table of contents, which includes the etiology and pathogenesis of syphilis, as well as its pathology and the pathological anatomy; the special pathological anatomy of brain syphilis; and finally the mental diseases due to both acquired and inherited syphilis. The larger part of the book is taken up with case histories which are divided into groups of: 1, Gummata of the brain; 2, syphilitic meningitis; 3, syphilitic arteritis, etc.

The print, paper, and illustrations are excellent; in fact the entire work is up to the standard of German bookmaking.

Textbook on Nervous Diseases. By G. ASCHAFFENBURG, Cologne; H. CURSCHMANN, Mayence; R. FINKELNBURG, Bonn; R. GAUPP, Tübingen; C. HIRSCH, Göttingen; FR. JAMIN, Erlangen; J. IBRAHIM, Munich; FEDOR KRAUSE, Berlin; M. LEWANDOWSKY, Berlin; H. LIEPMANN, Berlin; L. R. MÜLLER, Augsburg; H. SCHLESINGER, Vienna; S. SCHOENBORN, Heidelberg; H. STARCK, Karlsruhe; H. STEINERT, Leipzig; CHARLES W. BURR, B.S., M.D., Professor of Mental Diseases in the University of Pennsylvania; Neurologist to the Philadelphia General Hospital. In Two Volumes. With 156 Text Illustrations in Volume I, and With 90 Text Illustrations in Volume II. Philadelphia: P. Blakiston's Son & Company, 1915. Pp. 1133. (Price \$24.)

In this translation of the German composite work on nervous diseases is made available to English readers, not only a well arranged and complete textbook on the subject of neurology, but also a series of excellent monographs by various authors, each an international authority on the subject of which he has written. The common disadvantages of books written by multiplicity of authors, viz., repetition and lack of uniformity of presentation, are comparatively

slight in the present work, and may be minimized in view of the advantages obtained. The subject matter is found to be clean and sufficiently elementary for easy reading by nonspecialists, and the chapters on anatomy, physiology, methods of examination, and diagnosis, are unusually comprehensive.

The editor of the English edition, Doctor Burr, deserves great credit, not only for the excellent translation of the German text, but also for the supplementary chapter on the diagnosis and treatment of neurasthenia; psychasthenia; hysteria, and borderline mental states which well supplies an evident need of the German edition.

Textbook of Materia Medica for Nurses. Compiled by LAVINIA L. DUCK, Graduate of Bellevue Training School for Nurses. Fifth Edition Revised and Enlarged. New York and London: G. P. Putnam's Sons (The Knickerbocker Press), 1915. Pp. vi-340.

That a book has reached its fifth edition is sufficient mark of its worth. A compilation whose practical character is the result of the author's own observation and experience in clinic, pharmacy, and classroom, Lavinia Duck's *Materia Medica for Nurses* possesses unusual merits as a textbook. The subject matter is systematically arranged, and written in such style as to attract the student's interest.

The introductory chapter opens with an explanation of the three standpoints from which the classification of the drugs are considered, namely, their source of derivation, their physiological actions, and their ultimate forms and appearance as prepared in the pharmacy by definite standard formulæ, for administration. At its conclusion are valuable notes on solutions, and the various tables comprising the metric system. The chapter following gives a classification of remedies according to their prominent therapeutical actions.

The volume is then divided into two parts. Part I treats of inorganic materia medica, of which drugs derived from metals and acids are an example, while Part II deals with organic materia medica, there being a separate classification for those drugs derived from the vegetable kingdom and those derived from the animal kingdom.

The remainder of the book is devoted to a discussion of poisons and their treatment, including a table of poisons, giving antidotes and antagonists, emetics, hypodermics, serum therapy, electrotherapeutics and radiology, and mineral waters. A list of unclassified drugs is also given. An exhaustive index completes the manual.

The Primary Lung Focus of Tuberculosis in Children. By DR. ANTHON GHON, O. O. Professor of Pathological Anatomy at the German University in Prague. English Edition. Authorized Translation by D. BARTY KING, M.A., M.D. (Edin.), M.R.C.P. (Lond. and Edin.), Assistant Physician to the Royal Hospital for Diseases of the Chest, London; Physician to the Department for Diseases of the Chest, St. Pancras Dispensary, London; etc. With Seventy-two Text Illustrations, One Black and One Colored Plate. London: J. & A. Churchill, 1916. Pp. xxiv+72.

This volume records the results of a clinical and post mortem study of 184 cases of tuberculosis of the lung in children. The fact that ninety-two per cent. of the cases showed a primary focus in the lung, justifies to the author the assumption that primary infection of the lungs is the usual form of the tuberculosis invasion. To the large number holding the opposite view, viz., that infection of the peribronchial glands is the primary change, this scientific study would seem a complete refutation. The clinical and pathological studies have been carried out with great thoroughness, and the pathological changes studied both macroscopically and microscopically in every case. With such complete records the conclusions have real scientific worth, and the practical deductions will be of great value.

Interclinical Notes.

Examination of *Medical Pictorial* for February, 1916, recalls once more the gloomy, but unfruitful prophecies of those who, on the appearance of the first issue, foretold that the supply of humorous material would soon give out. This journal is a distinct addition to the physician's *joie de vivre*. The necessity of the profession lends a special

charm to the relations between writers and readers and adds additional point to many a jest.

* * *

The *Survey* for March 4th comments on the singular coincidence of Dr. Henry B. Favill's sudden death when presiding at a meeting where the subject of discussion was longevity. He was presented as "the genial, youthful chairman of the evening" by a member of the Physicians' Club who quoted the words of the pessimistic Omar:

You know how little while we have to stay,
And once departed, may return no more.

Other matters discussed in this issue of the *Survey* are the control of typhus on the Mexican border, equal rights for children in all States, Federal quarantine at New York, and the painful work of 5,000 children in the beet fields of Colorado. Edith Houghton Hooker continues her interesting department of Life's Clinic, in which she lays stress on the strange and dreadful indifference with which uneducated people regard servants, even nurses infected with syphilis.

* * *

A thoughtful series of articles begins in the *Survey* for February 26th, The Four Ages of Woman, by John Martin. The first article is entitled The Industrial Subjugation of Woman. Everychild at the School Door arraigns the system of instruction by classes and states that individual care saves from one to three years of the time necessary to obtain an elementary education. There is an admirable editorial reply to the contentions of an antiviviselector and mental healer who writes a typical letter apropos of a remark of Sir William Osler.

* * *

A correspondent of Don Marquis's Sun Dial brings a serious accusation against Day Allen Willey, a writer in the *Wide World Magazine* for February, 1916. He says the supposedly true story, The Sunken Submarine, is almost word for word a transcription of a tale by the late Morgan Robertson, called Fifty Fathoms Down. Mr. Willey avers that he got his story from the diary of a late Lieutenant Breen. We submit some of Mr. Marquis's comments in the *Evening Sun* for January 22d "Are we to congratulate Mr. Willey upon the fact that the material extracted from the diary shaped itself under his pen into a narrative almost precisely identical with the narrative of such a master of fiction as Morgan Robertson? Mr. Sanford, the contributor who first called our attention to it, evidently does not think that Mr. Willey is to be congratulated. He writes: 'I started to write some mean things, but I couldn't think of anything mean enough.' Morgan Robertson has not been dead very long. He was an artist, but he did not succeed in making much money from his work. The fact that he failed to accumulate a competence which would have enabled him to end his days in some sort of peace was one of the most deplorable things in the recent history of American literature. We wonder what the rates per word are for narratives extracted from the diaries of dead lieutenants?"

Meetings of Local Medical Societies.

MONDAY, March 20th.—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Elmhurst Clinical Society; Psychiatric Society of Ward's Island.

TUESDAY, March 21st.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Medical Society of the County of Monroe; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Westchester.

WEDNESDAY, March 22d.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, March 23d.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, March 24th.—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

SATURDAY, March 25th.—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending March 8, 1916:

Appelwhite, C. C., Assistant Epidemiologist. Directed to proceed to Rome and other points in Floyd County, Gr., for duty in connection with studies of rural sanitation. **Appelwhite, J. D.**, Field Investigator. Directed to proceed to Greenville and other points in Greenville County, S. C., for duty in connection with studies of rural sanitation. **Brooks, S. D.**, Senior Surgeon. Granted eight days' leave of absence from March 8, 1916. **Carrington, P. M.**, Surgeon. Granted three months and four days' leave of absence from March 15, 1916, and placed on waiting orders beginning June 19, 1916. **Clark, T.**, Surgeon. Directed to proceed to Richmond, Va., for conference with the State Commissioner of Health in regard to the diagnosis of certain alleged cases of trachoma. **Collins, G. L.**, Surgeon. Granted one day's leave of absence, February 21, 1916. **Currie, Donald H.**, Surgeon. Detailed on request of territorial board of health as Sanitary Advisor of the Governor of Hawaii. **De Saussure, R. L.**, Assistant Surgeon. Relieved at Baltimore, Md., and directed to proceed to Rome and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation; bureau letter dated February 19, 1916, amended to read "eight days' leave of absence from February 21, 1916." **De Valin, Hugh**, Passed Assistant Surgeon. Relieved at Hongkong, China, and ordered to report to the chief quarantine officer, at Manila, P. I. **Ebert, H. G.**, Surgeon. Detailed to make medical examinations of arriving aliens at Astoria, Oregon, in addition to other duties. **Ernst, Edward C.**, Assistant Surgeon. Ordered to report to the commanding officer, Coast Guard Cutter *Bear*, for temporary duty. **Fox, Carroll**, Surgeon. Directed to proceed to Omaha, and other places in the State of Nebraska, to conduct a study of public organization and administration; directed to deliver an address on pellagra, at the meeting of the Missouri Valley Medical Society, at St. Joseph, Mo., March 23 and 24, 1916; granted seven days' leave of absence from March 2, 1916. **Francis, Edward**, Surgeon. Detailed to address a meeting of the Southeastern Sanitary Association, at Brunswick, Ga., March 23 and 24, 1916. **Fricks, L. D.**, Surgeon. Granted five days' leave of absence en route to Utah, under bureau orders of February 26, 1916. **Harrington, F. E.**, Assistant Epidemiologist. Directed to proceed to Tuscaloosa, and other points in Tuscaloosa County, Ala., for duty in connection with studies of rural sanitation. **Hurley, J. R.**, Passed Assistant Surgeon. Relieved at the Hygienic Laboratory, and directed to report at the bureau for temporary duty in connection with the inspection of government buildings. **Kearny, R. A.**, Passed Assistant Surgeon. Relieved at the Hygienic Laboratory, and directed to report at the bureau for temporary duty in connection with the inspection of government buildings; granted one day's leave of absence on account of sickness, March 2, 1916. **Kerr, J. W.**, Assistant Surgeon General. Directed to proceed to Spartanburg, S. C., for conference in regard to special studies of pellagra. **McDevitt, C. J.**, Assistant Surgeon. Relieved at Chicago, Ill., and directed to report to the commanding officer, Coast Guard Cutter *Manning*, for duty. **McWhorter, W. B.**, Field Investiga-

tor. Directed to proceed to Rome, and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation. **Mathewson**, H. S., Surgeon. Granted three days' leave of absence, effective March 22, 1916. **Miller**, K. E., Assistant Surgeon. Directed to proceed to Rome, and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation. **Mustard**, H. S., Field Investigator. Directed to proceed to Rome and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation. **Neill**, M. H., Assistant Surgeon. Granted two days' leave of absence on account of sickness, February 25 and 26, 1916. **Paine**, Liston, Assistant Surgeon. Directed to report to the Bureau for temporary duty in connection with the sanitary inspection of government buildings. **Prather**, D. J., Assistant Surgeon. Directed to proceed to Greenville, and other points in Greenville County, S. C., for duty in connection with studies of rural sanitation. **Sharp**, W. K., Jr., Field Investigator. Directed to proceed to Greenville, and other points in Greenville County, S. C., for duty in connection with studies of rural sanitation. **Slaughter**, W. H., Assistant Surgeon. Directed to proceed to Rome, and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation; granted one day's leave of absence on account of sickness, February 28, 1916. **Taylor**, Quintard, Field Investigator. Directed to proceed to Greenville and other points in Greenville County, S. C., for duty in connection with studies of rural sanitation. **Townsend**, J. G., Assistant Surgeon. Relieved from duty on Coast Guard Cutter *Bear*, and ordered to proceed to St. Louis, Mo., for duty in investigation of rural sanitation; directed to proceed to Rome and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation. **Warren**, B. S., Surgeon. Granted six days' leave of absence on account of sickness from February 23, 1916. **Witte**, W. C., Assistant Surgeon. Relieved from duty on Coast Guard Cutter *Manning*, and ordered to proceed to St. Louis, Mo., for duty in investigations of rural sanitation; granted five days' leave of absence en route; directed to proceed to Greenville and other points in Greenville County, S. C., for duty in connection with studies of rural sanitation. **Ziegler**, M. V., Field Investigator. Directed to proceed to Greenville and other points in Greenville County, S. C., for duty in connection with studies of rural sanitation.

Boards Convened.

Board of commissioned medical officers convened at the bureau, Washington, D. C., for the preparation of questions for the mental examination of Surgeon L. L. Williams to determine his fitness for promotion to the grade of senior surgeon. Detail for the board: Assistant surgeon general A. H. Glennan, chairman; Assistant Surgeon General W. G. Stimpson, member; Assistant Surgeon General L. E. Cofer, recorder.

Board of medical officers convened at Boston, Mass., for the medical reexamination of aliens, when required. Detail for the board: Assistant Surgeon M. V. Safford, chairman; Acting Assistant Surgeon H. B. C. Reimer, member; Acting Assistant Surgeon A. J. Nute, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending March 11, 1916:

Craft, Edgar D., Captain, Medical Corps. Directed to proceed to the Letterman General Hospital, Presidio of Monterey, Cal., for observation and treatment. **Dear**, William R., Captain, Medical Corps. Relieved from duty at Fort Slocum, New York, and will proceed at the proper time to New York city, and take the transport *Burford*, to sail from that place on or about March 15, 1916, for the Philippine Islands, and upon arrival at Manila, will report in person to the commanding general, Philippine Department, for duty. **Fletcher**, Harry Q., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Oglethorpe, Georgia, and will proceed to his home and upon arrival there stand relieved from further active duty in the Medical Reserve Corps. **Kefauver**, Lloyd A., Captain, Medical Corps. After arriving in the United States, and upon expiration of such leave as has been granted him, will proceed to Fort

Slocum, New York, and report for duty. **Kirtley**, Howard P., First Lieutenant, Medical Reserve Corps. Ordered to active duty at Fort Douglas, Utah, and upon the expiration of service will return to his home and stand relieved from active duty in the Medical Reserve Corps. **McCaw**, Walter D., Colonel, Medical Corps. After arriving in the United States, and upon expiration of such leave as has been granted him, will proceed to Fort Slocum, New York, and report for duty. **Maddux**, Henry C., Captain, Medical Corps. After arriving in the United States, and upon the expiration of such leave as has been granted him, will proceed to Fort Myer, Virginia, and report to the commanding officer of that post for duty. **Seaver**, Edward P., Jr., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person to the commanding officer, Fort Rodman, Massachusetts, for duty; and upon completion of duty at Fort Rodman, Massachusetts, will return to his home and stand relieved from active duty in the Medical Reserve Corps. **Thearle**, William H., Captain, Medical Corps. Directed to proceed to the coast defenses of San Francisco, Cal., for duty at Fort Winfield Scott, California.

Births, Marriages, and Deaths.

Born.

Onderdonk.—In Hartford, Conn., on Sunday, February 27th, to Dr. and Mrs. H. Jay Onderdonk, a daughter.

Married.

Colgan—**Martin**.—In New Haven, Conn., on Monday, February 28th, Dr. Walter J. Colgan and Miss Marie Martin. **Eaton**—**Barnard**.—In Towanda, Ill., on Wednesday, March 1st, Dr. Benjamin Eaton, of Tremont, Ill., and Miss Ethel Barnard. **O'Donnell**—**Edwards**.—In Brooklyn, N. Y., on Friday, March 3d, Dr. Thomas J. O'Donnell, of Greenwich, Conn., and Miss Almada May Edwards. **Tillman**—**Byrd**.—In Montgomery, Ala., on Tuesday, February 22d, Dr. John S. Tillman, of Clio, Ala., and Miss Lola Maye Byrd. **Willcutt**—**Baker**.—In San Francisco, Cal., on Wednesday, February 16th, Dr. George Mayes Willcutt and Miss Dorothy Baker.

Died.

Aspy.—In Fort Wayne, Ind., on Thursday, March 2d, Dr. H. M. Aspy, of Geneva, Ind., aged sixty-five years. **Bouton**.—In Waukegan, Ill., on Wednesday, March 1st, Dr. William C. Bouton, aged fifty-one years. **Butler**.—In Unadilla, N. Y., on Friday, March 3d, Dr. Andrew J. Butler, aged forty-eight years. **Chamberlain**.—In Palm Beach, Fla., on Friday, March 3d, Dr. James P. Chamberlain, aged eighty-four years. **Crandall**.—In Troy, N. Y., on Wednesday, March 8th, Dr. Edward Llewellyn Crandall, aged fifty-nine years. **Demand**.—In Mechanicsburg, Ohio, on Thursday, March 2d, Dr. Charles E. Demand, aged sixty-three years. **Dye**.—In Springfield, Ohio, on Monday, February 28th, Dr. Elza A. Dye, aged forty-four years. **Griffith**.—In Frostburg, Md., on Thursday, March 2d, Dr. Timothy Griffith, aged fifty-two years. **Hoerner**.—In Lewisburg, Ohio, on Thursday, March 2d, Dr. Osa Hoerner, aged thirty-two years. **Hull**.—In Atlanta, Ga., on Saturday, February 26th, Dr. James L. Hull, aged fifty-five years. **Lavender**.—In Omaha, Neb., on Monday, February 28th, Dr. William R. Lavender, aged sixty years. **Main**.—In Stonington, Conn., on Monday, March 6th, Dr. Charles O. Main, aged seventy-three years. **Mann**.—In Bolton, Conn., on Thursday, March 2d, Dr. Thomas H. Mann, aged seventy-three years. **Mirick**.—In Monticello, Iowa, on Wednesday, March 1st, Dr. Willis A. Mirick, aged sixty-two years. **Mitchell**.—In Lynn, Mass., on Thursday, March 2d, Dr. Charles H. Mitchell, aged sixty-nine years. **Paden**.—In Parkersburg, W. Va., on Saturday, March 4th, Dr. William M. Paden, aged sixty-nine years. **Peltier**.—In Cohoes, N. Y., on Thursday, March 2d, Dr. Gaspard Upton Peltier, aged sixty-seven years. **Pharr**.—In Dunlop, W. Va., on Thursday March 2d, Dr. James R. Pharr. **Roos**.—In Scranton, N. Y., on Tuesday, February 29th, Dr. Elias Roos, aged fifty years. **Townsend**.—In New York, on Sunday, March 12th, Dr. Wisner Robinson Townsend, aged fifty-eight years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal ^{and} The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 13.

NEW YORK, MARCH 25, 1916.

WHOLE No. 1947.

Original Communications.

ORIENTATION AND EQUILIBRATION.*

*A Study of the Sense of Position and Movement;
Its Dependence on the Vestibular Apparatus
and Its Importance in the Whole Field of
Medicine.*

BY ARTHUR B. DUEL, M. D., F. A. C. S.,
New York.

Since man began to speculate upon life, the phenomena pertaining to our knowledge of position in space, and adjustment to it, have come in for more than a fair share of consideration. An amazing mass of literature has accumulated. Much of it is highly theoretical and based on incomplete experiments; some of it is beyond all ordinary understanding. On the other hand, enough exact work has been done upon which an intelligent conception of the subject can be built. If I can present an outline of this conception, without involving it in too much technicality, I shall be gratified.

Nearly a century ago Purkinje made a number of experiments in rotation, and worked out some laws governing it which were quite accurate; but he erroneously attributed all the phenomena, upon which he based these laws, to stimulation of structures outside the static labyrinth.

A few years later, in 1828, Flourens, by experiments upon the labyrinth of pigeons, demonstrated that the semicircular canals were definitely connected with movements of the head. Goltz, in 1870, pointed out that equilibration was the result of afferent impulses from peripheral end organs to a central mechanism, with resulting efferent impulses to groups of muscles. Some years later Ewald, in 1892, while experimenting upon pigeons, discovered that extirpation of the labyrinth "caused a muscular weakness and uncertainty of movement, and completely abolished the power of flight."

Schrader, experimenting upon frogs, discovered that the destruction of one labyrinth caused a slight muscular weakness and a tendency to curvilinear springing, while bilateral ablation caused a very marked muscular weakness.

In 1893 and 1894, Professor Lee, of Columbia University, published the results of some very exact experiments on sharks, in which he demonstrated that when they were passively rotated the eyeballs and fins made compensatory movements, and that when rotated in the plane of the semicircular canals

the eyes rotated in the same plane and in the same manner as when the particular canal was stimulated. On stimulating the anterior semicircular canal of one side, the eye on that side rolled upward and on the other side downward. If the nerve was divided, the opposite result was obtained. If both anterior ampullæ were divided the fish dived downward. On section of the nerve of both anterior ampullæ, the fish swam upward, sometimes putting its head out of the water.

As Greenwood¹ has said, "these results hardly leave room for doubt as to the participation of the semicircular canals and the labyrinth in the equilibration process." We can hardly fail, in passing, to mention the names of Breuer, Mach, and Crum Brown, who, in the latter half of the last century, contributed important and accurate observations to this subject. Their experiments and the conclusions resulting from them, while not in perfect accord, have contributed the sum total upon which our accurate knowledge of the subject is based, and upon which, quite recently, Barany and some of his associates have worked out a series of definite functional tests which are of great practical value.

All the experiments of these physiologists on animals, birds, fishes, and reptiles have confirmed the accuracy of Flourens's early observations, and have added much further proof that the vestibular apparatus is a special sense organ, solely concerned with orientation and equilibration; that its physiological connection with the auditory apparatus is practically nothing compared with its intimate connection with other special senses, such as sight, the kinesthetic sense (muscle-joint), and the sense of touch.

It is the main object of my effort now to bring out this fact, well known to many physiologists, but, I believe, not generally appreciated.

The eighth nerve—the auditory—should be described in anatomy and physiology as the nerve of hearing only, with its end organ, the cochlea. The so called vestibular branch should be given a place by itself, and should be described as the nerve of orientation only, with its end organ, the vestibule and semicircular canals.

So far as the anatomical evidence in the matter is concerned, it is sufficient for the moment to say that the distribution of the vestibular and auditory fibres is to entirely different centres.

We have but to contemplate for a few moments the various precise poises of the body in space, together with the adjustments of the limbs and other

*Presented before the New York Academy of Medicine, December 16, 1915. For discussion, see page 517.

¹Greenwood, Physiology of the Special Senses, p. 59.

require movements in circles or curves in addition to those in straight lines, we find that the mechanisms have developed, and that, in addition to the suspended otolith in a box, there is a system of canals arranged in curves or segments of circles, and occupying positions at right angles to each other, each of these having its appropriate indicator with its connection with nerve filaments which carry back its records of stimulation to some perceptive centre.

Progressing to the highest orders, where more complicated movements and a nicer equilibration are necessary, we find that other senses are entering very closely into the conception of position—the eyes, particularly; the muscle-joint sense; the tactile sense. (Fig. 4.)

Now, the anatomical arrangement and the physiological action, deduced from experiments and clinical observations of the vestibular apparatus in man, point distinctly to the fact that it is the highest development of a gravity apparatus which constantly sends impressions of position in space. It is the homologue of the stiffened tentacle of the jelly fish, the calcareous particles (otoliths) of the higher forms, the more elaborate vestibular apparatus of the vertebrates.

In the higher forms the sense of orientation necessarily becomes more important in all the acts of the individual, and we see, through nuclei in the brain, intimate associations established which reflexly adjust the eyes and the skeleton to information constantly acquired by the vestibular apparatus.

As I said at the outset, we should regard the otic labyrinth as the end organ of the vestibular nerve, just as we regard the cochlea as the end organ of the auditory nerve, the retina that of the optic nerve, the Schneiderian membrane that of the olfactory nerve.

We have seen that as we reach the higher order of beings, the sense of position is safeguarded and augmented by intimate association with other sensations—sight, the kinesthetic sense, hearing, touch, smell, etc. In the perfectly normal individual the conception of position is the result of the harmonious assembling of all these afferent impulses. Loss or imperfect action of any of them produces a disharmony which, if not corrected, results in a misconception varying according to the degree of upset. There may be simply a slight uneasiness or uncertainty at the mere thought of some daring act of equilibration, or some previous experience like looking from a dizzy height, a rough sea voyage, a ride on a merry-go-round, or other psychic illusory idea. Again, there may be the varying degrees of vertigo resulting from the actual experiences, the thought of which may have caused the psychic vertigo, and on to the more violent manifestations of vertigo accompanied by nausea, vomiting, loss of equilibrium, ataxia.

Through all this, however, we should not lose sight of the fact that the vestibular apparatus is the most essential factor in the sense of orientation—the only source of such afferent impulses as have to do with that sense alone.

The phylla deprived of its stiffened tentacle; the higher forms deprived of their otoliths, completely lose their sense of position and cannot maintain

existence. The tadpole deprived of its vestibular apparatus sinks to the bottom and lies there inert. The dog fish, deprived of his, still makes efforts to swim and maintain existence, but he is quite indifferent whether he is placed on his back, his belly, or his side, and makes his efforts in such position, without attempting a change—he has lost his sense of position, his power of direction.

A dog normally swims when thrown into water which is over his head. Deprived of his vestibular apparatus, he learns, in time, to walk, run, jump, and eat, but thrown into a tank of water, after he does these other things very well, he sinks; he has lost his power of orientation in this unusual environment. He might learn to swim without the aid of his vestibular apparatus, if supported at first and trained, because he is more intelligent and resourceful than the tadpole and the fish, but he would have to be educated to compensate for the loss of a function which in a normal state he would have performed instinctively. A pigeon deprived of its vestibular apparatus in time learns to stand, walk, hop, and eat, with a certain amount of imperfection, but he never learns to fly again. Apparently his orientation never is compensated sufficiently for this more difficult task, which he normally accomplishes instinctively.

Now in the human subject, in whom the struggle for existence is the fiercest, in whom the demands for finest orientation are ever present, even in the ordinary pursuits, it would be quite natural that the compensatory factors for the loss of this sense of position furnished by the vestibular apparatus should be more complex. Or, to put it in another way, it is quite natural that the augmentation of this most important sense should be accomplished by a much more intimate association with the other senses. And so we find it. A man deprived of one vestibular apparatus is temporarily greatly upset in his sense of position; as a result he has violent vertigo, which his other senses make frantic efforts to correct. Owing to the illusions of motion, his eyes fix upon an object, and follow it until it is apparently out of the field of vision, snap back, and fix again, and so on, producing the oscillations called nystagmus.

The whole musculature of the body, in response to the sensation that the victim is being turned in space, makes efforts to resist the movement. This violent effort to correct a change of position which is not actual, results in loss of equilibrium. If the motion had actually taken place in exactly the degree that the illusion of motion had been produced in the perceptive centres, the movement of the eyeballs and the muscular effort to correct it, instead of causing disequilibrium and ataxia, would have been just sufficient to maintain perfect balance.

Normally we use this sense thus in a thousand and one ways in our daily pursuits. Looking out of any moving vehicle and at the same time moving about; walking on a moving platform, or up or down a moving stairway, are illustrations. Without this sense we could not shoot accurately while moving, or at a moving object. We might bring up endless examples. But these efforts to compensate for the loss of a vestibular apparatus

succeed with varying rapidity. The more violent manifestations rapidly subside in a few days; in a few weeks the ordinary acts are performed with apparent ease.

In such a case has orientation become perfect again? Certainly not, any more than with one eye we can be said to have perfect vision, or with one ear perfect hearing.

A man who has lost one eye finds great difficulty, at first, in looking attentively at an object; his vision is confused and blurred; he cannot judge distance with any accuracy; the landscape, and indeed all objects, have the same flat appearance to him that a photograph gives, in contrast to the effect of looking into a stereoscope, which corresponds to impressions we normally get by binocular vision.

In time he learns with one eye to gaze intently at objects without having a confused impression, he reads an indefinite time without blurring vision. He learns to judge distance. Has he, then, perfect vision? Certainly not. He has adjusted himself to the loss, he has learned the trick of moving his head or eye to get a point of view from two slightly different angles at practically the same instant.

A man totally deaf in one ear, in addition to other losses in finer hearing, finds it impossible to locate the direction from which unfamiliar sounds outside of his vision come. Binaural hearing is as essential to judging the direction of sound as binocular vision is essential to perfect judgment of distance. The individual with one sided deafness learns to judge direction of sound by sudden movement of the head, thus getting the sound from two slightly different angles at practically the same instant.

Perfect orientation requires angulation—impressions must come from two different vestibular apparatus at the same time. Very perfect adjustment may take place after the loss of one, by some subtle device. And, as I have said, in the human animal the loss of both may be compensated for sufficiently for most of the ordinary acts of life, but one with such a loss will not be orientating (in the true sense of the normal orientation) any more than the blind see by sense of touch, or the deaf hear by reading the lips or by interpreting vibrations.

The deaf mute, with congenital loss of vestibular apparatus, does many acts of equilibration with perfect ease. He misses many of the upsets of life which those who have a perfect sense of orientation may have. He may make a better whirling dervish than a normal person. He may never experience the throes of *mal de mer*. Yet he has a defect which means, in a way, as much to normal existence as the loss of sight to one born blind.

Of course one born without a sense never misses it as one does who is deprived of such a sense after birth. In the first place, compensation for the loss, begun at birth, becomes more perfect; in the second place, it is impossible adequately to appreciate a power which has never been exercised.

The loss of both static labyrinths is a great catastrophe. While the first symptoms may not be violent, owing to the fact that the great disharmony from afferent impulses coming from one side only does not have to be corrected, the task of learning to orientate without the aid of the organs

specially designed for orientation, is much like the blind person learning to read from the sense of touch, or the deaf one interpreting the movements of lips from the sense of sight, and often the results are quite as imperfect.

To appreciate this, we have only to try any of the more difficult acts of equilibration on such a patient. For example, to balance on one leg, with the eyes closed, to walk forward or backward with the eyes closed, or any act of walking or turning in the dark. We are all quite familiar with the illusion, so frequently experienced while sitting in a train in the station, that the train in which we are seated is moving, when actually a train by our side is moving out or into the station. This optical illusion is easily corrected by a normal individual, either by looking at some upright portion of his own car which is not moving, or by closing the eyes. Now, when the eyes are closed the optical illusion is corrected by our special sense organ, the static labyrinth, which immediately informs us that we are not in motion.

If a congenital deaf mute (i. e., one having no static labyrinth) were to have such an illusion, it would have to be corrected by the sense of sight. If he closed his eyes the illusion would remain, particularly if there happened to be any vibration which would upset his tactile sense, the only remaining means of correcting the misinformation of his vision.

Now, if we can imagine an individual suspended in space in the dark, where he could not use his sight to correct the illusion, and had no contact with anything which would allow his tactile sense to correct it for him, having once started the illusion he would in his own mind go on moving forever, or until he could get some definite knowledge, by vision, that the motion was not taking place. A normal individual in such a position would correct his illusion immediately by closing his eyes, from the definite information furnished him by his static labyrinth.

I can well imagine that an aviator who had no static labyrinth, and who might guide his aeroplane with perfect precision while he still had objects on the earth in view, might suddenly lose all knowledge of position if he was enveloped in a cloud where he was dependent entirely upon the only remaining auxiliary, his tactile and muscle-joint sense.

I have already taken too much space with this phase of the subject, but I hope the notion will be strengthened that the vestibular portion of the eighth nerve, with its own end organ, the static labyrinth, deserves a place in anatomy by itself, being just as important in its own way as the auditory nerve, with its end organ, the cochlea. I hope also that this somewhat desultory introduction to the subject may pave the way for a better understanding of how, on the one hand, perfect orientation may be upset by misinformation from many sources; how impulses from the static labyrinth are so powerful to correct this misinformation; on the other hand, how misinformation from the static labyrinth itself is corrected with comparatively great difficulty by the other afferent impressions.

How can we use this knowledge of the function of orientation practically? As a matter of fact, it concerns us all, inasmuch as any imperfection in our

sense of position is followed by some evidence of vertigo, expressed in varying degrees, from the slightest psychical manifestations to the most violent forms of disequilibrium. I shall leave it to others to point out the methods of fixing the cause on peripheral or central organs; on functional or organic disturbances; on lesions of the different afferent sources of information; the cerebellum, the great coordinating mechanism, or the cerebrum, which after all must be the source of our consciousness of position, as well as that from which we voluntarily change it.

MILITARY PREPAREDNESS FROM A MEDICAL STANDPOINT.*

For the Regimental Sanitary Detachment,

By MAJOR EDMUND PRINCE FOWLER,

New York,

Surgeon, Seventh Regiment Infantry, N. G. N. Y.

The regimental medical department and the medical departments of other troop units are responsible for the execution of sanitary measures and for the temporary care, treatment, and transportation of the regimental sick and wounded. The regimental surgeon is the adviser of the regimental commanding officer in medical and sanitary matters, and the entire regimental personnel is instructed by him in personal hygiene and first aid.

He is held responsible for the records, reports, and returns, and any deficiencies in supplies and equipment of his department, and for the provision of a serviceable first aid packet for every man of his regiment. For the early detection of disease he physically examines every soldier and civilian with the regiment monthly, and on the march and in camp makes frequent examinations of the sick in order to insure their proper treatment and disposal.

The work of the regimental sanitary detachment, augmented if need be by civilian labor, or by details from the line, and the first aid during an engagement are under the supervision of the regimental surgeon. In addition to its other duties, the detachment procures, or improvises field sanitary apparatus, prepares and applies disinfectants, supervises the water supply and its purification, the sanitation of kitchens and cooking places, the preparation, care, and filling in of latrines and urinals, and the marking of old sites thereof; the collection, removal, and disposal of wastes, solid and liquid; and the policing of washing and bathing places.

The equipment should include hospital stores, quartermaster, ordnance, and subsistence property; and be complete for a regimental infirmary, the ordinary provision during field service for the care of the trivially sick in camp. The very ill, being an incumbrance to a command in the event of a move, are promptly transferred according to orders from the chief surgeon division.

In combat the supplies of the regimental medical personnel consist only of those carried on their per-

sons, the hand litters, and the cases of surgical dressings upon the pack animal. The pack animal (constituting the sanitary combat train) is the sole transportation for the regimental aid station.

During an engagement before the aid station is established the entire regimental medical personnel accompany the troops, treating the wounded wherever found and pausing only to give appropriate first aid. When later in the combat the number of the wounded constantly requires several attendants, the surgeon orders the establishment of the regimental aid station, as near the firing line and as much under shelter as possible. No elaborate arrangements obtain at the aid station. It is mainly a place for assembling the wounded, applying first aid, readjusting dressings, stopping hemorrhages, immobilizing fractures, and administering restoratives and analgesics when necessary. If practicable, stimulating food and drink should be prepared. The wounded are directed to the rear and, if unable to walk, are carried to the dressing station or possibly to the field hospital by the bearers sent forward by an ambulance company. The aid station is cleared, and the wounded in advanced positions are reached by the regimental and ambulance company personnel, especially during darkness. Lieutenant Hutton has prepared a chart showing graphically the scheme of medical transport service at the front, but I can only mention this subject here. Many important problems present themselves in this field of operations.

In order that the duties outlined above may be efficiently performed, it is apparent that the officers and men of the medical units must be proficient, not only in their special work, but also as trained soldiers. Without discipline and a knowledge of military organization, regulations, and administration, it is impossible for the most skilled physician or surgeon to organize, train, control, or use his personnel to advantage. Likewise with the medical units of the rear and base, the medical personnel must be properly prepared to be efficient.

It therefore becomes our duty, if we are loyal citizens, to take up seriously the problem of military preparedness from a medical standpoint and to assist the army in its ceaseless endeavors to get ready for the inevitable.

For those who would go to the front with the fighting troops (the younger men), there are at present practically but two ways by which these may orient and partially train themselves for duty, namely, by service in the National Guard, or in the field with the Medical Reserve Corps. Training with troops is imperative because, as we physicians know, theory is no criterion of efficiency. For the older men there is at present no method available.

Of course, old and young alike, every one of us, owe to our country our personal support and service, and whenever called upon, the medical profession must not be found wanting. But, unless we organize, tabulate, and classify our medical resources and assign to each medical institution and its personnel definite preparation, when war or other terrible national calamities come, as in the past, we shall not be ready to play the game.

If by bringing to my readers' attention, conditions

*Read at the New York Academy of Medicine, January 24, 1916, where papers on preparedness, for the civilian, for the army, and for the organized militia were also read. The field equipment and supplies used by the Medical Department, U. S. A., were exhibited and demonstrated by H. C. Detoch, 7th Inf., N. G. N. Y.

abroad and our endeavors and shortcomings at home, this paper has awakened in their minds only a sense of unpreparedness, it will have been a miserable failure. If, on the other hand, it is instrumental in arousing individual and collective action, to the end that we prepare for war, then it will have accomplished its purpose.

In a democracy, it is eminently fitting that every man give to his country his services when war threatens. How more fitting, then, that in peace he equip himself to meet any external aggression. It is not the duty of a few to protect all. The service must be universal. Surely it is better for every one to give a little time to preparedness *now*, than to wait for trouble, and then not only give one's whole time, but it may be almost uselessly one's life.

616 MADISON AVENUE.

- DUODENAL ULCER.

Its Surgical and Medical Treatment,

By ANTHONY BASSLER, M. D.,

New York.

Assistant Professor of Medicine, New York Polyclinic Medical School, Etc.

Until recently it was believed that essentially all duodenal ulcers were indurated in nature. The number of perforated ulcers of the duodenum met with, of late years, which are soft, the infrequency of indurated ulcers that have perforated, together with the many characteristic x ray findings of duodenal ulcer in those having all the way from distinct symptoms to no symptoms at all, and further experience with cases of duodenal ulcers treated medically, are the bases of this article.

At the present status of the subject, we can all agree with Mayo (1) that the important means of diagnosis in these cases are, history, x rays, physical examination, and the laboratory—these given in their respective values of practical importance in chronic ulcers of the type that gives symptoms. Surely the history and the x rays will diagnose ninety-five per cent. of those that give symptoms. He states further: "A study of the history of the natural course of chronic duodenal ulcers makes the prospect of cure by medical means open to question." He believes that there is no difference between medical cures and the spontaneous remissions, on the basis that the x ray shows no physical changes in the period of improvement, and if we operate during this period, no sign of healing is to be found, suggesting distinctly that surgical intervention in all cases is indicated.

One hundred and six patients with definite symptoms of ulcer of the duodenum, and thirty-six in whom only the x rays were positive, and in whom few if any symptoms and no characteristic ones existed, were taken as a basis for deduction. These were seen in 1913 and 1914, so a full year has passed at time of writing. In those with definite symptoms (nonperforated), sixty-three had been operated upon. Four died from the operation—one from hemorrhage, two from peritonitis, and one from postoperative pneumonia. Of the fifty-nine remain-

ing, thirty-four are free from symptoms and made marked return to health; thirteen have more or less symptoms of digestive disturbance up to the present, and twelve could not be located or did not answer communications. Of the remaining forty-three of those who had symptoms and were not operated upon, eleven could not be traced, and more or less medical treatment had been continued by the thirty-two remaining. This consisted of practically no special or sustained treatment at all to complete the rest and diet treatment for ulcer. Taking these as a group and disregarding how they had been treated, twenty-four said they were well during 1915, five continued more or less with treatment during last year, but said they felt better, and three died, one probably from perforation, one from apoplexy, and one from myocarditis.

The rather surprising result in the second group suggested examining as many as I could of the group operated upon who stated that they were well. Only seven responded. In these, four showed errors of the duodenal contour after matching the plates taken before the gastroenterostomies were performed. One had had a pyloric occlusion done (which although the pylorus was opened again, was considered not completely so, and the more prominent irregularity of the duodenum threw it out of consideration). In two it was deemed that the duodenum was distinctly more regular than shown by the first plates. It is therefore a question in my mind whether after gastroenterostomy, with or without pyloric occlusion, allowing a year of time and freedom from symptoms, all patients operated upon have normal duodenums. The reexamination of these seven was a very difficult basis for deductions. After a gastroenterostomy the duodenal filling phenomena change. If the stoma remains patent, this may be marked, and it is difficult to match plates then taken with the first series and deduce with satisfaction from the two sets.

What is happening with the twenty-four of the second group who were not operated upon and say they are well? Averaging the remission course of three to over five years that nineteen of them had (the remaining five were shorter than three years), the individual remission time was slightly over three months, and yet they all were free from symptoms for twelve months and over. Is it not true, as reported by me in the first edition of my textbook in 1910, that there is a proportion of duodenal ulcer patients, even some having distinct symptoms, who will get well on medical treatment? Eleven of these were again x rayed. Six showed essentially normal duodenums; in two distinctly less defect was observed, and in three the plates could be matched to the first ones taken.

Wilkie (2), at autopsy, met with forty-one instances of duodenal ulcer, in only six of which the diagnosis had been made during life. He believes that there is a silent type of duodenal ulcer, and the x ray diagnoses of my cases, together with those encountered at operation for other abdominal conditions, and at autopsy, strongly suggest this to be true. Gruber says that seventy-five per cent. of the duodenal ulcers found after death were diagnosed as something else during life, and he, with Wilkie, notes the frequency of silent ulcers in old people

with arteriosclerosis. In thirty-six of my patients, the ages ranging from twenty-seven to sixty-four years, definite duodenal defect was noted and yet few, if any characteristic symptoms were present. Leaving out the one that perforated and the other fatalities, should all of these be operated upon? If not, what will happen to the majority of them? Will they get symptoms afterward or not? Will they perforate or not? Cancer of the duodenum is rare, so that danger may be left out of consideration. It has now come to be my belief that operation should be advised in those who are young and have definite symptoms. If operation is refused or inadvisable, medical treatment for ulcer should be carried out—not necessarily the duodenal tube method, which gives no better results than the von Leube or the Lenhartz method—but always proper dieting and care afterward; that every one of these should be apprised of the danger of perforation, so as to be forewarned, and also of the improbability of benefit to be obtained by medical treatment; that with persistence of symptoms, operation should be insisted upon; that with those who have ulcer and few if any symptoms had best be treated medically for ulcer, operation being considered secondary for the time being; and that those in the group who have definite arteriosclerosis be treated for the vascular condition rather than ulcer, because they usually die of the first and not of the second.

REFERENCES.

1. *Journal A. M. A.*, lxiv, 2036, 1915.
2. *Edinburgh Med. Jour.*, ii, 106, 1914.

21 WEST SEVENTY-FOURTH STREET.

GUELPA'S DISCOVERY.

The Importance of Fasting in the Treatment of Diabetes,

By J. H. KELLOGG, M. D.,
Battle Creek, Mich.

At the annual meeting of the British Medical Association, held in London, July, 1910, Doctor Guelpa, of Paris, read a paper entitled, *Starvation and Purgation in the Relief of Disease*. Maintaining that diabetes is due to intestinal toxemia, he cited clinical results which demonstrated that by abstinence from food and thorough evacuation of the intestines sugar disappears even in the most severe cases of diabetes and generally in a remarkably short time. Doctor Guelpa asserted that by withholding all food (the so called "absolute diet" of the French), and by thorough going evacuation of the bowels with a saline laxative, sugar may be made to disappear from the urine in most cases of diabetes within three days. This method was found successful even in cases in which sugar reappeared on the resumption of feeding, it being only necessary to repeat the fasting and purgation once or twice to cause complete and often permanent disappearance of sugar.

Notwithstanding the remarkable results shown by Doctor Guelpa, little attention was paid to his observations by English speaking physicians, although great interest in his method was aroused in France, indicated by the discussions in the Société de théra-

peutique and the Société de médecine de Paris. The eminent French internist, Bardet, although disagreeing with Guelpa in some of his theoretical views, acknowledged in discussing one of Guelpa's papers before the Société de médecine, "that the extraordinary facts brought forward by Guelpa completely upset established ideas concerning the pathogeny of diabetes. Once again facts convict us of ignorance, and show that views we have long cherished will not hold water."

Bardet at first regarded with incredulity the assertions of Guelpa, but was converted by a severe test case treated by him in company with Professor Robin. At the Beaujon Hospital there was at that time a woman suffering from grave diabetes of several years' standing. She passed enormous quantities of sugar, sometimes as much as 800 grams (12,320 grains) in twenty-four hours. She had been under Doctor Robin's alternating treatment, however, but he had succeeded in reducing the sugar to only 160 grams. After a course of this treatment all medication had been suspended for a time, and the patient was placed on the diabetic diet usually prescribed in the hospital, consisting of:

Meat	500 grams
Potatoes	500 grams
Green vegetables	500 grams
(A total energy intake of about 2,100 calories.)	

On this diet the patient passed twelve liters of urine in twenty-four hours and eliminated 760 grams of sugar or more than 500 grams of sugar in excess of the ingested sugar. This case was evidently a typical one of grave diabetes in which the sugar could not be made to disappear from the urine by medication or by the ordinary methods of regulating the diet. The patient was much emaciated.

To the astonishment of the experimenters the sugar fell, in the first twenty-four hours after beginning the fast, although purgation was not employed, from 760 to thirteen grams, and the volume of urine from twelve to two liters. At the end of the second twenty-four hours the sugar had entirely disappeared and the volume of urine was only three quarters of a liter, while the general condition of the patient was excellent. Concerning this experiment and the result Bardet remarked:

This result, it need hardly be said, was truly surprising and unexpected. For my part, I should certainly not have believed beforehand that mere abstinence from food could have brought about, almost instantaneously, the disappearance of sugar from the urine of such a patient. In demonstrating this to us, Guelpa has, it cannot be denied, *done something both new and of great significance*. . . . If we cannot accept all the theories put forward by Doctor Guelpa in explanation of the facts he has thrown into relief, it is none the less true that he has rendered therapeutics a very great service in forcing medical men to recognize once more the disastrous influence of the ideas prevalent among them, as among the general public, concerning the supposed necessity of alimentation. Once more we have brought forcibly to our notice the great influence exercised over the organism by the practice of over-alimentation. In a state of nature animals are rarely dyspeptic, and the disorders of nutrition which are the melancholy appanage of humanity are to them almost unknown. It is sad indeed that the cerebral development of man, which, from many points of view, has produced results so admirable, has unfortunately led him to eat without need and drink without thirst, and thereby, too often, to ruin his organism and shorten his days.

The first case cited by Guelpa in his work, *Auto-intoxication et désintoxication*, was treated by him in 1896. The patient, a diabetic, who was discharging daily 100 grams of sugar, and for whom the ordinary methods of treatment had been tried without success, was extremely anxious to obtain life insurance. The method of abstinence and purgation was tried purely as an experiment and with the result that the sugar disappeared from the urine on the second day, and on the third day the patient made a successful application for life insurance. In another case cited by Guelpa, a patient whose urine contained 300 grams of sugar and a large amount of albumin, was in a few days made sugar free and the albumin was greatly reduced. At the beginning of treatment the patient was suffering with diabetic gangrene, which had destroyed one toe, which was amputated. The wound was soon healed, and a month later the patient was discharged with the urine sugar free.

In still another case in which the patient's urine contained daily more than a pound of sugar, the sugar disappeared on the fourth day. The fast was continued a day longer. After feeding the patient on a restricted diet for a few days, the sugar reappeared, when a second fast was undertaken. The sugar disappeared on the second day. The fast was continued two days longer. Feeding was then resumed, and the sugar did not reappear.

A youth of sixteen years, who had been under treatment for several months for diabetes, and who sometimes excreted in twenty-four hours twenty-four pints of urine containing 117 grams of sugar, at the end of fifteen days excreted only two pints of urine and this was free from sugar.

The aftertreatment prescribed by Guelpa consisted of a restricted dietary from which meat was excluded, with frequent short periods of fasting.

Guelpa's success in treating severe cases of diabetes was so great that he became overenthusiastic, and imagining that he had discovered a universal cure-all, he put forward assertions and fantastic hypotheses which have not survived the ordeal of criticism. But the results of the fasting method which he enunciated and of which he was the first to make systematic use in the treatment of diabetes, have been substantially confirmed by the experience of research students as well as by the writer and his colleagues, and many others.

The discovery which entitles Guelpa to much credit is the fact that a diabetic may abstain from food for several days without inducing acidosis or diabetic coma. Prior to his observations the physiologists had taught in a most emphatic manner that fasting was exceedingly dangerous for a diabetic, a conclusion most natural, since it was known that in health a fasting man develops acidosis within a few hours. Guelpa's observation that the diabetic, even with a very high sugar output and high degree of acidosis, might fast for several days, not only without injury, but with the almost uniform result of making the urine sugar free and relieving malaise, drowsiness, and other symptoms which accompany acidosis, and, as shown later of causing a great decrease and even disappearance of urinary acetone, diacetic acid, and excess ammonia.

Guelpa laid special stress upon the importance of reducing weight, to which his attention had been called by experiments of the late Doctor Dujardin-Beaumetz.

My attention was first called to the benefits of fasting in this disease three years ago, by a dental surgeon who had noted in his own case that the urinary sugar disappeared and a feeling of well being increased whenever he fasted for a day or two. At that time, I was so thoroughly impressed by the warning of Benedict, Mendel, and others that fasting by a diabetic was an open invitation to coma and positively dangerous, that I felt it my duty to warn the patient of the great risk of fasting, and to urge the necessity for taking at all times care to protect his store of glycogen. Later, I learned of the brilliant work of Allen at the Rockefeller Institute and shortly after obtained copies of Guelpa's book and his paper in the *British Medical Journal*.

Beside causing the rapid disappearance of sugar from the urine, the abstinence method, according to Guelpa, secures with other minor advantages, the following:

1. A very marked change in the intestinal flora with a reduction of the number of bacteria.
2. Lowering of blood pressure when high, with increase in the percentage of hemoglobin and the number of red cells.
3. Reduction in the volume of the viscera when enlarged, especially of the liver.
4. The disappearance of pains in the joints and muscles.
5. A general feeling of well being, suppleness, and readiness for mental or physical activity and less necessity for sleep.

The writer and his colleagues have verified these results in the treatment of a considerable number of cases within the last two years, and we are fully convinced of the great value of the discovery with which the name of Guelpa must be associated in this country as has long been the case in continental Europe.

It is surprising that notwithstanding the great success which from the first has attended Guelpa's method of treating diabetes, the general profession has been slow to accept his teaching, doubtless because of the deeply rooted belief that in diabetes the patient is already suffering a partial inanition through elimination of unused sugar, a condition in which relief by abstinence would not be expected. Careful investigation, however, discloses the remarkable fact that a diabetic when deprived entirely of food may actually suffer a smaller loss of tissue than when taking the ordinary diabetic diet of meat and fats, as was pointed out by Bardet in a discussion of a test case observed by himself and Robin. This patient lost in twenty-four hours, while taking the ordinary hospital diabetic diet, 760 grams of sugar, representing more than 3,100 calories, while the total caloric value of the food intake was 1,000 calories less than that of the sugar eliminated. To this loss must be added at least 1,000 calories, the "base ration" required for the maintenance of heart action and other bodily functions and animal heat, making a total of 2,600 calories daily expended by the patient in excess of

the energy furnished by his food intake. This energy loss was wholly derived from the destruction of the patient's tissues amounting to at least two or three pounds. During abstinence, after the sugar was suppressed, which occurred almost immediately after the fast began, the net loss was only 1,600 calories, or 1,000 calories less than when taking food; hence the patient's tissues were less exposed to destructive changes during abstinence than when he was taking the ordinary anti-diabetic diet, which in this particular case contained so large an amount of protein (100 grams—400 calories), that there was doubtless a great speeding up of metabolism, and hence an extraordinary loss of tissue. It is evident then, that the danger from diabetic coma during abstinence may be actually lessened instead of being increased in the really grave cases in which marked acidosis and coma are likely to appear.

The remarkable effects of depletion in diabetes were known nearly two centuries ago. In 1737, Le Ferre employed bleeding in diabetes, and a century later Watt, of Glasgow, brought the method into vogue among British practitioners. In a case treated at the Middlesex Hospital nearly one hundred years ago by Doctor Satterley (*Medical Transactions* v, 1, quoted by Good, v, page 329), 126 ounces of blood (nearly one gallon) were withdrawn within twenty days and a highly successful result was reported. The effects of the bleeding seem to have been quite similar to those of fasting.

It must be borne in mind, also, that the value of a greatly restricted dietary has long been recognized by such eminent authorities as Nauyn and von Noorden. The "green diet" of von Noorden, when strictly followed, is little more than abstinence, since green vegetables contain only about five per cent. of carbohydrates, practically no fat, and very little protein.

Within the last two years, 267 cases of diabetes have been treated by the writer and his colleagues by methods in which the new principle brought forward by Guelpa was fully utilized. The results secured have been most gratifying, especially in young subjects who heretofore almost wholly baffled therapeutic effort. In the following typical case sufficient time has elapsed since the application of the method fully to demonstrate its permanent value:

CASE. Man, aged twenty-six years, bookkeeper. Nine months before a heavy plank fell upon him, forcing him into a narrow space. He began at once to lose flesh. On examination, weight was 130 pounds, thirty-five pounds less than normal. Loss of flesh had been particularly rapid during the last two months, during which time he also suffered greatly from thirst and marked constipation, having only one natural movement in ten days. The patient was stupid, weak, and showed decided symptoms of beginning coma. Twenty-four hour specimen of urine contained 200 grams of sugar. Volume of urine 3,600 c. c.; ammonia 1.752 grams; acetic acid 1.324 grams. The patient was placed at once on a graduated diabetic schedule, and on the ninth day was entirely free from sugar, and remained practically so afterward. For a time, a small amount of sugar appeared in the urine when the carbohydrate intake was large, but, ten months after the patient's dismissal, the urine remained sugar free on ordinary diet. He regained his normal weight and soon engaged in active business.

In this case the food intake was gradually re-

duced. Later experience has convinced us that the complete withdrawal of food is perfectly safe, even in cases of threatening coma, and secures quicker results.

It is manifest that Guelpa has presented the profession with a new and most important method of combating diabetes; a method which not only clears the urine of sugar with surprising quickness, but which affords more hope of permanent relief than any heretofore proposed, and at the same time lessens the danger of diabetic coma, gangrene, arteriosclerosis, renal disease, and other grave toxic complications of diabetes.

DISEASE IN APPARENTLY HEALTHY COLORED GIRLS.

An Investigation,

By GORDON WILSON, M. D.,

Baltimore,

Professor of the Principles of Medicine, University of Maryland.
Physician in Charge, Municipal Tuberculosis Hospital.

At the request of the supervisors of the City Charities of Baltimore City, Dr. Mary Hodge and I made an examination of a number of colored girls who were minor wards of the city, residing in a reformatory institution which received its inmates not only from the city but also from the counties. This report is based on the examination of seventy-six of these colored girls, committed from the city to this institution. I want to take this opportunity of thanking Dr. Mary Hodge, of the Johns Hopkins dispensary staff, for permission to use the results of her examinations in this paper.

Before undertaking the examination of the inmates, a method was decided upon which included taking the weight, height, as well as the age of the girl to be examined, a thorough physical examination, a Wassermann test, and the examination of smears made from the urethra or vagina.

The girls were dressed for the examination with only shoes and stockings and a gingham mother Hubbard dress extending from the waist down, and with a light piece of cheese cloth covering the shoulders and breast. They were brought in one by one, weighed, and their height was taken on tested scales. This was done by the nurse, after which they came to me, and in every case I proceeded as follows:

1. Scalp examination for scars, eruptions, and the presence of lice.

2. Eyes examined for evidence of jaundice, equality of the pupils, reaction of the pupils, scars showing previous disease, and signs of Graves's disease.

3. Ears for discharge, or evidence of deafness.

4. Mouth: Evidence of anemia was looked for, and the condition of the teeth was carefully noted. Condition of tonsils was also looked into.

5. The neck was examined for evidence of glandular, especially thyroid enlargement.

6. Upper extremities were examined for nervous tremor, and the pulse rate was also noted. In all save fifteen (sixty-one), the blood pressure, both systolic and diastolic, was recorded.

7. The chest, absolutely bare, was examined carefully for evidence of heart or lung disease, both front and back.

8. The abdomen was examined for enlargement of the liver and spleen, and areas of tenderness or muscle spasm. The lower extremities were examined for signs of edema, tibial thickening, and the patella reflexes were noted.

9. Glands: The neck, the arm above the elbow, axillæ, and groins were palpated for evidence of glandular enlargement.

10. Skin: Careful observation was made for the evidence of eruptions, scars, or pigmented areas showing previous eruptions.

In all cases where I found rapid pulse, distinct undernourishment, history of cough or blood spitting, or abnormal signs in the heart or lungs, I reexamined at a later time. There were twenty-five such reexaminations. In each case after I had completed the foregoing, the girl was sent to Doctor Hodge, who made the following examination:

1. Breasts were examined for lumps, hypertrophy, or signs of pregnancy.

2. External genitalia were examined for scars, condylomata, the condition of the vaginal and urethral orifices, Bartholin's glands, and the presence of discharge. Any hypertrophy of the clitoris or internal labia was also noted.

3. Inguinal lymph nodes were examined, as an index to previous or active inflammatory processes in the lower genitourinary tract.

The urethra was then stripped with the rubber covered finger, a sterile swab was inserted into the urethra, and smears were made from the secretions on clean glass slides. These smears were made in duplicate and were later stained and examined microscopically for the presence of gonococcus.

After the examination above described, five c. c. of blood was drawn from the vein at the elbow, for a Wassermann test. Each specimen was put at once into a sterile tube marked with the girl's name. Later a slip accompanying each tube was written out, embodying any data obtained from the girl's history or examination pointing to presence of venereal disease and any treatment the girl might have received for such a condition. The tubes and corresponding slips were then promptly sent out to the City Hospital at Bay View, where a Wassermann test for syphilis was done on each specimen, under the supervision of the resident physician, Dr. Thomas P. Sprunt.

I might say that a very careful history was taken by Doctor Hodge of the menstrual and urinary functions and that she also inquired of every girl as to a history of pregnancy in the past, primary sores, skin eruptions, or leucorrhæal discharge, while I obtained simply a history of illness occurring within five years, and did not attempt to obtain facts relative to diseases within the family. I might say that the superintendent of the home had told us that all the girls were well, save three who were supposed to have minor ailments.

On account of the fact that many of the girls had been committed by the courts to this school on account of immorality, we expected to find quite a large percentage suffering from the venereal diseases, and for that reason and as a matter of clinical

interest, the girls were divided into two groups, the first group containing fifty-two girls showing no evidence on physical examination of a past syphilitic infection, and the second group containing twenty-four having one or more signs suggestive of syphilis, such as pigmented scars (fifteen girls), dental changes (nine), high blood pressure (three), and general glandular enlargement (eleven). The report on the Wassermann tests of these seventy-six girls was positive in the case of six, showed very slight fixation in seven, and no fixation in sixty-three. The six positive Wassermanns all occurred in the group of girls who showed absolutely no physical sign of a past syphilitic infection, and in the seven negative cases with slight fixation, only two had been in any way suspected of having had syphilis, one (aged twelve years) on account of her having serrated edges to her lower incisors, and the other one (seventeen years old) was suspected on account of corrugations over front of lower incisors.

The nourishment of the girls was apparently normal, as is borne out by the fact that the total weight of those fifteen years of age and over (sixty-four) was 7,057 pounds, while the normal weight for a similar group of white women according to the medicoactuarial investigation would be 7,051 pounds, a difference of only six pounds in 7,000, provided that an allowance of three pounds is made for the difference in the weight of clothing, as in the case of these girls they did not have on underclothes, corsets, or underskirts, and the dresses were below the average weight. In the medicoactuarial investigation the weights were of women applying for insurance, normally dressed, who applied during the years 1885 to 1900 inclusive, at which time the clothing of women weighed considerably more than it does now. Unfortunately, there is no table of weights that I know of for the colored race, and this may be of importance, as it is known that Austrians and Germans of the same age and height are ten per cent. heavier than Americans, and that Japanese are ten per cent. lighter (*Medico-Actuarial Investigation*, 1).

The average age of those examined was sixteen and one half years, the youngest being eleven years old, the oldest twenty-one years old lacking a few days. The average length of stay in the school was two years and two months, the shortest being a few days, while the longest stay was eight years.

The most important thing found in our investigation was the extremely bad condition of the back teeth, not noticeable on ordinary casual inspection, but readily seen when the mouth was open and the teeth were examined. Thirty-one out of the seventy-six girls had one or more teeth which were simply shells or roots. It is noteworthy that only three showed bad front teeth, which might account for the popular impression that the negro race has better teeth than the white.

In only three of the girls were the tonsils in need of treatment.

Only one girl wore glasses; none had any evidence of eye disease, and only one showed evidence of previous eye disease (corneal scar).

None of the girls had discharging ears or noteworthy deafness.

Five girls showed moderate but definite enlargement of the thyroid gland. In one it was accompanied by tremor of the fingers and rapid pulse, and in one by rapid pulse but no other sign of Graves's disease.

Two of the girls had definite compensated valvular disease of the heart, and one had a slightly enlarged heart with functional type of murmur. One of these girls had had definite inflammatory rheumatism in the past, and the other one gave a history of repeated attacks of sore throat.

The blood pressure was found to be high in one nineteen year old girl (systolic 165 mm., diastolic 110 mm.), two others having moderately high blood pressure (systolic 140 mm. and 142 mm.).

Tuberculosis of the lungs was found in six girls, one of them having an extensive infiltration of the lung complicated by a tuberculous peritonitis, and possibly by Pott's disease. The other five had the disease in its incipient stage with slight or no symptoms, and only very moderate physical signs. In addition, there were three girls who should be sent to the Municipal Tuberculosis Hospital (together with the other six) for observation on account of their having either suspicious symptoms or indefinite signs.

Abdominal examination showed that one girl had a small umbilical hernia, which however, did not require treatment. There were six girls who had more or less tenderness in one or both iliac fossae, unaccompanied by muscle spasm, a condition not infrequent in young girls.

There was a possibility of one of the recently admitted girls being pregnant on account of the history she gave and the delayed menstrual period.

Three of the girls showed scars in the neck typical of old broken down tuberculous glands of the neck, and three of the girls were found to have tuberculous glands of the neck, which, however, did not require surgical treatment.

The results of the examinations by Dr. Mary Hodge may be briefly summarized in two groups.

a. *Based on statements:* 1. Urinary. Pain and burning in three cases, all giving negative urethral smears. In one of these cases a urethral caruncle was suspected.

2. Menstrual. Menstruation had not yet begun in fourteen girls, of whom one was sixteen years old, four were fifteen years old, and the rest younger. Pain was present at the periods in thirty-two cases, in only five to a considerable degree. In three cases periods had been missed for several months, ranging from four months to one year.

3. A child had been borne in one case. This girl had gonorrheal organisms in the urethral smears.

4. A miscarriage was noted in one case. In this case both the Wassermann reaction and smears were negative.

5. Pregnancy (early) was suspected from the history in one case. This girl had a purulent leucorrheal discharge, with gonorrheal organisms.

6. Venereal history suggestive of syphilis was given in four cases, of which three had negative Wassermann reactions. Two of these negative tests were explained by previous treatment with salvarsan.

b. *Based on physical examination and laboratory finding:* 1. Breasts were markedly hypertrophied in four cases.

2. Labia or clitoris hypertrophied in twelve cases.

3. Outlet or vagina marital in all cases.

4. Condylomata or other signs of secondary syphilis were found in no case.

5. Scars were not found on the external genitalia.

6. Discharge from the vagina was noted in twenty cases, in most of them slight; purulent and profuse in only one case.

7. Enlarged inguinal glands were found in seventeen cases. In seven of these syphilis was proved by the Wassermann test. (One of these cases showed a negative Wassermann at this date, but had had a positive test a year ago and had been treated at the City Hospital with salvarsan.) In four cases gonorrhea was proved by the finding of organisms in the smears.

8. Urethral smears were found positive, i. e., showed gonorrheal organisms, in eight cases. In all these cases the infection was in the chronic stage.

9. Wassermann tests were positive, i. e., showed active syphilis in the body, in six cases. In two more there was a definite history of syphilis, but the Wassermanns were negative after active treatment with salvarsan.

CONCLUSIONS.

We have as a basis for this study the primary fact that these girls were all considered to be healthy, and were resident of a semiprivate institution under city supervision having an attending physician, but no medical history or physical examination had been made of any of these girls, either immediately prior to their admission or during their stay in the institution. This examination has disclosed the following cases of disease.

1. *Syphilis.* In this group of supposedly healthy girls there are six girls who are suffering from latent syphilis, without physical signs or symptoms, and two other girls have had syphilis in the past and have been treated with salvarsan.

2. *Gonorrhea.* Eight girls were shown to be suffering from chronic gonorrhea, as proved by the finding of the organism in smears. Twelve others had a leucorrheal discharge, which on one examination only failed to show gonococci. No doubt some of these girls could be shown to have gonorrhea if many smears were made.

3. *Valvular heart disease.* Two girls had valvular heart disease, while a third had a slightly dilated heart.

4. *Tuberculosis.* Six girls were found to have tuberculosis of the lungs, five in the incipient stage, and one in the advanced stage. In addition, three were suspected of having incipient tuberculosis on account of symptoms or physical signs, or both. Three girls were found to have tuberculous glands of the neck, and three girls also had scars in the neck indicative of previous tuberculous adenitis.

5. *Hyperthyroidism.* One girl had a definite mild case of this disease, and one other was suspected of having it on account of thyroid enlargement accompanied by tachycardia.

6. *Hypertension.* There was one girl with this

condition, and two others whose blood pressure readings were relatively high.

7. *Dental caries.* Thirty-one girls had teeth badly in need of attention, but in none had there been symptoms or at least complaint, and in only three was the condition suspected on casual inspection.

8. *Wassermann test.* This test showed six girls (eight per cent.) to have syphilis, and yet none of these girls showed any of the physical signs usually considered to be associated with syphilis (save enlarged inguinal glands), and from none of these six was there obtained a history suggestive of syphilis. This seems to confirm the growing belief among physicians that syphilis may be present and yet give rise to no physical signs which would cause one even to suspect it.

4 EAST PRESTON STREET.

MIGRAINE.

Its Cause, Treatment, and Cure.

BY ANTONIO H. MOLINA-DE SAINT REMY, M. D.,
Porto Rico.

Migraine, the classic title of the disease, is probably the best designation, as all the other pseudo-scientific labels are based on a mistaken pathology. It is called *hemicrania*, when often two sided; *bilious sick headache*, when the bile is innocent; *ophthalmic migraine*—even so—in Osler's *Modern Medicine*, when, as will presently be shown, it is of purely nasal origin, though manifested by pain in the ophthalmic branches of the fifth nerve, and even in the occipital region.

The affection is currently defined as a recurring, one sided headache of hereditary and neurotic origin, with symptoms, during the attacks, of nausea and vomiting, and various visual, aural, and nervous phenomena.

The disease usually appears at puberty and lasts till advanced middle age, in women till the menopause, and in men till they are well into the sixties. The attacks begin, as a rule, in the morning, on rising, get rapidly worse, and reach their acme after several hours or, in the most severe cases, several days. The sufferer then is relieved and during the intervals feels unusually well.

Up to the present, true migraine has been constantly confounded with headaches due to ocular defects, whether of refraction or of the muscles, which is a condition entirely foreign to that under consideration. The distinction is obscured, moreover, by the simultaneous presence of both causes; a nasal defect being complicated by the presence of eye troubles, whose symptoms are relieved neither partly nor at all by the use of the proper glasses, no matter how well prescribed, nor by tenotomies, however well performed.

The cardinal distinction between headaches of nasal and of ocular origin, when occurring apart, is that the pain due to the eyes always comes on after their use, is relieved by resting them, and naturally by the use of proper glasses to correct all of the defects; and treatment for, and care of the muscular affection, if such is present. Headaches of nasal

origin, on the contrary, are present on rising, get worse during the day, and especially on lying down or lowering the head, independently of whether the eyes are used or not. Remedies for the eyes are useless even to reduce the intensity of the pain, when this is due to disturbance in the nose.

Of course, these various procedures will relieve that part of the suffering due to the simultaneous presence of the eye defects. They may even contribute to the prevention of the sympathetic occurrence of the migrainous affection. There is no doubt, when both causes are present, that the use of the eyes, when abnormal, tends to precipitate a reflex disturbance in the nose, and to that extent to contribute to the causation. This is seen when proper intranasal treatment cures the headache even in the presence of uncorrected defects of refraction of relatively high degree.

Osler, in *Modern Medicine*, quotes the analysis made by Spitzner, who, after going over all the work done, and the theories advanced, has come to the conclusion that the symptoms are due to a passive or active cerebral congestion, the result of plugging up of the foramen of Monro, which is, according to Spitzner, unduly stenosed, causing increased pressure in one or both of the ventricles. Although this seems to be the nearest that any observer has got to the true causation, still it is quite far from the fact, as will be seen upon further study and analysis of the symptoms.

To attribute the phenomena to intermittent nasal obstruction is both simpler and more scientific, especially as it can actually be demonstrated during the life of the patient. This theory explains all of the various symptoms, the connection between which has never before been even remotely understood.

Pressure upon the sphenopalatine ganglion, caused by swelling of the mucosa of the middle turbinate impinging against a relatively high deviation of the nasal septum, by disturbance of the local circulation, ends in a reflex spasm of the cerebral vessels, which accounts for all the remote symptoms, to wit, the vertigo, nausea, vomiting, dullness, oppression, etc., which appear in turn. Once this etiology is grasped, it becomes clear why the disease comes on about the age of puberty, for it is then that the nasal septum begins to bend from pressure upon it by the faulty development of the facial bones. The disproportionate growth of the frontal and maxillary causes the vomer to yield. Any one conversant with the anatomy of the nose may now readily see why migraine is sometimes double, because the septum may be so thickened as to obstruct both nostrils, and consequently compress both ganglia at the same time, or it plugs the nostril posteriorly, resulting in *occipital* (Dana) migraine. Thus also is made clear the reason for the spontaneous cessation of the disease late in life *when the nasal mucosa is no longer erectile*.

Apart from the nasal obstruction there are undoubtedly other contributing factors, such as vasomotor disturbance, which cause the flushing of the face, chilly sensations, and later pallor, which are usually present. Heredity plays its role in the sense that the bony configuration of the nose is inherited.

and also the tendency to the same form of deviation. A neurotic element alone can account for the fact that many septums are deviated, but relatively few people are affected with migraine. The converse, however, that there is no migraine if the septum is normal, will invariably be found to be the case, and serves as a means of differential diagnosis when the headaches are due to other causes.

Needless to say, in the great majority of cases the deviation is of slight extent, includes the upper third of the septum, and is often situated fairly far back in the nose. The convergence of the bony walls of the nose above allows a relatively small deflection or thickening to cause marked obstruction when the mucosa swells. During the intervals of the attacks practically no disturbance is felt by the patient in most cases, and only a painstaking and thorough examination can determine its existence in some patients.

In the presence of the attack of migraine no difficulty will be found in demonstrating the swelling of the membrane and the resulting contact and compression. Many sufferers spontaneously complain of the nasal obstruction, and speak of the "stuffedness" in the head and nose. But, as will be readily understood, the reason this symptom is not more often elicited, is that the pain naturally overshadows all the other subjective features, and in the intervals the obstruction is not usually of sufficient degree to attract the attention of the patient.

The nasal obstruction is at times so marked as to cause an almost incredible resistance to the passage of a cotton wound probe. The extreme tenderness over the posterior part of the middle turbinate and the region of the sphenopalatine ganglion is highly suggestive in these cases.

The intermittency of the attacks, so characteristic of the disease, can be explained only by the erectility of the mucous membrane of the "swell bodies," which, by their susceptibility, react to stimulation by atmospheric conditions and barometric changes. Thus it is, that foul air, sudden changes of temperature, irritating vapors, and even tobacco smoke may act as stimuli.

Cocaine solution upon the swollen mucous membrane, by shrinking it, gives almost instantaneous relief from the headache, but the pain comes back as soon as the effect of the medicine passes off. Some authors have held that this relief is due to the analgesic effect of the cocaine; therefore adrenaline solution was substituted and found to have the same power. This experiment clearly demonstrates that the swelling of the nasal mucosa and the resulting pressure on the nerves and ganglion, are the determining factors in the pathology. Drugs, such as potassium bromide, in massive doses, which reduce cerebral congestion, are capable of modifying the symptoms.

TREATMENT.

The treatment is clearly indicated once the cause is known. The thorough and complete submucous resection of the nasal septum alone can cure true migraine. It is of the utmost importance to bear in mind the true pathology, because if the resection is not properly done some points of contact may be allowed to remain and so render ineffective the

operative interference. No amount of tinkering with the turbinates can do more than relieve, somewhat, the trouble. And this is true, as will be shown by a study of the cases presented, because while the mucosa is active, a secondary hypertrophy may occur after the removal of the middle turbinate; or a compensatory overgrowth of the superior turbinate may follow operation on the one below.

The thorough extirpation of all the bony defect of the septum, however, with due care to avoid perforation, which is of importance in these cases, will give prompt and complete relief, because no amount of swelling of the middle or superior turbinate can then cause pressure, as there remains only the resilient membranous partition after the resection, which yields to their increase in volume. The beautiful plates (cxlv, etc.) of Deaver's *Surgical Anatomy*, show in detail the relations of the sphenopalatine ganglion to the posterior extremity of the turbinates, as well as the distribution of the nerves in the turbinates and septum.

CASE I. Miss A. R., teacher, aged about twenty-five years, single, intense headaches, eyes examined, over plus three with astigmatism in both eyes against the rule. Some relief from wearing glasses. Patient spontaneously called my attention to her nose, as she felt "something there." Examination showed a deflected septum, and when seen during an attack, cocaine was applied to get some relief. Although this was my first case, in 1905, in Ponce, I recommended resection to relieve the nasal obstruction, not the headache. To my great surprise the patient returned cured of the headaches.

CASE II. R. D. C., male, married, American, cashier, aged about thirty years, very intense headaches, occipital. Corrected moderate hypermetropia and some astigmatism. He could work better but had absolutely no relief from the great pain he suffered. Resection performed, with the result that the pains stopped on the left side of the head and only slight discomfort remained on the right. Dr. Bailey K. Ashford, who saw the case in my absence, recommended resecting the posterior tip of the right middle turbinate, as he found it somewhat hypertrophied; the patient, however, declined any further operative interference as he felt that it was not worth while.

CASE III. R. A. M., aged about forty-five years, married, American, three children, high compound myopic astigmatism with irregular axes, accurately corrected, and glasses worn constantly, but no relief was obtained from the terrible headaches, which confined him to bed for days at a time; this man had a perforation in the anterior part of the septum, but no specific history. Refused operation. Died some three years later of septicemia following a left antrum sinusitis.

CASE IV. Mrs. I. de B., married, aged twenty-eight years, no children, dressmaker; headaches almost continuous since fourteen years of age. Corrected high compound myopic astigmatism and resected the septum under general anesthesia, with complete cure.

CASE V. Father A., aged fifty years, single, "terrible headaches," very marked deflection of the septum. The very poor general condition of this patient prevented intervention; he had only the usual presbyopia.

CASE VI. J. G., lawyer, Porto Rican, aged thirty-four years, plus two hypermetropia corrected. Headaches cured by resection.

CASE VII. A. R., waiter, male, single, aged twenty-one years, no eye defect; headaches of such intensity as to make him almost idiotic during the attack; radically cured by resection.

CASE VIII. Mrs. C., prescribed glasses, no relief; cured by resection under general anesthesia.

CASE IX. Mrs. J., married, no children, aged thirty years, milliner; headaches commenced at thirteen years of age; always saw well at a distance; eyes tested at twenty years, compound hypermetropic astigmatism. Wore glasses for six months, no relief. The eyes were again tested, no relief, a tenotomy was performed on the left internus and,

two months later, two more tenotomies were made with some relief from the headaches and soreness in the eyeball.

Her nose was treated at the same time; six months later, had a part of one ovary removed; three months later, the rest of the ovary was taken out. For a month after this "everything seemed as in a dark mist." Could not read print at the time, and was very weak. A Birmingham specialist removed some bone from the nose twice (turbineotomies?), which gave her some relief. Eyes again tested, and glasses changed; some relief, but had to have different ones about every six months; then had prisms prescribed, which were changed four times; had never seen double (11). Headaches commenced on the left side of the head, then spread; she awoke in the morning with pain. Had marked tenderness over the left middle turbinate posteriorly, had a divergent strabismus, used now 4° prisms, base in, on each eye, and plus 2.25 with plus 50 cylinder against the rule. I myself examined her and found that she accepted plus 1.25, plus 50 cyl. ax., 180 in both eyes, and that she saw perfectly without prisms, both for distance and reading, which was certainly remarkable. However, the new glasses had no effect on the headaches, and as the only interval from these had been after having had an application of cocaine to the nose, I strongly recommended that a resection be done. Unfortunately only the posterior part of the left middle turbinate was finally excised, which, although it relieved her, still, I was informed, that she was again complaining. The pressure against the septum exerted by the turbinate was tremendous, and the bone was of great hardness. The year before, the anterior part of the same turbinate had been excised, with partial relief as I found after.

My own mother was a sufferer from the most intense and terrible migraine all her life, and although this was at first attributed to her stay in the tropics, still on returning north it was as severe as ever and passed off only at the age of sixty years. She had a compound myopic defect which I corrected myself years ago.

From the age of fifteen to twenty years, when I had a spur removed for catarrh, I suffered from the most intense headaches, and this in spite of the correction of my eye defect which is minus 50 cylinder in each eye. The nasal operation stopped the catarrh, the headache ceased, and I was troubled no more, till this fall when, on returning to New York, my nose felt slightly obstructed and I have had some slight discomfort in and behind the right eye.

REFERENCES.

- SIDNEY KUH: *Journal A. M. A.*, Feb. 10, 1915, p. 595.
 W. H. HASKIN: *Annals of Otolaryng.*, June, 1913, p. 384.
 J. E. M. HOLMES: *Ibidem*, p. 351.
 G. M. GOULD: *Journal A. M. A.*, 5. WOLFF: *FRONTALITIS: Headache in Its Relation to Nasal Discharge*, NEW YORK MEDICAL JOURNAL, Jan. 1, 1911.

THE PREVENTION OF FIRE IN OLD BUILDINGS HOUSING THE INSANE.

By J. ALLEN JACKSON, M. D.,
 Philadelphia,

Chief Resident Physician, Philadelphia Hospital for the Insane.

In making a survey of the general care of the insane, we are forcibly struck with the old inflammable buildings set aside for the care and treatment of the mentally defective. This condition prevails, regardless of whether the cases are cared for by the State, municipality, or county. The superintendents of all of these institutions in their annual reports, have earnestly pleaded with the Legislatures for available funds to replace these wooden structures. Their obligations do not end here, however, because careful supervision as to details relative to fire prevention is paramount.

BUILDINGS.

It would be impossible in a brief article to undertake to outline the various types of structures which, at the present time, house the insane. It is safe to say that certain buildings exist erected in the early part of the nineteenth century, which are wholly unfit for the care of the insane, and exceedingly dangerous so far as fire is concerned. We must bear in mind, however, the lack of enthusiasm on the part of the public in general, concerning the care of the insane, and realize the great burden of taxation attached to demolishing and rehabilitating many of these buildings. In the interim, a local board of trustees could not feel that they had done their duty by the insane under their general care, unless they had approved and installed some form of fire escape.

FIRE ESCAPES.

In visiting many State hospitals, we observe the many types of fire escapes, some apparently make-believes and others badly situated and poorly designed. Unfortunately, a fire escape cannot be put to the test until a fire occurs, and many men point with a great deal of pride to numerous adjunct and annexed structures which they are pleased to label fire escapes.

Apparently the most useful and most serviceable fire escape is what is known as the outside fire escape, that is, a fire escape which runs the length of the building, and is readily accessible to main doors from that side of the building. Such a fire escape may be entered from any part of the ward, and if properly screened, patients may be removed from the ward with little confusion and particularly those of the ambulatory type.

Many institutions built on the block system, with long corridors and bedrooms on either side, rely wholly upon hall exits; such an arrangement is not bad, provided that the wards are connected by means of landings and fire towers; it is needless to add that these landings should be fireproof and the stairways of the towers of slate, cement, or iron. Here again we notice that in many institutions we have fallen short of accomplishing our desired results, because many of the stairways in these towers as well as the landings from the wards are of wood. Such escapes, if fireproof, would be fairly efficient if the fire rules and regulations demanded that the wards empty in opposite directions in case of emergency. Here again we are unable to test the efficiency of such fire escapes, particularly in three or four story buildings, until some disastrous fire has demolished the entire structure with an appalling loss of lives.

Fire walls in many of these long hall buildings would undoubtedly be of advantage and time saving in the case of emergency, as all the patients could be rushed to the end of the ward opposite to that in which the fire occurs, the fireproof partition lowered, and the patients removed from the buildings. Here again, we are concerned with the problem of the fire traveling along either the rafters or the sills of the floor, and much combustion having taken place before the fire is generally known or located.

There is one particular fire escape on which I am anxious to have a report as to its efficiency; I refer to the chute tower or enclosed circular fire escape, placed at the end of the buildings for the purpose of emptying the wards in case of emergency; they are rated very highly, classed as efficient, and convincingly demonstrated with employees, but I doubt seriously if the hospitals in which these towers are installed ever empty an entire ward, particularly of demented or of refractory and unclean patients. An intelligent sane person no doubt makes the incline without any obstruction; just what the various types of lunatics would do under excitement is questionable.

There is a fire escape which has recently been installed in a new group of buildings for the feeble minded, which is interesting. It is on the same principle as the circular tower, except that it is not closed. The metal work is exposed to rain and snow, and it is a question of just how long the smoothness of this escape will last. Deterioration will certainly take place as a result of rain and snow. In the midst of excitement, patients will not await the "toboggan slide," but will resort to the "high dive." The buildings are only two stories high and the windows are free from bars.

Then again we see a type known as the inside fire escape, designed by whom, I know not; the efficiency of such a system is nil. Many of these empty into the ward, which is quite a distance from the exterior of the building; such towers are fit only for the accumulation of junk and dust and to afford a pastime for the average whitewasher. He who rests at night, with such a type of fire escape to guard the poor unfortunate under his care, feeling that he has done his conscientious duty by those under his supervision, certainly must labor under a delusion.

The type of fire escape, semiexposed and semi-interior, used in modern hospital construction, renders efficient service; this concerns particularly, however, new buildings, because they cannot be installed in old buildings.

The hospital superintendent should see that there are sufficient exits; that there are either end hall or side exits to some fire escape and that the escapes themselves are serviceable. In institutions built many years ago, such as Blockley, the outside fire escape running parallel with the ward, readily accessible by means of many doors from a long hallway, is not costly and is certainly serviceable.

REMODELING.

Conditions often demand the installation of new floors. In view of the fact that many of the old type of buildings are constructed of stone with firm walls, fireproof floors with steel beams and reinforced concrete, would assist in making the buildings fireproof. In many old buildings, it becomes necessary to rip out baseboards, window sills, etc.; these could be readily replaced with cement, thus eliminating as much as possible wooden structures. Occasions demand that certain partitions be installed, rooms enlarged, modified, etc. These undoubtedly should be fitted up with what are known as fireproof partitions.

Wax certainly makes more attractive the wooden

floors of the hospital for the insane, but, at the same time, we must remember that it increases the inflammability of a building, therefore a substitute of cement with gunboat linoleum or linoleum of any kind properly laid over the hallways, bed spaces, and so on, would eliminate a great risk.

Many executives overlook the condition of their cellars; the cleanliness of a cellar sometimes is an index as to the housekeeping of the institution; unless the basements are of modern construction, nothing should be stored in them; refuse such as old hospital furniture, benches, chairs, etc., should be stored in places which are absolutely free from debris and kept in systematic order. Cellars should be whitewashed and free from refuse. The lighting of the cellars in many of these old institutions is very important. Here and there we find gas jets to be used when occasion arises, such as correcting the steam pipes or plumbing, and for general lighting purposes. The mechanics attached to such an institution should be impressed with the rules governing fire prevention; and particularly should they be instructed to handle very cautiously matches, lanterns, etc., in the cellars and to see that no excelsior or debris is left when the work is completed and that the gas jets are turned off. If the gas jet must burn constantly, it should be covered with a metal mesh basket and suspended so that it cannot come in contact with any of the wood work of the building. The safest procedure would be to abolish these jets and install electricity. At the same time we must bear in mind those unforeseen accidents where even dynamos are put out of commission.

YARD SPACE.

Many of the county institutions constructed years ago are enclosed with stone walls or fences, and the ground space available for exercise and emergency in case of fire is too restricted. This condition, complicated with marked overcrowding, is a very serious menace. In many of these institutions the gates leading from these walls are placed at such distances and angles that it would be difficult for the patients to make an exit in line formation. Therefore, we should emphasize the necessity of having available sufficient yard space and sufficient yard exits to meet any emergency.

WARD ARRANGEMENT.

Many institutions, under the old system of arrangements, placed their infirmaries on the third or fourth story; we can appreciate the gravity attached to housing sick, infirm, and helpless patients on the third or fourth story in inflammable buildings; to rearrange such wards would entail considerable expense, as they have already been converted into semiinfirmaries with operating rooms, dining rooms, etc. If any of the old buildings are to be remodeled, and such arrangements have not been made, the superintendent should insist that his infirmaries, as far as possible, be placed on the ground floor, and the wards should be so remodeled as to allow available space through which the beds may be rolled out into the open; otherwise the problem of carrying out many patients on stretchers would be a serious one. The same applies to wards housing terminal demented.

To overcome the defect of having infirmaries on the third and fourth stories, the hospital superintendent should see that, as far as is in his power, fire escapes are readily accessible, and in good condition, and that a sufficient number of stretchers are kept hanging on the walls. Many of the old buildings fortunately have installed sufficient fire hose; this does not necessarily meet the situation, however, until we are positive that we have sufficient pressure for an emergency. It stands to reason that where such hose is not available, there should be stated places for fire buckets kept filled with water, as well as fire extinguishers.

HEATING.

In many old buildings we find the remains of an antique heating system with steam pipes uncovered. A superintendent has no excuse for permitting this in these days of civilization. In the first place, the patients should be protected against burning themselves, and even if the authorities advise us that combustion seldom takes place from heated steam pipes, I personally feel more comfortable when I know that all steam pipes in close proximity to wooden structures are carefully covered with asbestos. It is needless to add that in hospitals for the insane many of these radiator coverings should be removed at frequent intervals in order to destroy the dust, rags, etc., which the patients have a mania for secreting in every secluded spot. In many institutions we find what is known as the hot air system, with the opening in the wards protected by a small flat surfaced radiator. These vents should be cleaned out at frequent intervals during the year, particularly before the heat is turned on in the winter. In outlying buildings, such as old farm buildings, utilized for the colony method of care, every effort should be exercised to see that the fire places are fireproof, that the chimneys and vents are cleaned before the winter season begins, and that fire extinguishers are installed.

LIGHTING.

Electricity, as far as possible, should replace gas. Many institutions have installed both systems of lighting—electricity and gas. In old buildings it should be mandatory that the wiring be inspected by the chief electrician at frequent intervals. Gas lights should not be used, except in emergencies; these jets should be placed out of reach of the patients and should not only be covered with a basket which encircles the light proper, but the basket should have a solid floor in order to prevent patients from sticking materials into the flame. Gas jets should be lighted with regular hospital tapers, and the custom of lighting one jet from another by means of paper, etc., should be absolutely forbidden. It is needless to add that the "original match" should be kept under lock and key and only employees should be permitted to light the gas jets. Patients should not be permitted to have matches. In the interior of the buildings the safety match is the only match to be used. The night attendants in many hospitals are accustomed to carrying old fashioned oil lanterns. In this hospital, several months ago, we abolished the use of such lanterns and substituted the small electric lantern composed of an ordinary cell battery and a small bulb; these are easily manipu-

lated and are free from danger; they are very serviceable, and all possibility of having an oil lantern kicked over or smashed by some excited patient as well as the housing of oil, have been eliminated correspondingly.

RULES GOVERNING EMPLOYEES.

In mapping out a set of rules relative to fire prevention, we want to establish rules which are effective, yet at the same time will not deprive the average employee of his pleasures, such as smoking, etc. Physicians and employees should not, at any time, smoke in the buildings where patients are housed. The resident staff should have available a recreation parlor, and smoking should not be prohibited in their bedrooms, provided that they smoke pipes or cigars; cigarettes, particularly of the Turkish type, on account of their steady burning, should not be placed here and there; they are always dangerous.

Employees should not be permitted to smoke in their rooms; it is exceedingly difficult to impress this fact upon the average hospital employee; many of them are addicted to cigarettes and are more or less indifferent about the disposal of their matches and cigarette stubs. Some have the abominable habit of smoking in bed; such men are unfit to wear the hospital uniform and should be banished from the building at the earliest possible moment. On the other hand, the hospital should provide recreation rooms where these men may smoke; they should be cautioned to crush their lighted cigarettes or cigars, as well as tobacco burning in pipes, before entering the building, and particularly to avoid throwing cigarette stubs, etc., down into some adjacent light shaft, which is close to the cellars of the building. Again, it behooves the superintendent to see that the yards as well as the beautiful grounds surrounding the buildings are freed from dead leaves and foliage in the autumn and winter months.

Unfortunately, many of the old institutions do not provide separate sections or separate buildings for housing employees; therefore it becomes necessary, when funds are not available, to erect such homes or to provide quarters for the employees on the ward sections, as was the custom years ago. The employees should be cautioned about smoking in this section. The light should be properly extinguished on leaving the rooms; matches, tapers, etc., should be extinguished before placing them in receptacles for waste materials: the gas jets, if electricity is not provided, should be so arranged as not to come in contact with the wood work, furniture, and especially window curtains. The attendants should be impressed with the fact that the furniture is not to be moved from its original location, as it was originally placed with special caution as to fire prevention. Short curtains, suspended by rods and attached by rods at the lower border of the window, are far safer than the long flowing curtains. Gas jets should be properly covered with a metal basket as well as an illuminating globe in order to give as much light as possible. The attendants should not use this jet for attaching irons, cooking utensils, etc., as use for this purpose is fraught with many dangers. I have known cases where fires originated from flowing curtains and carelessness on the part of the attendants in having the mattress come in

contact with one of these gas heated stoves; cool headed assistants and employees prevented serious results.

The attendants should thoroughly search every patient after he has received visitors, in order that he may not secrete matches and harmful implements which have been given him by some thoughtless relative; they should, by no means, permit patients to come in contact with the lighted gas or to assist in any way in lighting the wards.

The chief nurse or assistant chief nurse, weekly or unheralded, should check all attendants' quarters, buildings, etc., in order to see that the fire rules and regulations are carried out. The ward dining rooms as well as the general dining rooms and kitchen should also be guarded with a set of fire rules and regulations.

In the old institutions where they still cook on coal stoves, special caution should be taken in emptying ashes in the evening and special care to see that no inflammable material is kept in the ash cans; these cans should be kept away from the buildings and covered. Special care should be exercised in ward dining rooms where gas stoves are used for preparing emergency meals, as well as for keeping food receptacles warm. Gas stoves should be inspected from time to time, to see that they are in good working order and to avoid danger of fire. All cans containing waste materials from the wards should be kept as far as possible from the buildings, and properly covered.

Considerable care should be exercised in handling the floor polishes, wax, rags, etc. These should be kept outside the building, and the cabinets so arranged that the air may percolate through the brushes in order to prevent spontaneous combustion. Old wax cans should not be used as receptacles for chloride of lime, etc., unless the cans have been thoroughly cleaned and freed from wax; otherwise, combustion may take place.

Special caution should be taken to see that the old broom closets installed in many of these institutions are kept perfectly clean and free from debris, and that they contain nothing except brooms and the whitewash on the wall. The best precaution, no doubt, would be, if possible, to nail many of these crevices up, as they offer a great temptation for a greenhorn attendant to throw partially extinguished matches or a partially cramped cigarette into them.

RULES GOVERNING PATIENTS.

The rules governing patients are briefly enumerated in the preceding paragraphs: They should not possess matches, come in contact with lighted gas jets, gas stoves, etc. They should not use lighted tapers; they should be searched after having been visited by relatives. Their tobacco and pipes should be lighted by the attendants in the yards, and their cigarettes and cigars extinguished before line formation to enter the ward. The burning tobacco should be removed from their pipes; an ordinary pipe is best for a patient to smoke.

Under this heading it would possibly not be amiss briefly to discuss the question of fire drills. The majority of institutions have fire drills. They all possess, more or less, a form of rules; however, the majority of institutions fall short in carrying out

their supposed fire drills because it is difficult to put into play a real fire drill in the infirmaries and terminal dement sections.

For many years I have given serious thought and study to the problem of fire drills, and am convinced that unless all employees of the institution, both day and night forces, are thoroughly familiar with these exercises, the drill falls short of its purpose, for if a fire occurs at night, the majority of the day force are out of the institution until midnight, and the night force is practically helpless to combat the situation. Many of the institutions, and unfortunately my institution may be included in the list, require that many of the day force remain in the institution at night in order to be on hand in case any emergency should arise. In institutions having a congregate dining room, such as the Philadelphia Hospital for the Insane has, emptying the wards three times daily aids greatly in familiarizing the patients with the order of marching, exits, etc.

Another serious defect in fire rules and regulations is that the majority of the drills take place during the day when the patients are fully dressed. I cannot recall any institution having set aside some night hour to test the efficiency of the fire drill. Such a time would seem preposterous and ridiculous. Hospital experts should devise some means whereby this knowledge could be gained without causing a great commotion.

Those who are familiar with the intramural patients realize the amount of excitement that fire drill usually causes among certain classes of patients, yet, at the same time, we must recall that this is the class that we hope to handle most efficiently in case of fire. The quiet patients will, no doubt, possess as much intelligence and will leave the wards in as orderly a manner as a sane person. The greatest trouble and difficulty will arise in handling refractory, unclean, and bedridden patients. Personally, I believe that without any blowing of whistles or ringing of bells as a fire alarm, by having the patients, once a week, under the supervision of the chief nurse, leave the wards by means of the fire escape exits, as outlined in fire drills, we can accomplish the same purpose; after all, it is merely acquainting the patients with the different exits from the wards.

Every institution should establish some such ruling whereby the wards may be emptied in case of emergency, and such a working system should be carried out at least once a week. As to the infirmaries patients, the safest precaution is to have installed fire hose, fire extinguishers, and a sufficient number of stretchers. It is difficult to outline a rule that would hold good in all fires in infirmaries. I fear that such an emergency would be regulated solely by the intelligence of the nurse in charge of the ward, in working her patients from the point of fire to some safe point.

FIRE DEPARTMENT.

Every institution of any size should have a well equipped emergency chemical fire engine, manned day and night with expert firemen. Fire plugs should be readily accessible and passage ways clear for fire engines, etc. Two firemen should be on duty, day and night, alternating every other hour

in patrolling the buildings, cellars, and attics. Institutions in the rural districts should, by all means, install towers and pumps for sufficient water pressure to meet any exigency.

Such a brief outline can only help to alleviate the responsibility attached to housing the insane in a building not fireproof. This sketch may be helpful to institutions which house patients on the open dormitory plan, each ward properly manned with an attendant day and night, and no patients under locked doors or in a cell section. It is hard to believe that there are institutions at this day, which are housing thousands of lunatics whose doors are locked day and night, with a night patrol passing the ward only once within the hour. This is beyond conception of our meaning of the term, "humane treatment."

The problem of housing insane patients in buildings not fireproof can only partly be met by fire rules and regulations, but a great deal can be done as to prevention. There are certain wards housing a certain class of patients where no fire rules or regulations will prevent serious loss of lives. With such a fact facing us, we should not be content until all these unfortunate patients are properly housed in fireproof buildings.

THIRTY-FOURTH AND PINE STREETS.

THE ELEMENTS OF PSYCHANALYSIS.*

BY ARTHUR D. DRYFOOS, M.D.,
New York.

We realize that whatever knowledge we possess is acquired through the senses. This is a gradual process, starting in infancy and continuing through life. We speak of this capacity of the brain for preserving impressions as memory. There are of course abnormal brains which retain little or nothing, constituting a class designated as imbeciles and idiots. Aside from this category, it is quite apparent that the quality of memory differs greatly in individuals. Some people have what might be described as a photographic memory, whereas others have the greatest difficulty in recalling what they have seen or learned. It seems perfectly natural that there should be this variation of the brain function of memory, just as different people exhibit the greatest variations in other intellectual and artistic endowments. We cannot, however, dismiss this topic without further discussion.

We do not simply remember things or forget them. Our loss of memory may be only relative; i. e., while we do not recall something for the moment, it is not absolutely forgotten (so to speak, wiped off the brain like chalk marks from a blackboard). How frequently does it happen that the sight of some object recalls a forgotten duty. A letter box reminds us of a letter we wished to mail, but have left on our desk. This makes it apparent that ideas or memory images are more or less connected. In fact our memory is not composed of separate distinct or individual sense impressions, but each idea is linked to another in an endless chain. This is what is known as association of

ideas. We can state as an absolute rule, that all thought is associative. It is impossible to think of one thing without linking something else with it. Thus the word, hospital, may call up to the mind German Hospital, and that again some experience in the training school, some patient we took care of, etc.; finally we may arrive at some subject quite remote from hospital. We frequently experience this when we permit the mind to wander, and in conversation it results in losing the thread of our discourse. What prevents us from continually going astray in this maze of thoughts is the censorship exercised by the intellect. It keeps us to the subject on hand and disregards the byways which tend to bring us further and further away from our topic.

We may then conceive of the mind as storing up innumerable impressions which are woven together by a meshwork of associations. This brings me to the point I wish to make, namely, that there is no such thing as absolute forgetting. We may not be able to recall something (i. e., make use of a certain memory picture) at the moment, but nevertheless the record exists in our brain. This is very evident in degeneration of the brain due to old age. Here the brain is no longer able to retain recent impressions, but the long forgotten scenes of youth are again recalled to mind.

Why is it that we can recall certain things and have difficulty in bringing to mind others? Thus far we have concerned ourselves with the material that goes to make up the intellect (the building blocks, so to speak) without touching on another very important quality of the brain, the emotions. Intellect and emotions must not be regarded as separate entities, but rather as different qualities of the mind; just as any object possesses both form and color.

How do the emotions affect the mind? We appreciate all sense impressions as either pleasurable or the reverse. A child is content with a full stomach and cries when it is hungry; warmth and cold produce similar reactions. The emotional content is not quite as simple in adult life, but we can nevertheless reduce everything to two fundamental emotions, love and hate. The term, love, is used here in a very wide sense, signifying anything that gives us pleasure, while hate is used to designate its opposite.

If I were to ask the reader which of two incidents (a pleasant and an unpleasant one) he would be more likely to recall, he would all doubtless agree that the unpleasant ones leave much more vivid impressions. Nevertheless this is not the case. The mind instinctively tries to displace or forget things disagreeable to it. In this of course it is only partially successful, but what it does accomplish is to interpose barriers to our natural trains of thought.

This instinctive or defensive characteristic of trying to forget the unpleasant, creates what is known as the subconscious or unconscious mind. They are sense impressions of which we are not consciously aware, but are nevertheless a controlling factor in our life through association with its conscious content.

Incidents happen to all of us every day which illustrate this. I have a bill to pay, but for some reason do not wish to pay it. I make out the check,

*Reprinted from the "New York Medical Journal."

but forget to enclose it in the envelope, or I forget to sign the check. You will see from this that I assert there is no such thing as purely accidental forgetting. Our actions are never matters of chance. What we call chance is merely the control of the unconscious.

This loss of conscious control becomes very apparent in some neurotic individuals. We all know of people who suffer from morbid fears, e. g., inability to go out alone, to stay in a room alone, to cross an open square, to appear in public (stage fright), etc. These symptoms, which are spoken of as phobias, are all due to the fact that the subconscious mind has become more powerful than the conscious, for the reason that the neurotic does not know the source of the subconscious impulse.

For example, a daughter is watching at the bedside of a dying father. She fears that the brothers will unduly influence the parent in her absence so that he may discriminate against her in the will. The thought of the possible benefit by the death of the father is painful to her, so she rejects it; instead, she finds that when she goes on the street she has cardiac palpitation forcing her to return. In this way she is unable to leave the parent. Such a symptom may persist for years until the subconscious cause of the phobia is made apparent to the patient. Or again, a great injury has been done by one man to another; the offended party craves revenge (he would like to kill his enemy), but prudence or ethical reasons prevent him from carrying out his wish. So long as he receives no satisfaction, the mental conflict will go on. But subconsciousness may solve the problem by producing a so called hysterical paralysis of his right arm. He no longer has to be restrained by ethical motives from committing murder, he is now physically unable to do so.

We see, then, that the neurosis is the result of a mental conflict, an intense desire to do something that our code of ethics forbids us to do. The phobia or hysterical paralysis effects the compromise in this conflict simply by preventing us from carrying out our desires. The cause of the mental conflict becomes repressed, as we say, and sinks into the subconscious. To cure such a patient it is necessary to discover the conflict and to make him aware of its existence. By helping him to adjust himself to his problem, we remove the cause of the repression and effect a cure. If we know how jealously the subconscious mind guards its secrets, we shall appreciate that the task is not an easy one.

We have at our command, however, two methods of studying the subconscious; by hypnosis and by analysis of dreams. The former method is but little employed at present, for the reason that hypnosis is at best a two edged sword and its results are not lasting. I wish, however, to give some idea of the nature of dreams and the method of interpreting them.

The dreams of children are most readily understood. They express simple wish fulfillment without distortion. Thus a child may dream that it is sitting at table and eating all the cake and candy it wants. The dreams of adults are of course not as simple, nevertheless they also have as the kernel the fulfillment of a wish. We accomplish in our dreams the things we desire in our waking state. It is quite

evident, therefore, that we must look for the cause of a dream in some incident of the previous day which had not been solved to our complete satisfaction. No doubt it has happened to all that they could trace the origin of a dream to some such source. The remainder of the dream was, however, unintelligible and was dismissed as nonsense. Dreams, as a rule, cannot be readily interpreted, for two reasons; in the first place, on account of their symbolic character, and, secondly, the material is condensed and transposed.

Freud has compared a dream to a mosaic composed of squares in which the four corners of each square are brought together at one point, so that the original picture is lost and only unintelligible colored points are left. By analysis we try to regain the original picture. A dream may be very brief, nevertheless the true content brought up by its associations may fill several pages.

What is meant by symbolism in dreams is easily understood. One of the best known symbolic dreams is the dream of Joseph recorded in the Bible. He dreamed that he and his brothers were working in the fields and that they tied up the grain into sheaves. His sheaf stood erect and the sheaves of his brothers bowed down before it. This is evidently a dream of ambition in which he expresses his desire for supremacy over his brothers. As this is a subconscious wish, however, it is not expressed directly in the dream. Nevertheless, an allegory of this sort is readily interpreted.

It is only rarely, however, that a dream can be explained without the aid of the dreamer, for the reason that associations are personal and consequently it involves reading the thoughts passing in another's mind.

The following dream, which I was able to interpret for a patient, illustrates the symbolic character and the wish fulfillment. A young woman dreamed that she went with her mother to be photographed. As her mother had been dead for a number of years, it struck her as a ridiculous dream. She was a buyer for one of the large department stores in this city. On the previous day, some of the girls had shown her photographs, to which fact she attributed the dream. I told her the dream meant that she had the opportunity of marrying, but that she was unwilling to leave her mother. The interpretation was correct, and as I will show, not difficult to get at in this instance.

The photographs shown her by her girls were naturally photographs of young men to whom they were engaged or at all events hoped to be. The young woman was born in Germany. There, I believe, it is customary for an engaged couple to be photographed together. In the dream she symbolizes her attachment for her mother by the wish to be photographed with her; in other words, to marry her in preference to any man.

While I have now given some idea of "such stuff as dreams are made on," I wish before leaving this subject to touch briefly on the method of analysis.

The patient should be made comfortable and the room as quiet as possible. We then ask the patient to associate on some part of the dream. In other words, we ask him to tell whatever comes into his

mind. The first association is generally not the true one, but if we allow him to proceed from one subject to another, he will eventually strike an association which will bring up some incident. It is astonishing how matters which apparently have been long forgotten can be recalled in this way.

Contrary to popular opinion, dreams do not foretell the future, though they may seem to do so at times for the reason that the dreamer effects the realization of some wish in his dreams which may happen subsequently. The association of dreams always carries us back further and further until even childhood scenes are recalled. In fact, a dream cannot be said to be satisfactorily analyzed unless a childhood reminiscence can be brought up in association. Notice I did not say completely analyzed, for the reason that it is impossible to analyze any dream completely. As all thought is associative, an individual's entire life history may be contained in a dream; so we could keep on associating on any one dream for an indefinite time.

This method applied to nervous disorders could be termed the rational method, inasmuch as it effects a cure by an appeal to pure reason. Unfortunately, it cannot be applied in all cases. Some patients do not possess sufficient intelligence and absolutely resist the treatment. Analysis is at best a painful procedure, inasmuch as it involves understanding ourselves and seeing our faults; never a pleasant task.

While analysis is perhaps the only way of curing the neurotic by an alteration of his personality, there are many other methods of securing at least symptomatic relief.

We frequently hear people say, "I know such and such a thing has helped me, because I felt better after it." There is no more fallacious reasoning than this, for it disregards a most important factor in all of us, suggestibility. Suggestibility is nothing more or less than the willingness of the mind to believe what we should like to have happen. This is the rationale of faith cures and of the cures effected by various cults. There is no greater error than to maintain that people are not cured by these means. I do not advocate these procedures because these healers are unskilled and do not know how to select their cases. Physicians, both consciously and unconsciously, make use of the power of suggestion. The very confidence in himself that he can cure his patients creates the belief of cure in the mind of the sufferer. So we may suggest various procedures or treatments to patients, always inculcating in their minds the idea that it will cure. Thus we may treat an hysterical paralysis with electricity, provided that it is a novelty to the patient. A simple faradic battery, such as everyone has in his home, will never cure a nervous patient, because he is too familiar with it, while a large and imposing high frequency machine which he has never seen may cure in one sitting.

Most of my remarks have been in reference to the abnormal, but we must bear in mind that the mental processes of the neurotic do not differ essentially from those of so called normal people. What I wish to emphasize in my closing remarks is the control that the subconscious mind exercises over all of us. We may imagine that we are all free

agents, in other words, that we do or do not do as we elect. Nothing could be further from the truth. The subconscious mind through its associations puts out its numerous tentacles and makes us the playthings of our repressed emotions rather than masters of ourselves.

We may say, then, why have a subconscious mind at all! That we cannot prevent, because disagreeable occurrences may happen and do happen to all of us; but we can do something toward preventing the subconscious from gaining the mastery over us. All the baser qualities, hate, envy, and jealousy, necessarily produce subconscious impressions and interfere with our normal associations. Even a simple untruth does harm, on account of the repression of the true associations.

I do not wish the reader to think that I have assumed a moralizing attitude; it is merely a rational view to which one is forced to come through psychology. Nor do I wish the reader to deduce that the kernel of my remarks is "love your enemies," and if one strikes us on one cheek we must turn the other. It is true that these views make us more tolerant of other people, since we realize that there are strong undercurrents in all of us which influence us regardless of our true intentions. What I wish to impress, however, is this. It is the mental conflict which results in a disturbance of our psychic equilibrium. If we have a problem to meet, let us not evade it, but face it squarely. An incorrect decision, provided it is our conviction, is better than vacillation. The neurotic solves these problems by compromise; let our watchword be "decide now."

42 WEST EIGHTY-FIFTH STREET.

NERVOUS SYMPTOMS IN VISCERAL DISEASES.*

BY AUGUSTUS A. ESHNER, M.D.,
Philadelphia.

Strictly speaking, a viscus is an organ contained within any cavity of the animal body but for the purposes of the present discussion a more liberal application of the term will be made, and I shall undertake to point out some of the symptoms referable to the nervous system that occur in the course of the so called internal diseases.

Disease may be defined as the reaction, abnormal in degree or extent, on the part of the animal body, to irritation of various kinds, as manifested by derangement of function or alteration in structure, or both. The most common form of irritant is some low order of vegetable or animal life, which brings about its effects in part through its presence as a foreign body, but more especially through its interaction with the tissues of the body, and in consequence of which are generated both injurious and protective substances, of which now the one, now the other predominates, and in accordance with the ascendancy of which, death or recovery ensues. It is mainly by reason of this disorder of the body chemistry that perturbations in the domain of the nervous system of the most diverse character so frequently, if not always in some degree, attend visceral disease.

*Read before the Southeast Branch of the Philadelphia County Medical Society, January 7, 1915.

Also reflex effects, although less tangible and not always to be differentiated, must be taken into consideration.

Convulsions in infancy or childhood are often attributed to dentition or to gastrointestinal disorder, and they frequently attend the onset of acute infectious disease at this period of life. No doubt the immaturity and the sensitiveness, so to speak, of the juvenile nervous system predispose to the occurrence of these manifestations on slight provocation, but it is well always to look for an exciting cause, toxic or reflex. Only recently a prominent surgeon has undertaken to show that epilepsy, in some cases at least, is due to constipation, with the associated intestinal infection, and he reports illustrative cases in which good results followed removal of the assigned etiological factor by colectomy or ileosigmoidostomy. It is, however, a fact long and well known that a favorable influence on the convulsive seizures is at times observed as a result of traumatism of any kind, surgical or other, as well as of intercurrent infectious disease. I am disposed to believe that undue importance has been attached to the part played by so called autointoxication in the development of symptoms frequently observed in connection with disorders of the gastrointestinal tract, such as headache, vertigo, lassitude, and the state comprised in the term biliousness.

Cerebral symptoms of a more or less profound character, such as delirium, meningeal irritation, or actual meningitis, occur not rarely in the course of acute infectious diseases, and are commonly referable to a toxic cause, although at times they too may be due to the primary or to a superadded infection.

Such diseases as pneumonia, endocarditis, typhoid fever, and cholera, are, after all, general disorders, of which the local lesions and the visceral manifestations constitute but one part. Peripheral neuritis is almost invariably, not always of course, of toxic or infectious origin, and it may thus occur in the course of any one of a number of affections. Often it develops after exposure to cold and wet, and sometimes it is of rheumatic origin.

There is virtually no form of disease of the nervous system to which syphilis may not give rise, as there is likewise no tissue that may not be involved in the disease. The toxins of uremia, too, are capable of causing a number of nervous manifestations, and these may so closely resemble those of organic disease of the nervous system, as to be at times distinguishable only with great difficulty, if at all.

Profound nervous symptoms in cases of malarial fever, such as delirium, blindness, motor weakness, and paralysis, have been attributed to disturbances in the cerebral circulation caused by occlusion of small bloodvessels by plasmodia or pigment masses, but inflammation of the optic nerve and of other peripheral nerves may be due to toxins developed in the course of the disease.

Vertigo, headache, mental confusion or irritability, derangement of consciousness, impairment of memory, defect of judgment, delirium, somnolence, and wakefulness are not rarely observed in varying combination in the presence of disease of the heart and bloodvessels, and while they are due in part, perhaps largely, to circulatory disorder, some measure of responsibility may be placed also on the asso-

ciated metabolic disturbances and at times on accompanying renal disorder. Cerebral embolism, with its own distinctive train of symptoms, is not an uncommon complication of endocarditis or chronic valvular disease of one form or another. Syncopal attacks and epileptiform seizures have become familiar as part of the symptom complex of heart block or interference with the conduction mechanism of the heart. Several grades of anemia, pernicious or other, are at times attended with degenerative changes, probably of a nutritional or toxic character, in the posterior and lateral columns of the spinal cord, and perhaps also in the peripheral nerves, as manifested by ataxia, exaggeration of reflexes or spasticity, muscular weakness and numbness or anesthesia. Also escape of blood from the vessels may take place into the brain or spinal cord as into other textures under the same conditions. Leucemic deposits in bloodvessels of the central nervous system may give rise to symptoms varying with the situation and the extent of the lesions. A myriad of symptoms have been attributed to disease of the uterus, not always, justifiably. In fact, the name hysteria was coined on the basis of such a suppositional relationship; this view has long been given up.

The nervous system rarely if ever escapes in the involving the glands of internal secretion. The tremor of goitre, the mental phenomena that sometimes attend this disease, and always myxedema and cretinism, are familiar examples of symptoms referable to deranged function of the thyroid gland, while the asthenia of adrenal disease was among the earliest of the phenomena observed.

Whether the changes in the liver described by Kinnear Wilson as lenticular degeneration are more than associated or coincident phenomena may remain an open question, although it seems more likely that both sets of manifestations are the joint results of a common cause, which is to be sought perhaps in some developmental disorder or toxic state. Paralysis of the soft palate, with regurgitation of ingested fluids through the nares, is characteristic of the neuritis of diphtheria, while involvement of the nerves of the extremities may give rise to steppage gait, ataxia, loss of reflexes, and impairment of sensibility. The neuritis of lead poisoning gives rise to muscular weakness, especially in the upper extremities, with the distinctive wrist drop, although the lower extremities may not escape, with disorder of gait and station and abolition of knee jerks. Diabetes mellitus is at times attended with symptoms of peripheral neuritis, while the polyneuritis and the psychosis typical of alcoholic intoxication are but too familiar. Polyneuritis results from the use of polished rice as food, as seen in beriberi, but it has been both affirmed and contradicted that the cerebral and spinal symptoms of pellagra are due to spoiled maize.

From the foregoing brief presentation it will be evident that the nervous system is frequently involved in various forms of internal disease, and we cannot avoid being impressed with the constancy with which functional disorders of the nervous system are attended with symptoms referable to the internal viscera. We must be on our guard to differentiate primary and secondary manifestations.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

FOOD KNOWLEDGE IS FUNDAMENTAL IN THERAPEUTICS.

Two there are whose courage is a matter of wonder but not of envy. One is the young man who sets out for a career in modern medicine without an elaborate scientific training of which chemistry has become a handmaid, the microscope a common tool, and physics and psychology ready with explanation or working hypothesis; the other is the humble citizen who dares call a doctor to regulate the misworking of his invisible insides without knowing whether he is calling a man of science or a bluffer.

It may be granted that a surgeon has reasonable knowledge of his business, and that, except to be a surgeon he must operate and that occasionally he has not even learned to replace divots, he is worthy of all confidence.

But the odds are against the humble citizen in search of the doctor for internal disturbance. The doctor cannot take the necessary week or month to find out all about his patient; nor can he without clear scientific logic go from manifestations to remote causes; and slowly working causes, even if recognized, usually require slowly working agents to remove their effects.

Too often the conclusions are hasty and vague. Too often the remedies represent mere guesses. Maybe the patient will get well; the majority do. Maybe he will die; some have to. Who is the doctor, anyway, to interfere with the decrees of Providence?

Hardened sinners, malefactors of notable success, still say to aspiring youths, though less often than formerly, "Look at me! I don't know anything about this chemistry stuff and I've got along all right. Don't let it bother you." And they go right on substituting drugs for food, making ludicrous and costly errors in the use of mineral waters, laying out irrational diets, and turning hydrochloric acid into stomachs already suffering the tortures of a hyperchlorhydria which has nothing to do with the stomach and its contents.

Is the body merely a coordinated outfit of mechanical appliances? No. The body is a laboratory of nicely balanced chemical reactions, and knowledge is dropping upon us like the showers of heaven, too fast for assimilation. It runs off the surface. But it will be gathered into the reservoirs of practical knowledge, from which only those who understand can draw.

Life and health are maintained by air, water, and food under proper physical conditions, and nothing

can do their work or take their place. The wonderful self regulating mechanism of the body maintains its balance against excesses for a time; it even compensates against deprivations until the power of resistance is starved. Starvation, moreover, is a much more subtle and delicate condition than the mere craving of an empty stomach for food. The stomach may be full of prepared proteins, saccharides, and fats, and yet starvation of phosphorus, iron, potassium, or lime may be pending with long continued consequences.

If it were possible for the doctor to know only one subject well, it should be foods—their composition, their relation to the nutrition of the body, and the way to restore to the wasting, sick tissues the elements which they lack. Within the next fifteen or twenty years the subject will have an importance and an accuracy in therapeutics and preventive medicine never dreamed of till recently.

EDWIN J. BARTLETT,

Professor of Chemistry, Dartmouth College.

DIET IN INTERNAL DISEASES.

BY OTTO LERCH, A. M., Ph. D., M. D.,

New Orleans.

Professor of Medical Diagnosis and Treatment, Tulane University of Louisiana, Postgraduate Department.

I.

ARTICLES OF FOOD.

A diet is made up of meat—lean and fat—milk, eggs, vegetables and fruit, sugars, and starches, that is bread and cereals. This is the food best suited to man; he has become adapted to it through countless generations and the anatomy of his digestive system indicates it. Hard food which has to be thoroughly chewed before it can be swallowed, keeps the mouth clean, though tooth brush, tooth powder, and mouth wash are necessary on account of the preparation of the food and ought to be used freely after each meal.

Food furnishes the means to make blood, and we can suit it to age, occupation, and to any disease under any climatic conditions. Selection of a suitable diet depends on climate and season, age, personal taste, and habit, changing widely with social conditions and country, and on the activity of the glands that preside over metabolism. A clear distinction has to be made between foods that are digested in the stomach, and others that are digested in the intestines. Some foods are brought with difficulty into solution by the gastric juice, while the intestinal juices will dissolve them with ease, and vice versa. Increased or decreased gastrointestinal secretion, absorption, or motility may disturb it.

Digestion begins in the mouth, and thorough chewing and insalivation are necessary; the stomach has no teeth. Excitement, grief, and worry may cause pain and nausea. Cheerful company aids

digestion and the beneficial influence of rest after a meal is known. The digestion of food depends largely on the quantity ingested and on its preparation. Some foods are more easily digested in the morning and others at night. A digestible food ought to be easily dissolved by the action of the gastrointestinal juices; it ought not to slow or increase gastrointestinal peristalsis unduly; it ought not to irritate the mucous membranes in a chemical, thermic, or mechanical way, and ought to be readily absorbed.

All foods consist of water, proteins, fats, carbohydrates, and salts, and the proportion of water ranges from ten to ninety-eight per cent. The nutritive value depends on their chemical composition and the amount that can be absorbed during their passage through the gastrointestinal tract.

Though water is an important part of our diet, foods that contain much of it are considered of small nutritive value. Protein foods, on account of their content of nitrogen, are of importance; a diet without them is insufficient. Meat contains from seventeen to twenty-five per cent. of proteins; cheese, twenty-five to thirty-five per cent.; and the legumes twenty-five per cent.

The carbohydrates, the starches, and sugars are mostly found in plants. Wheat bread contains fifty-five per cent.; potatoes, twenty per cent., and sugar ninety-five per cent. of carbohydrates. Fats are derived from animals and plants. Butter and cream, meat fat, and olive oil are all in daily use.

Of the salts the most important is table salt, a condiment and a necessary component of the body. Nutritive salts are salts of iron, phosphorus, sodium, potassium, calcium, etc. From one to three per cent. are taken with every meal.

Foods, after they have been absorbed by the cells, are burnt up and produce heat and energy, and the heat unit, the calory, has been adopted to judge of the nutritive value.

1 gram of protein equals	4.1	}calories
1 gram of carbohydrates equals	4.1	
1 gram of fat equals	9.3	
1 gram of alcohol equals	7.0	
0.244 gram of protein or carbohydrates	furnishes one	
0.102 gram of fat	calory.	
0.143 gram of alcohol		

It is this proportion in which the different food stuffs can replace each other to some extent.

We can calculate the value of foods if their composition and the quantity absorbed during their passage through the gastrointestinal tract are known. The amount ingested, minus the amount of protein, carbohydrates, and fats contained in the fecal matter, is the balance digested. The undigested matter consists mainly of insoluble cellulose and similar substances.

The healthy organism is able to absorb from 93 to 95 per cent. of the protein of meat, 60 to 80 per cent. of vegetable protein, light bread and rice up to one per cent, carbohydrates of beans 70 per cent. while fats melting at body temperature, if not ingested in too large quantities, are absorbed almost without loss. Variety as well as a good mixture of the various foodstuffs facilitate digestion and absorption. One part of protein to three and one half or four and one half parts of fats and carbohydrates furnishes the best mixture. Foods

are judged by their nutritive value and digestibility.

The daily amount of food necessary for an individual to keep in good health varies according to age, sex, height, weight, and work done, under the same climatic conditions. Adolescents need more than adults; they have to provide for the daily expenditure as well as for growth. The body weight gives a fair idea as to nutrition; it must correspond with the height.

The amount of water needed depends on the factors mentioned. A large quantity is contained in the solids and semisolids. Ingestion of large amounts of liquids dilutes the gastric juice and may cause dilatation of the stomach. Pieces of food may be swallowed unchewed, when liquids are taken with the meal. If patients can eat better and with greater relish, small amounts of liquids may be allowed with meals.

The temperature of the foods is of importance and not enough can be said against the ingestion of iced liquids, though foods taken too hot may also cause injury to the mucous membrane of the esophagus and stomach. Water is not absorbed in the stomach, and may be given by rectal injection as normal salt solution, if for any reason only small amounts are permissible by mouth.

Water, like all foods, ought to be pure, and aerated waters ought to be taken in small quantities only; they distend both stomach and intestines.

Though milk contains all the principles of food and is theoretically ideal, it contains too much water, that is, too large a quantity is needed, if it is alone depended upon. It may be enriched by condensation or by adding cream, eggs, and other foods. The taste may be altered and digestibility enhanced, and curdling prevented by a small addition of cocoa, coffee, tea, or lime water. Milk contains 3.5 per cent, protein, 3.8 per cent. fat, 4.8 per cent. carbohydrates and sugar, 0.7 per cent. salts, 87.4 per cent. water.

Buttermilk, on account of its agreeable taste, ready absorption, and mild purgative action, is a valuable article of diet in the sickroom.

Clabber is more easily digested than milk; it contains fat, has an agreeable taste, and the uncomfortable feeling it causes some persons may be prevented by beating it up.

Kefir is fermented cow's milk and contains protein and carbohydrates in an easily digestible form. The small amount of alcohol it contains stimulates gastric secretions. It acts as a purgative when one day old, and causes constipation when three days old, changing with the diminution of ferments and increase of lactic acid.

Coffee and tea are pure aromatics.

Cocoa and chocolate possess nutritive value.

The active principles of coffee, tea and cocoa, are, caffeine, theine, and theobromine.

Cocoa differs from chocolate; it is defatted, and has no addition of condiments or flour or sugar.

Alcohol is largely absorbed in the stomach, and if taken before eating increases the flow of gastric juice; larger doses decrease it. Unfermented wines, if not sterilized, are injurious on account of the yeast cells they contain, which cause fermentation and disturb digestion. Alcohol, if taken in large

quantities in any form, or if continuously taken in smaller quantities, is injurious, especially when taken before eating. Alcoholic beverages containing tannic acid, like huckleberry wine and the Greek wines, may be used in intestinal diseases.

Champagne contains carbon dioxide and produces a rapid stimulating effect; it is frequently given in infectious diseases.

Beer as a rule is not useful in disease; it contains yeast cells. Malt beer is richer in carbohydrates and is frequently prescribed.

Eggs are of great nutritive value; their digestibility depends on the manner of preparation, raw, soft boiled, or poached. Hard boiled eggs are more easily digested if powdered.

Fat meats are less well digested than lean meats; fat prevents the gastric juice from coming in close contact with the meat particles. White meats are more tender and contain little fat and extractives. Raw meat scraped is easily digested, dangerous, however, on account of the parasites it may contain. Cooking and frying deprive the meat of a considerable amount of water and make it, therefore, more nutritious. Smoked meats have to be used with caution; permitted only as appetizers. Meat of the lean fish is easily digested and nutritious. Fat fish must be avoided in diseases of the stomach. Oysters possess little nutritive value; they are refreshing and appetizing.

Bouillon and clear meat soups have practically no food value, but may be enriched with yolk of eggs, cereals, etc. Meat soups may be given in small quantities as appetizers, if not contraindicated on account of their content of salt, peppers, spices, and extractives. Meat juice is somewhat richer, and many artificial meat solutions and peptones may be used. Their value lies mainly in their property of stimulating the appetite.

Of greater importance are preparations produced from milk. All may be used alone or in combination as substitutes for the natural diet.

Of the fats, butter and cream are the best; meat fats are enclosed in insoluble fibrous tissues. Cream is best boiled before using as an addition to cocoa, milk, coffee, fruit, etc.

Cheese is rich in nutritive value, and if not contraindicated, is best given grated; it requires thorough chewing.

A thorough insalivation of the carbohydrates is necessary; the process of their digestion commences in the mouth. Crust of bread, stale bread, and toast are easier to mix with the saliva than the soft parts of hot fresh breads, and are therefore preferable.

Wheat is to a larger percentage absorbed in its passage through the digestive tract than other foods. The cereals may be added to soups. Barley soup is a home remedy in gastrointestinal troubles. The legumes have a large percentage of albumin, with fifty per cent. of carbohydrates; they require thorough preparation and long cooking. The flour of beans, peas, and lentils, free from hulls, is easy to prepare.

The potato, especially the Irish potato, is a daily article of diet with most people. It is not of great nutritive value, and is difficult to digest, unless prepared as a purée with butter and milk (mashed potatoes), which enhances its food value. The

baked potato is more easily digested than the boiled potato, better done and easier to chew.

Carrots have less nutritive value than potatoes; they are of importance with the green vegetables in cases of atonic constipation to excite intestinal peristalsis. People with digestive troubles have to take them in form of purée.

Salads, like lettuce and cress, are best prepared with lemon juice. Vinegar contains yeast cells. Raw vegetables are necessary.

Fruit contains a large amount of pure water, between eighty and ninety per cent., and some sugar. Stewed fruits are more easily digested and less irritating to the mucous membranes on account of the softer condition of the cellulose, and if given as purée, may be used in gastrointestinal diseases.

Raw fruits are good in cachectic conditions, and the fruit juices, freshly pressed, are refreshing and useful in these as well as in febrile diseases.

All fruits, especially prunes, act on the intestines, and in chronic constipation, prunes are a standard home remedy. In catarrhal conditions, they ought to be given freshly prepared as purée.

The sugars are of large caloric value, used daily, and sugar of milk acts as a mild laxative.

The condiments are appetizers; the most important is table salt.

II.

DIET IN DISEASE.

The infectious diseases.—We have to make a difference between the febrile diseases of short and those of long duration. The object of the dietary regimen is to keep the patient in as good a state of nutrition as is possible, to keep the blood pure, and to influence the circulation. All febrile diseases cause waste, owing to loss of appetite and the toxic condition that prevails. The loss of body protein is in proportion to that of fat, in fact it is greater, contrary to the common belief, and it is of great importance to consider this in dietary measures. In febrile diseases of short duration, diet is a negligible factor, though of importance during convalescence. On the other hand, it deserves the greatest consideration in chronic diseases. Experience has taught that a diet rich in carbohydrates and nitrogenous foods in these diseases, especially in consumption, increases the resistance and strength of the patient, and it is known that the antibodies are proteid substances, derived from the body protein, which has to be replaced by food.

During the febrile process, large amounts of liquids are indicated to dilute the blood, make it less toxic and less irritating, especially in diseases in which the kidneys are liable to become affected, such as scarlet fever, diphtheria, pneumonia, and others. It is a time to "save the kidneys." For the same reason, all irritating substances, condiments, pepper, and salt must be used sparingly. Coffee, tea, and alcohol in some form may be given as heart tonics, in selected cases. It would be unwise to withdraw alcohol from a patient who has always been accustomed to its use, or not to give it in protracted cases when the patient craves it, and when it will serve as a good appetizer and stimulant. It is usually not difficult to give a sufficient amount of liquid to patients who have lost their appetite for

solids and are exceedingly thirsty. Food is administered in liquid form, the medicine diluted with water, and fruit juice added to allay thirst. Occasionally patients will object to larger quantities of liquids, and in these cases it may be given as a nutrient enema, and, if larger quantities are needed, by enteroclysis in the form of physiological salt solution. When the kidneys are affected, the salt must be replaced by sugar of milk. The color and quantity of urine voided in twenty-four hours indicate the amount of liquid to be given.

Milk is an excellent food in febrile diseases and is largely used, often to the exclusion of all other foods, which, if the disease is lasting, becomes monotonous and lessens the appetite. As a rule, it is well taken and we do not find many patients who object to milk in some form. It is easily digested, nonirritating, and can be given in many different ways, iced, as milk jelly, or buttermilk. Coffee, tea, cocoa, vichy, and lime water may be added to overcome any aversion to odor and taste. It may be enriched by boiling it down, adding yolk of eggs, cream, and butter. Serve it in the form of soups and flavor to suit the taste. A further advantage is that the patient, in order to get the necessary amount of calories, has to take at least two quarts in twenty-four hours.

Beef tea, freshly pressed fruit juices, and the meat extracts are favored articles of diet during fevers. It must be borne in mind, that though they are excellent appetizers and stimulants to the heart and nervous system, they have practically no value as foods; they may, however, be enriched with yolk of egg, egg albumin, and with cereals.

If the meat extracts are contraindicated, fruit and wine soups may be given, with eggs and cereals added to increase their value. They are refreshing and usually liked by the patient.

Eggs may be further given as white of egg in water, egg and sherry, yolk of egg with claret and sugar, egg beaten up to foam with orange juice, apple butter, etc.

The various meat, fruit, wine, and milk jellies furnish a valuable variation in the fever diet. They do not tax the digestive organs and are cooling and refreshing.

If it becomes necessary to give a diet rich in calories, as is the case in chronic infectious diseases, the fever itself offers fortunately small contraindication to a partly semisolid and solid diet, and overfeeding, frequently indicated in tuberculosis, becomes easier, with an increase in the variety of the food that can be given.

Meals are best served when the temperature is lowest. The appetite and the faculty to digest food decrease with increasing temperature. Meat ought to be tender and served in a form to excite the appetite. Chicken, bird, and fish are tender meats, and may be prepared in a great variety of ways.

Crackers and toast softened in milk, apple butter, with the addition of sugar and lemon, the soft part of a baked apple, milk soups with hominy and grits, the vegetable purées boiled with meat and butter added, all may be used if no contraindication exists.

In some cases, though rare, rectal feeding may become necessary.

It is of the highest importance to conduct con-

valescence properly and not allow the patient to pass from observation till his health is restored. Kidney affections, gastrointestinal diseases, tuberculosis follow frequently in the wake of the acute infectious diseases, and the heart muscles are weakened in almost every case. As soon as the temperature returns to normal, craving for food becomes usually excessive, and many a severe relapse with fatal ending has been due to injudicious diet during this time. If the patient has been on a rigid liquid diet, only a gradual change is permissible, testing digestive capacity, temperature, and heart strength with the progress. Even during this time the patient ought to be encouraged to take large amounts of liquids to favor elimination of toxic substances and to protect the kidneys.

If the treatment has been well conducted, the patient will come out in as good and often in a better state of nutrition than before he contracted the disease.

Diseases of the digestive tract. The esophagus, whether contracted or dilated, needs protection of its inflamed mucous membrane by the administration of fats, olive and almond oil, butter and cream. The food must be rich in nutritive value, soft and well tempered, neither too hot nor too cold, eggs in various forms, and in addition the artificial foods, the thick soups, especially milk soups, meat, fruit, and wine jellies, malt extract, honey, and fruit juices; in less severe cases, vegetable purées pressed through a sieve. Rectal feeding and subcutaneous injection of normal salt solution becomes necessary in complete stenosis.

In acute affections of the esophagus due to acids and alkalies, liquids may be given, usually with caution, about five to eight days after the injury.

Stomach and intestinal diseases. In acute diseases of the gastrointestinal tract, it is often necessary to stop feeding for several days, allowing nothing but water, to which, in some cases, fruit juice or weak tea may be added, cold if the stomach alone is affected, tempered if the intestines are involved; barley and rice water are useful, and protect and soothe the mucous membrane. After decided improvement, the nutritive value of soups may be enhanced with yolk of egg and butter, and as convalescence continues, a more solid diet may be gradually substituted. Acute catarrhs can be cured with such a regimen, unless a serious etiological condition is at the bottom of the trouble.

Chronic gastritis with anacidity and subacidity. If the proteolytic function of the stomach is entirely destroyed, the organ serves only as a reservoir and the test breakfast, after removal, is unchanged, except for chewing and insalivation. Nevertheless, these patients may do well, as the intestinal function compensates for the deficiency, unless motor insufficiency and diarrhea due to insufficient chewing cause trouble. The most important rule in this affection is a thorough cooking and chewing of the food. Coarse foods must be avoided, and meat and vegetables served in form of purées. A nice piece of roast meat excites the appetite better than a fine hash, and it is, therefore, better to have the patient cut the meat at the table. Instead of meat, eggs, and fruit jellies, milk, buttermilk, clabber, and soft

cheese may serve as substitutes for meat. Salt and condiments will increase appetite, unless contraindicated by kidney disease, liver affections, and arteriosclerosis. Fat may be given as needed. It is desirable to increase the secretion of gastric juice by means of appetizers, and skilled preparation and serving of the food, except in cases of total achylia gastrica, but even then the intestinal digestion will be improved if the food is well prepared and served.

(To be continued.)

POISONOUS PROTEINS.*

A Series of Five Lectures,

By VICTOR C. VAUGHAN, M. D.,

Dean of the Department of Medicine and Surgery, University of Michigan.

LECTURE II.

Doctor Vaughan's readers will remember his statement in Lecture I, that the cellular substance of a bacterium to which an animal was highly immune, killed the animal on the first injection; and that the cellular substance of a bacterium to which the animal was highly susceptible, did not kill on first injection. However, the cellular substance of bacterium to which the animal was immune, sensitized that animal on first injection, so that the second injection might kill it. These statements were made with the full understanding that just to what extent they were true remained to be determined. Immunity was a relative matter altogether. Prodigious, to which the guineapig was highly immune, killed the animal on first injection. The tubercle bacilli to which the animal was highly susceptible, did not kill on first injection, but did sensitize so that the second injection might kill it. Why was the guineapig immune to prodigious? What was the difference between a pathogenic and a nonpathogenic organism? What was it that determined whether a given bacterium might induce disease in a given animal or not? There were two ways of determining this. In the first place, in order that a bacterium might induce a disease, that bacterium must be able to feed upon the constituents of the animal's body. Infection meant that the infecting agent multiplied in the animal's body. This did not refer to toxins, such as diphtheria, tetanus, the venom of snakes, etc., but to that large class of bacteria which did not, to any appreciable extent, produce soluble toxins. A child might have diphtheria bacilli in its throat and still not have diphtheria; the nurse who took care of tuberculous patients might have tubercle bacilli on her hands, under her finger nails, and still not have tuberculosis. Before it was possible to have an infection, the organism must be growing and multiplying in the animal's body. Many bacteria were nonpathogenic because they could not grow and multiply at the expense of their host.

The second and more important point was that the secretions of the animal's cells must not kill the bac-

teria. The guineapig was immune to prodigious because the first prodigious cells that got into the animal's body were destroyed; therefore the animal was immune, but if you took the cellular substance of that bacteria and injected it into that animal in sufficient quantities so that when the cellular substance was split up, enough poison was set free to kill the animal, it would do so. On the other hand, the guineapig was susceptible to tuberculosis, first, because the tubercle bacilli could feed upon the proteins of the guineapig's body and, second, because the secretions of the cells of the guineapig did not destroy the tubercle bacilli. The bacteria grew and consequently the animal was susceptible.

While the cellular substance of the tubercle bacilli when first injected into the guineapig would not kill the animal, nor would it produce any marked effects, yet it was not harmless. If dead tubercle bacilli were injected into the abdominal cavity of a guineapig and it was then killed, it would be found that the great omentum had gathered up these tubercle bacilli, folded them up into itself and tuberculous lesions would be found there, not in sufficient numbers to have marked effect on the animal, but enough to produce giant cells. It was not the growth of the bacilli in the body which caused the lesions. Both pathogenic and nonpathogenic bacilli, dead or alive, caused the symptoms and the lesions of the disease. If some one drank water containing typhoid bacilli today, he would not have typhoid fever today nor tomorrow. In all infectious diseases there was a period of incubation; this varied with the disease and to a certain extent with the individual affected. During this period the organism grew with enormous rapidity and multiplied, but there were no symptoms. Two things occurred during the period of incubation while the germ multiplied; it was not the amount injected, it was the amount of germ substance which that germ developed, plus that which was injected, which killed the animal.

The speaker believed, though he admitted it was theoretical, that the body cells became sensitized and began to destroy the foreign cells, breaking up the foreign cells and setting the poison free. When the dead germ substance was used, there was no growth of the germ. The only thing necessary was for the body cells to pour out enough secretion to digest the cellular substance. But how did we know that the poison came from the cellular substance? It was split into two parts, one poisonous, called the protein poison, and the other nonpoisonous. Having found this poison in pathogenic protein, the experiment was made to find the same poison in nonpathogenic bacilli, and there was just as much poison in the nonpathogenic bacilli as in the pathogenic. Having found the poison in pathogenic and nonpathogenic bacilli, the question arose whether other proteins might not contain bacilli. So experiment was made with animal proteins, casein of milk, serum of muscle, all kinds of protein, and just as much poison was found in these; there was just as much poison in vegetable protein as in animal and bacterial protein.

This protein poison was a very interesting thing. It was not a poison when taken into the alimentary canal, as the digestive juices destroyed it there and

*As a subject of the Cleveland Herpetological Society, the Cleveland Herpetological Society, Cleveland, Ohio, is hereby notified by the author of the above article for the NEW YORK MEDICAL JOURNAL. See our issue for March 4th, 1904.

in the second place, it was not readily diffusible, it did not readily pass through membranes. But when bacteria grew in the blood or in the tissues (parental), or any other part of the body, where there were no walls to protect the body from poison, there were no enzymes which split up the poison into harmless portions, and it was difficult to escape its effects. This protein poison was readily soluble in water and more soluble in absolute alcohol. A very important point was that, while the bacterial cellular substance gave all the protein reactions, the poisonous part of it did not and there was no carbohydrate in the poisonous part, all the carbohydrate being in the nonpoisonous part; neither was there phosphorus in the poisonous part. These facts indicated that the cellular substance, or the protein, was split along chemical lines. When the soluble poison was injected, in a fatal dose, into the peritoneal cavity the effects revealed themselves almost immediately, there being no period of incubation. The bacilli had been grown and cleaved.

This substance being a poison and not a toxin, it did not produce any antibody. A certain amount of tolerance could be established by injecting nonfatal doses every day until the animal bore twice the dose that would kill a fresh animal. But blood serum of animals treated with this poison had no anti action upon it. Many animals had been sacrificed trying to get an antibody for this protein poison. One half mgm. of this substance injected into the blood-vessels intravenously or into the heart of a guineapig killed the animal.

There were other interesting things about this protein poison; the action was not the same with all proteins. The gross physiological action was the same, but there were fine points of difference in the physiological action according to the protein from which the poison was obtained. In certain doses and in certain animals the poison prevented the coagulation of blood. Underhill, of Yale, found that poison protein made from the casein of dogs when used in sufficient quantity prevented the coagulation of blood, and that this poison was neutralized by calcium salts to a certain extent, but no animal injected with a fatal dose of protein poison simultaneously with calcium had lived.

DIABETIC FOODS.

The United States Department of Agriculture has issued a decision on gluten products and diabetic food for the guidance of officials of the department in enforcing the Food and Drugs Act, and has fixed a definite limit to the amount of starch and sugar that may be present in certain gluten products and diabetic foods, also the amount of nitrogen that must be present in certain of these products, beside making requirements as to moisture and other constituents. The decision covers ground gluten, gluten flour, self-raising gluten flour, and diabetic foods. The definitions and standards as stated in the food inspection decision were recommended by the Joint Committee on Definitions and Standards, consisting of representatives of the United States Department of Agriculture, the Association of American Dairy,

Food, and Drug Officials, and the Association of Official Agricultural Chemists. These two associations have already adopted the definition and standards.

Investigations by the officials in charge of the enforcement of the Food and Drugs Act have shown that various products have been placed on the market from time to time that are recommended by the manufacturers for use by people suffering from diabetes. It is generally held that the foods best suited to persons suffering from diabetes are those which contain little or no starch and sugar. Some of the foods placed on the market and recommended by the manufacturers for use in diabetes have been found to contain nearly as much starch and sugar as ordinary products, so that they were of no more value in the treatment of diabetes than ordinary food products that could be purchased more cheaply. The diabetic patient can avoid ordinary food products that contain considerable quantities of starch and sugar, as the composition of these products is generally known. In the case of prepared foods advertised for use in diabetes, however, the patient may be misled into eating quantities of starch and sugar that might be positively injurious. Hereafter such products should meet the requirements of Food Inspection Decision No. 160, which are as follows:

Ground gluten is the clean, sound product made from wheat flour by the almost complete removal of starch and contains not more than ten per cent. of moisture, and, calculated on the water-free basis, not less than fourteen and two tenths per cent. of nitrogen, not more than fifteen per cent. of nitrogen-free extract (using the protein factor 5.7), and not more than five and five tenths per cent. of starch (as determined by the diastase method).

Gluten flour is the clean, sound product made from wheat flour by the removal of a large part of the starch, and contains not more than ten per cent. of moisture, and, calculated on the water-free basis, not less than seven and one tenth of nitrogen, not more than fifty-six per cent. of nitrogen-free extract (using the protein factor 5.7), and not more than forty-four per cent. of starch (as determined by the diastase method).

Gluten flour, self raising, is a gluten flour containing not more than ten per cent. of moisture, and leaving agents with or without salt.

Diabetic food. Although most foods may be suitable under certain conditions for the use of persons suffering from diabetes, the term, diabetic, as applied to food indicates a considerable lessening of the carbohydrates found in ordinary products of the same class, and this belief is fostered by many manufacturers on their labels and in their advertising literature.

A diabetic food contains not more than half as much glycogenic carbohydrates as the normal food of the same class. Any statement on the label which gives the impression that any single food in unlimited quantity is suitable for the diabetic patient is false and misleading.

The foregoing definitions and standards are adopted as a guide for the officials of this department in enforcing the Food and Drugs Act.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MARCH 25, 1911.

DIETETICS AND ALIMENTATION.

We present this week a second installment of our Department of Dietetics and Alimentation. To judge from the extraordinary interest excited by the inauguration of the new department in our issue for March 4th, we hardly need direct special attention thereto. The letters received from our readers, however, especially those from experts in the subject, have been numerous and most gratifying and reward us for the trouble and research demanded to emphasize to the profession the importance of dietetics, not only in the treatment of the sick, but as a basis of health for the well, especially children. The contributions to the department in this issue comprise a signed article by Professor Edwin J. Bartlett, of Dartmouth College; a summary of a lecture on Poisonous Proteins, especially revised for the NEW YORK MEDICAL JOURNAL, by Professor Victor C. Vaughan, dean of the department of medicine at the University of Michigan; and the first installment of an original communication on Diet in Internal Diseases, by Professor Otto Lerch, of Tulane University of Louisiana. We hope to present this new department twice monthly, and our contributors to subsequent dietetic issues will also be men distinguished along these lines.

PROTECT THE CROTON WATERSHED.

Pure water is the primary need of every urban population. The city of New York has expended about \$100,000,000 in providing a supply of pure water from the Croton watershed. It has expended more than \$140,000,000 for an additional supply from the Catskills. The Catskill supply is intended for the use of the boroughs of Brooklyn and Queens. Westchester communities may be supplied from this source, at cost. The Croton watershed is to furnish water for the boroughs of Manhattan and the Bronx. But the Westchester county politicians, not content with obtaining the advantage of the New York city Catskill supply, have secured the location of two State institutions on the Croton watershed, in Westchester county, where they are certain to contaminate with their sewage the drinking water of Manhattan and the Bronx. To prevent this contamination bills have been drawn up by the Merchants' Association of New York and by Senator Wagner, known as S. 58, 60, and 193, and by Assemblyman Bloch, known as A. 978, 979, and 980, which provide for the removal of these institutions from the watershed.

It is the duty of every physician to exert all the influence he may possess in favor of the enactment of these bills. At the hearings which have been held on the measures expert evidence clearly proved the unreliability in practice of sewage purification. Even where these purification plants have been carefully installed they have eventually become inefficient. It seems incredible that any group of men should be so far lost to the ordinary sentiments of humanity as to be willing to risk the pollution by human excreta of the water supply of millions of people merely to further their selfish commercial and political aims. But this is the charge which is freely made against the political leaders who have opposed the measures named and who insist that building operations be resumed on the Mohansic State Hospital and the New York Training School for Boys. Less than \$500,000 have been expended on these institutions. More than half this sum is for the land, which can be resold. The installation and maintenance of sewage disposal plants for these two institutions as now contemplated by those who advocate their completion would make the retention of these sites eventually much more costly than their abandonment. We therefore have left as the only possible reason for the retention of these sites such petty advantages as might accrue to the politicians of Westchester county through the State expenditures for the maintenance of the institutions.

It has been said that the physician, occupying as

he does closely confidential relations with his patients, can exercise a great deal of political power. Surely this is one occasion in which every conscientious physician should exert all possible influence toward the protection of the water supply of the city of New York. We urge our readers both within the city and throughout the State to make a strong appeal to the members of the legislature from their respective districts for the passage of the Wagner-Bloch bills. Full particulars regarding the subject may be obtained from the Merchants' Association of New York, which is carrying on a vigorous campaign in behalf of these measures.

HIT OR MISS COOKERY.

Rare indeed is the woman who is qualified by training, knowledge, or experience to prepare food for the sick, for home cookery ignores that precision of food preparation which is a chief requisite for the dietetic treatment of disease; nor are many girls trained to an intelligent conception of the importance of compatible food combinations and the role played by food flavors and savor in promoting appetite and digestion. In health the human animal is given a wonderful power to reject poisons of the kitchen from his digestive tract, and toxic aminoacids are cast off from the intestinal mucosa almost as freely as virulent organisms of dust are shed by the cornium of the skin. A good cook is man's best friend, yet in our schools, where cooking lessons are given but where cooking is rarely taught, the opportunity to interest children in intelligently exact procedures is wasted. A more hit or miss system could scarcely be devised than the t. T. c. (teaspoon, tablespoon, and cup) method of measuring quantities, and the so called slow, moderate, or quick oven for applying heat.

To what purpose does a careful physician prescribe a dietary correct as to food content and food value, when there is no one in the household trained to intelligent and accurate cookery. Even nurses who have had training in hospital wards have not acquired accuracy in cooking. Although they may know at what temperature egg albumin coagulates, nevertheless they cook eggs at 212°F. and roast or fry meats at temperatures which result in rendering soluble proteins leathery, flavorless, and indigestible.

An important bulletin entitled *Some Attempts to Standardize Oven Temperatures*, published in December, 1913, by Professor May B. Van Arsedale, of Teachers' College, Columbia University, was a contribution of real value to scientific cookery; but even this excellent study did not attack the household custom of using variable measures for foods as

standard for kitchen practice. Cooking is mainly the application of laboratory procedures to food preparation, and culinary measures of heat and volume should be as precise as in any other laboratory. This is well recognized in every properly conducted concern which manufactures food products, but it seems that almost any slipshod kitchen method satisfies the American home. Miss Van Arsedale proved, for instance, that a "moderate" oven heat is anywhere from 145° to 420°F., and a "hot" oven will vary from 228° to 582°F., according to the varying sensibility to heat of the cook's hand. Women are not taught to use exact measures of heat any more than exact measures of quantity, and perforce home cookery remains an uncertain process. Moreover, men do not help their wives by furnishing accurate weighing and measuring apparatus for the kitchen, or ovens provided with thermometers.

In an age when we are coming to realize the importance of food preparation as a means of preventing poisonous gastric and intestinal fermentation, it becomes the duty of the physician as a guardian of public health to require better teaching in the schools of girls who later as homemakers become responsible for the intelligent preparation of food-stuffs for their families. Efficient methods of teaching food preparation in schools and instruction in cooking in hospitals are legitimate matters of interest to every medical organization. Medical societies would do well to organize committees on dietetics and so educate public sentiment in what is really an important branch of preventive medicine.

THE SURVIVAL OF POLYPHARMACY.

It was early in the eighties of the last century that a crusade against polypharmacy, or shotgun prescribing, became the fashion. The ideal prescription, the professors told us, contained one active drug, perhaps an adjuvant, possibly a corrective, and the vehicle; anything more was inelegant and superfluous. A great number of obvious jokes were made at the expense of numerous standard prescriptions, particularly those for "colds," digestive disturbances, and "debility." Somehow the ideal of a single shot prescription seemed to fade soon after graduation, and there must be few general practitioners who have not one or more formulæ containing half a dozen active ingredients, which they prescribe, not on the shotgun principle, but in the belief that a resultant, as a physicist would say, arises from the combination of forces. These men will back up their prescriptions by firm statements as to clinical results, the only kind of value from the general practitioner's standpoint.

If we may believe A. Graham-Stewart, M.B., Ch.B., in the *Practitioner* for February, 1916, polypharmacy is a positive fad in the British Isles. He gives seventeen prescriptions with a total of 119 ingredients, an average of exactly seven. Two prescriptions contain each ten ingredients; one is for hyperchlorhydria:

R	Acid. hydrocyan. dil.	℥iij
	Tr. capsici	℥ss
	Sodii bicarbonatis	gr. xv
	Sod. sulphocarbollatis	gr. x
	Sodii bromidi	gr. v to xv
	Liq. bismuthi et ammonii citratis	℥j
	Tr. cardamomi co.	℥xv
	Spt. chloroform	℥xx
	Syr. zingiberis	℥xxx
	Aq. destillat.	ad ℥j

Misce. Ft. mist.

Sig.: To be taken before or after meals, as directed.

The author of this bit of shrapnel unhesitatingly combines local and general sedatives, stimulants, alkalies, antiseptics, carminatives, and flavoring in one heroic dose. It is advised for use in cases where there is pain two hours after eating; where there is gastric irritability, combined with flatulence and pain soon after eating; in gastric and duodenal ulcer, gastric neuroses, and subacute gastritis.

Another prescription for insomnia contains "nepenthe," chloral hydrate, hyoscyamus, chloroform, syrup of poppy, and sweetening; knockout drops, truly. The occurrence of a proprietary remedy in this prescription is by no means unique. The English doctor prescribes proprietary preparations with the greatest freedom, sometimes including preparations from two or three manufacturers in one dose.

For high blood pressure, beside "sharp magnesium or sodium sulphate purges" we find a mixture of sodium nitrite, bromide, and iodide, ammonium hippurate, chloroform, and ginger; "digitalis may be added," says the writer. As a gargle he advises a mixture of three separate proprietary articles in a vehicle of saturated boric acid solution. Finally, our space commands us to limit ourselves to one more formula, this time for a pill, which the writer admits is open to the accusation of being a shotgun, although he insists that it is "built upon a scientific foundation" and "the results obtained from it have justified the trouble." The pill contains equal parts (grain one twelfth to one quarter) of aloin, iridin, euonymin, podophyllin, nux vomica, belladonna, cascara sagrada, capsicum, and phenolphthalein.

It will be seen that our British confrères maintain an open mind concerning polypharmacy and proprietary mixtures; the writer of the paper remarks that all the prescriptions are old and tried friends and have been judged, both by physician and public, to secure better results than simpler and more inelegant preparations.

THE TREATMENT OF GUNSHOT WOUNDS.

The treatment of wounds in war has naturally been the subject of much discussion. Some of the discussion has verged on the acrimonious, and it is really somewhat astonishing that so divergent views should be held with regard to the treatment of gunshot wounds and of the best means of rendering them as sterile as possible. The conditions presented by the present modes of warfare have never been witnessed before, and treatment has been profoundly modified, if not actually revolutionized, by the knowledge already gained. As pointed out by Sir Berkeley Moynihan in a paper read by him at the opening of a discussion on the treatment of gunshot wounds at the Harveian Society of London, February 24, 1916 (*British Medical Journal*, March 4th), the damage to tissues was far greater than any that has come within the ken of surgeons of the present generation. In consequence, at first, they were unable to cope efficiently with the unprecedented situation and the efforts to check the activity and malignity of suppuration, surpassing anything ever seen in civil practice, met with comparative failure. It was recognized that aseptic measures, in the circumstances, were of little or no avail, that the antiseptics in use possessed certain countervailing disadvantages which robbed them of a great deal of their value, and more powerful antiseptics must be discovered. Doctor Dakin's calcium hypochlorite solution was one of these, and possibly the most successful, but as the preparation has already been fully described in our columns, it is superfluous further to elaborate upon it.

According to Moynihan, however, another preparation has been brought out by Dakin known as "chloramine," which is thought to be in some respects superior to the hypochlorite solution. It is used in the form of a gauze in whose meshes powdered chloramine is held. Moynihan and his colleagues in Leeds and elsewhere in the Northern Command in Great Britain have employed it with great success, and it is suggested that it may prove to be one of the most powerful of all known methods for aborting grave infection.

The great Leeds surgeon, from his experience of the treatment of gunshot wounds, is of the opinion that the first attack made by a surgeon on a wound received in battle should be by an antiseptic, and the most powerful that it is proper to use. He does not think that Wright's method is applicable in the worst cases, at any rate. While Moynihan concludes that probably Dakin's solution or gauze is the most efficient means of treating infected wounds, he lays particular emphasis on the

immense advantage of keeping the patient out of doors. He remarks that "many years ago he learnt at Johns Hopkins Hospital that a high septic temperature was an indication for moving the patient on to a balcony rather than a reason for dreading the effects of exposure." Vaccine treatment of patients suffering from septic wounds has not been given sufficient trial in this war to warrant the expression of any decided opinion.

On the whole, judging from the experience of Moynihan and others, the efficacy of the antiseptic mode of treatment of septic wounds has been reestablished, that is, at least, so far as the conditions of warfare are concerned.

ANOTHER MEDICAL MARTYR.

Within the portals of the Hôpital des enfants malades, in Paris, and in many another hospital are impressive tablets dedicated to the memory of interns and other physicians who have bravely laid down their lives in the service of the suffering. But nowhere exists a memorial in honor of medical men who have become martyrs to the cause of humanity while engaged in the routine work of their profession. Their number is legion. Their unflinching courage is accepted as a common attribute of the medical practitioner, and few recoil even at the test of death when imposed by fate.

Both in Serbia and Texas the recent plague of typhus has demanded many new victims among physicians. The latest is Dr. Carlos Husk, who as chief surgeon of a prominent smelting and refining company, died on March 20th at Laredo, Texas, while engaged in an attempt to combat typhus in Mexico.

Dr. Peter Kolitsky and Dr. George Baehr, of Mount Sinai Hospital, left New York on January 27th for Aguas Calientes to combat the disease. They were equipped with apparatus, serum, and 100 tubes of typhus vaccine. When the hospital party arrived in Mexico, they were joined by Doctor Husk, who previously had been fighting typhus in the mining camps of his company, and headquarters were established in San Luis Potosi. He contracted the disease in the course of the work, and came north to Laredo with Doctor Kolitsky, after both had become infected.

The death of Doctor Husk adds another name to the roll of honor of those who have lived—and died—for their fellowmen. *Dulce et decorum est pro patria mori*; and Our Country means to the physician no narrow limitation of a single land, but rather the common weal of humanity.

Obituary.

NATHAN GROSS BOZEMAN, A. B., M. D.,
of New York.

Doctor Bozeman died on March 10, 1916, at his residence, 25 East Eighty-third Street, New York. He was born in Montgomery, Ala., February 13, 1856, and educated at Manhattan College, Seton Hall College, and schools in Coburg, Germany, and Vevay, Switzerland, from 1873 to 1877. He graduated at the University of Virginia, A. B., in 1877, and at the Sheffield Scientific School, Yale University, in 1882. In 1889, he married Marion McHenry, of Madison, Ga. He was one of the house staff of the Woman's Hospital, and in the last year of his term, house surgeon. Subsequently he became assistant attending surgeon to the same hospital, as well as outdoor visiting physician to the French Hospital and the Post-Graduate Medical School. He was also visiting gynecologist to St. Francis Hospital, Jersey City, and to St. Mary's Hospital in Hoboken, and consulting gynecologist to Bayonne City Hospital. He was a frequent contributor to medical periodicals, including the NEW YORK MEDICAL JOURNAL.

News Items.

The White Haven Sanatorium Association held its annual meeting on March 13th and elected the following officers: President, Dr. Lawrence F. Flick; first vice-president, Dr. Joseph Walsh; second vice-president, Dr. M. S. Kemmer; treasurer, Dr. Edward A. Millar; secretary, Miss Helen McDewitt.

Gifts to Columbia University.—Among the gifts to the university, announced by the board of trustees at a meeting held on March 6th, are \$10,000 from the East River Homes Foundation for tuberculosis work at the Vanderbilt Clinic, and apparatus for use in cancer research by Mr. Edward P. McMurry, of New York.

Office Hours of Dental Clinics in Public Schools.—Attention is called to the fact that the office hours of the dental clinics conducted by the Bureau of Child Hygiene in school buildings, heretofore 1 p. m. to 4:30 p. m., have been changed to 9 a. m. to 12:30 p. m. This action was taken after conference with interested persons and is felt to be for the best interests of the service.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, March 27th, South and North Branches of the County Medical Society, Section in General Medicine of the College of Physicians, Philadelphia Genitourinary Society; Tuesday, March 28th, West Philadelphia Medical Association; Friday, March 31st, Medical Club (directors).

Society of Sanitary and Moral Prophylaxis Changes Its Name.—At a meeting held on Monday, March 20th, announcement was made that this society, which was organized about ten years ago by the late Dr. Prince A. Morrow, would change its name to the New York Social Hygiene Society. The annual meeting will be held on April 11th in the offices of the society, 105 West Forty-fifth Street.

Harvey Society Lectures.—On Saturday evening, March 25th, Dr. R. T. Woodyatt, of the University of Chicago, will deliver a lecture on A Conception of Diabetes, and on April 8th, Professor Stanley R. Benedict, of Cornell University, will lecture on Uric Acid in Its Relation to Metabolism. The last lecture in the course will be given on April 29th by Professor William H. Welch, of Johns Hopkins University, his subject being Medical Education in the United States.

Pasteur Treatment for Rabies.—On and after Monday, March 20, 1916, the Brooklyn Antirabic Clinic, 29 Third Avenue, will be open daily from 1 to 4 p. m. and on Saturdays from 1 to 3:30 p. m. On Sundays and holidays, the antirabic service of the entire city will be cared for by the Brooklyn Clinic, the hours being from 10 a. m. to 12 noon.

Feeble-mindedness in Pennsylvania.—At the annual meeting of the Public Charities Association of Pennsylvania, held in Philadelphia on March 9th, announcement was made that a commission would be appointed by Governor Brumbaugh to study the problem of feeble-mindedness in Pennsylvania, with the object of determining the best methods for the care and treatment of the mentally deficient.

Franklin Institute Awards Certificate of Merit.—The Franklin Institute, of Philadelphia, has awarded its Certificate of Merit to Dr. Philip A. Sheaff, of Philadelphia, for his circle drawing attachment for microscopes. This device is designed to provide a reliable method of microscopic registration, whereby minute objects mounted upon a slide when once found may be quickly relocated under any microscope of high magnifying power. The attachment may be connected to the nose piece of a microscope.

Hospital Care for Varicella and Whooping Cough.—The Department of Health announces that owing to the present low census of scarlet fever patients in the Willard Parker Hospital, the Bureau of Hospitals is prepared to care for cases of whooping cough and varicella in the infectious stages of these diseases. Application for admission to the hospital should be made through the Bureau of Preventable Diseases in the same way as in cases of scarlet fever. Physicians in the borough of Manhattan are invited to avail themselves of this opportunity for the care of those cases which they believe need hospital treatment.

New York City's Death Rate.—During the week ending March 18, 1916, there were 1,541 deaths from all causes in the city of New York, compared with 1,743 during the corresponding week in 1915, the respective death rates being 14.39 and 16.63 in 1,000 of population. The number of deaths from the following causes showed a decrease, compared with the corresponding week last year: Acute infectious diseases, diarrheal diseases, other digestive diseases, cancer, heart diseases, lobar pneumonia, bronchopneumonia, pulmonary tuberculosis, diseases of the nervous system, and violence; influenza, bronchitis, and Bright's disease were the only ones that showed an increase. During the first twelve weeks of 1916 the death rate was 15.71; in 1915 it was 14.99.

Medical Society of the County of New York.—A stated meeting of the society will be held on Monday, March 27th, in Hosack Hall, New York Academy of Medicine. The program will include the following papers: Intussusception in Infants, by Dr. L. Miller Kahn; Quiet Hip Disease, a New Clinical Entity, by Dr. Henry Ling Taylor; Status Lymphaticus: Case reports, by Dr. William L. Culbert; Pathology, by Dr. James G. Dwyer; xigrams demonstrating enlargement of thymus, by Dr. Frederick M. Law. The program for the April meeting of the society will consist of a symposium on the surgical aspects of gastric and duodenal ulcer, by Dr. Richard Lewinsohn, Dr. Abraham O. Wilensky, Dr. Albert A. Berg, Dr. Herbert L. Celler, and Dr. William Thalheimer.

Lectures on Military Medicine at Columbia University.—A course of six lectures on military administration, medicine, and surgery will be given at the College of Physicians and Surgeons on Tuesdays, at 5 p. m., beginning March 28th. The lectures, which will be open to the general medical public as well as to students at the college, are as follows: March 28th, Organization, Equipment, and Training of Armies, by Lieutenant Colonel William S. Terriberry, Medical Corps, N. G. N. Y.; April 4th, Organization of the Medical Department, and Its Service in Campaign, by Major Joseph H. Ford, Medical Corps, U. S. A.; April 11th, Wounds in War, their Complications and Treatment, by Major Joseph H. Ford, Medical Corps, U. S. A.; April 18th, The Personal Hygiene of the Soldier, by Major Sanford H. Wadhams, Medical Corps, U. S. A.; April 25th, Camp Sanitation, by Captain Philip W. Huntington, Medical Corps, U. S. A.; May 2d, Preventable Diseases in War, by Captain Philip W. Huntington, Medical Corps, U. S. A.

New Buildings Planned for the Children's Hospital and Schools on Randall's Island.—The New York City Children's Hospital and Schools on Randall's Island, which is said to be the largest institution in the United States housing mentally deficient children, is to be completely reconstructed. There has been an initial appropriation of \$600,000 to start the work of reorganization, with the understanding that additional appropriations amounting to \$1,000,000 will be made. The buildings are seventy-five years old and have been declared unsafe and unsanitary. Dr. William B. Cornell, of Baltimore, formerly executive secretary of the Mental Hygiene Society of Maryland, has been appointed medical director of the hospital and schools, and assumed his new duties last week.

Personal.—Dr. Alonzo E. Taylor, Rush professor of physiological chemistry at the University of Pennsylvania, sailed for Europe on March 11th, to engage in Red Cross work as an attaché of the American Embassy at Berlin. He will return about October 1st.

Dr. John E. Daugherty has been appointed medical superintendent of Greenpoint Hospital, Brooklyn, to succeed Dr. Charles Sanborn, who resigned last November. For five years Doctor Daugherty was chief of the medical section of the Indian Bureau of the Department of the Interior, Washington, D. C.

Dr. John T. Leavitt, city health officer of Camden, N. J., has been appointed chief of the medical staff of the Municipal Hospital for Contagious Diseases, which will be opened in Camden during the week of May 18th.

Columbia University Dental School.—Plans for the establishment at Columbia University of a school of dentistry have been approved by the trustees of the university. Prominent dentists and physicians are back of the undertaking, and the school will be unique among dental schools of the country in its admission requirements and standards. The proposal was first submitted to the faculty of the College of Physicians and Surgeons, Columbia University, and the university council, and unanimously recommended by both these bodies to the trustees for favorable action.

The school of dentistry will be closely associated with the medical school and the admission requirements will be the same as the medical. The course will be four years, the first two years the same as those in medicine, thus giving the dental student a thorough knowledge of the fundamental sciences necessary to the practice of what is actually a specialty of medicine. At the end of the second year the dental student will give all his time to the study of dental subjects, namely, operative dentistry, prosthetic dentistry, oral surgery and oral pathology, orthodontia, etc., and the more technical part of the work required for the well trained dental surgeon. This new school will be the first university dental school in New York city and the second in the State.

A Clinic for Pay Patients at Mount Sinai Hospital.—Plans are being made for the establishment of a clinic at Mount Sinai Hospital, where ambulant patients in moderate circumstances, who are not entitled to free treatment, may consult reliable specialists without being compelled to pay office fees which are beyond their means. It is the purpose of the clinic to confine its aid to persons having incomes of \$1,200 per annum or less. Patients will be admitted to the clinic on weekdays from 7:30 to 9 p. m. Mount Sinai Hospital contributes the use of its dispensary building and equipment, and all earnings in excess of necessary expenditures will be divided among the members of the medical staff in proportion to their hours of attendance. The standard fee for routine or office consultation, except in the department for the prevention of disease, will be one dollar. Medicines will not be furnished by the clinic; prescriptions given to patients are to be filled elsewhere, as in ordinary private practice. A moderate extra charge shall be made for x ray work, and for any unusual laboratory or other investigation which necessitates the use of costly supplies, or the collaboration of auxiliary workers. The clinic will not seek to derive any profit from such investigation or examination, but only to be reimbursed for any unusual outlay, and to make suitable payment to professional collaborators. Besides treating patients who come to the clinic of their own accord, or who may be referred by physicians for routine examination and treatment, the members of the staff will be prepared to see patients at the clinic, in consultation with general practitioners.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Twelfth Communication.

IRON.

Throughout the vegetable kingdom, with the possible exception of some of the lower Thallophytes, iron is essential for the process of photosynthesis and assimilation. Among vertebrate animals in particular, iron is necessary as a component of the oxygen carrying mechanism, becoming thereby an essential constituent of the animal organism. In the human body it is chiefly found in the hemoglobin, though present in small quantities in nearly all the tissues.

In times past iron has been used extensively for both acute and chronic affections of nearly all the several systems of the body, but present observations indicate its true use to be that of supplying its own property to blood that has become deficient in the iron molecule. No adequate evidence of any other indication has been presented, either in the laboratory or at the bedside.

So far as has yet been determined, iron, in therapeutic doses, has no direct action on the heart, respiration, blood pressure, or muscular system. Pharmacologists are also prone to assert that there is no action on the central nervous system, even though it is a common clinical experience that repeated therapeutic doses of iron produce a dull heavy headache. Toxic doses of iron administered to frogs cause paralysis of the central nervous system; in mammals, also, they give rise to a paralysis just before death. But the question has been raised and remains unanswered, as to how far this action on the nervous system is direct or how far it may be secondary to the severe reaction produced by toxic doses on the gastrointestinal canal.

On the alimentary tract iron is mildly irritant, becoming chronically and severely so with extended use and doses. From the epithelium of the duodenum the slowly absorbed iron is conveyed first to the spleen, thence to the liver, whence it is slowly utilized by the blood.

Except for the physiology of hematin as an oxygen carrier, the mechanics of iron action within the system is quite unknown, but that it must exert some profound influence on metabolism is shown by the grave symptoms which arise whenever this important element becomes deficient. One such deficiency of easy recognition occurs in chlorosis. In this fairly common affliction of adolescent girls there is an apparent debility of the hematopoietic tissue, accompanied by a marked reduction of the ferrous iron in the hemoglobin. The administration of iron furnishes an excess supply of the essential constituent which seems thereby also to stimulate the blood

forming organs into a renewal of normal activity. The use of iron in such a case seems, therefore, fairly logical; but such logic is not forthcoming in most of the many other conditions in which iron is commonly administered.

Of all the official preparations of iron, two only need be mentioned; all others are therapeutically superfluous, including likewise the various organic preparations. The carbonate and the soluble citrate are efficient preparations, while they possess the minimum of undesirable by effects. A warning should be added concerning the tincture of the chloride, because of the distinctly harmful effects of the acid on the enamel of the teeth; if used at all, it should be taken, well diluted, through a glass tube.

Treatment of Migraine.—Sidney Kuh, in the *Saint Paul Medical Journal* for February, 1916, both in the prophylactic and interval treatment of this affection, recommends physical hardening of the patient, a simple mode of living, the avoidance of overexertion, plenty of fresh air, a late beginning of school education, the shunning of excitement, and abstention from the use of alcohol and tobacco. Where there is a tendency to constipation, it should be combated with the usual measures. Brain workers being seemingly particularly susceptible, a vacation which will keep the patient out of doors and employ his muscles rather than his mind should be advised. Meat should be taken only in moderation and all sexual excesses carefully avoided. A dry climate is to be given preference. While the giving of drugs is to be avoided in so far as possible, the urgent desire for relief during the painful attacks often necessitates their use. Bromides only rarely prove effectual. Salicylates and the coal tar analgesics, however, are often useful, and may abort an attack when given in the prodromal stage. Antipyrine salicylate (salipyrin) especially, alone or with citrated caffeine, gave Kuh satisfactory results in a number of cases. Cannabis indica is, perhaps, the most useful of all drugs, not only relieving the attack but, upon continued use, often diminishing the frequency and intensity of the seizures. Care to secure an active preparation is required. Oppenheim has recommended arsenic, preferably given hypodermically, and others have advised the use of strychnine, ergotin, and epinephrine. Kuh believes he has aborted attacks by the ingestion of a small dose of calomel during the prodromal stage. Some authors have suggested the use of cathartic waters at regular intervals. During the attack a strong cup of coffee, the application of menthol to the temple, or a mustard plaster to the back of the neck may have a soothing effect. Some get relief from an ice-bag to the head, others from the hot water bottle. Kuh confirms the assertion of Moebius that in some of the milder cases mental effort, e. g., the study of an involved problem requiring the closest attention,

will often stop the pain. In the severer cases absolute rest and quiet seem imperative. The diet most helpful in migraine cases is one consisting of eggs, milk, and vegetables (excepting legumes and mushrooms), with very little meat. Coffee, tea, and cocoa should be taken sparingly. Massage, gymnastics, and general faradization are all useful in improving general health, but Kuh has most faith in hydrotherapy, to which he attributes largely his own improvement. During the attack, gentle massage of the painful area is often grateful. Regular hours are deemed important, as is also plenty of rest in the form of long vacations, preferably in the mountains at great altitudes. C. E. Riggs, in the discussion, emphasized the value of bromides in overcoming the tendency to periodicity characteristic of migraine. In cases with initial vascular hypertension and a tendency to arterial spasm, he has found 1/150 grain of nitroglycerin, three times a day, most beneficial. Potassium iodide is recommended in presenile arteriosclerotic migraines. He has great faith in galvanic treatment of the cervical sympathetic, as well as in the high frequency current.

Dorsal Puncture in Cerebrospinal Meningitis.

—Chartier (*Revue de médecine*, November, 1915) draws attention to cases of cerebrospinal meningitis in which lumbar puncture yields only small amounts, e. g., a few drops or c. c. of fluid, and in which only a few c. c. of meningitis serum—six to seven c. c. and four to five c. c., respectively, in his two cases—can be introduced at this level. Both his cases were of the hyperacute type and had developed two days before in soldiers in the trenches. In both cases the scanty fluid withdrawn contained numerous meningococci; in the first case it was merely turbid, in the second, a relatively thick pus. Punctures were made in each case in both the third and fourth lumbar spaces, with uniform lack of success from the therapeutic standpoint. On the contrary, in both instances, punctures in the eighth dorsal intervertebral space easily permitted of withdrawal of seventy to eighty c. c. of cerebrospinal fluid and the injection of sixty c. c. of serum. Both cases experienced considerable improvement, but in spite of an additional serum injection on the next day, later succumbed. These were, however, extremely grave cases, the first having developed hemiplegia and coma before treatment and the other a most violent active delirium, necessitating fixation of the patient on the litter with rope. In spite of the evident inflammatory obstruction between the dorsal and lumbar cord in these cases the free flow of fluid upon dorsal puncture showed that there was no obstacle between the cord and brain. Autopsy of the first case revealed no cortical focus accounting for the hemiplegia. In similar cases of acute cerebrospinal meningitis in which obstruction is found at the lumbar levels, Chartier strongly advises dorsal puncture, which he considers safer under these conditions, with the subarachnoid space greatly enlarged by distention with fluid, than in the normal subject. In neither of his cases was there any difficulty in reaching the space, nor did the least amount of blood appear through the needle. The precaution was taken to blunt slightly the point of the needle before

its insertion, to lessen the danger of injury to the cord. At this level the needle must be introduced exactly in the midline and be made to follow closely the lower border of the spinous process above, forming an angle of 30° to 35° with the surface of the patient's back. In the author's cases the punctures were made with the patient in a reclining posture.

Treatment of Pneumonia with Optochin.—

Forty-three cases of pneumococcal infection were treated with optochin by E. Loewe and F. Meyer (*Berliner klinische Wochenschr.*, Sept. 27, 1915) with striking reduction in mortality. Only two of the patients died, one with an extensive empyema, the other from pneumonia complicated with measles. Most of the cases were of the severer grades of pneumonia. When the drug could be begun within the first three days of the disease the average duration of the fever was six and a half days, compared with eight and a half for the cases in which its administration began after the third day. In practically all of the patients the fever fell by lysis, which usually began promptly after the beginning of optochin administration. Optochin was given in doses of 0.25 gram six to eight times daily, in the form of the powder or as pills. Since the drug did not seem to have any influence on the heart, camphor, digitalis, or caffeine was given where needed. There was a marked favorable effect of optochin on the general condition of the patients, particularly in subjective symptoms. In no case was any of the serious side actions mentioned by other authors encountered. One patient vomited and a few complained of tinnitus and slight impairment of hearing.

Electrocardiographic Studies of Patients under Digitalis Treatment.—

Harold W. Stevens (*Boston Med. and Surg. Jour.*, March 9th) gives the following summary of his observations: The cases in which digitalis produces marked slowing of the heart are those of abnormally rapid rate; the drug in ordinary doses appears to have little or no effect upon rates which are normal. The ventricular slowing may be produced in cases of normal auriculo-ventricular sequence and in cases of auricular fibrillation and auricular flutter. In some cases of normal rhythm under digitalis treatment there is a distinct increase in the P-R interval, and an accompanying increase in the R-T interval. In some cases of fibrillation also the increase in the R-T interval is found. In most instances these increases are coincident with a decrease in the rate, and hence accompany an increase in the length of the whole heart cycle. A possible factor in the improvement of the heart's action under digitalis may be the increased mechanical advantages resulting from the increase in the total length of the cardiac systole. Transformations in both P and T waves appear coincidentally with and apparently related to the digitalis treatment. These variations are not constant. A single case in which digitalis coupling occurred shows, in all instances of the extra systoles, complexes of the same type, indicating a common focus of origin. A single patient showed a much increased susceptibility to slowing by vagus pressure during the digitalis treatment.

Pain from Diaphragmatic Pleurisy.—Joseph A. Capps (*American Jour. of the Med. Sci.*, March) gives the following as the main points of differentiation between diaphragmatic pleurisy and inflammation of the abdominal viscera: The skin and muscles of the abdomen are more sensitive to pain and touch in referred pleural pain than in visceral disease. This is elicited best by pinching the wall and scratching the skin. The cutaneous reflexes are more lively in referred pain as a rule. Deep pressure with the flat surface of the fingers is well borne in referred diaphragmatic pleural pain, while it elicits a dull, deep pain when applied over an inflamed organ. Evidences of respiratory infection usually are present in diaphragmatic pleurisy. Appearance of a sharp, definitely localized pain in the neck on the same side as the abdominal pain often reveals the true condition, as it points to irritation of the phrenic nerve. Referred pains in the neck and abdomen usually are induced or aggravated by cough and deep inspiration. Nausea and vomiting are more constant in visceral abdominal inflammation, but may occur and be very pronounced in diaphragmatic pleurisy. Hiccough is not a common symptom in the latter; it is seen more often in visceral disease.

Cardiospasm.—B. B. Vincent Lyon (*American Jour. of the Med. Sci.*, March) says that in the earlier cases of the primary type relief may be obtained usually by the administration of antispasmodics, such as belladonna and atropine, pushed to the limit of tolerance, and, with due regard to a possible neurotic etiological factor by the advocacy of proper hygiene, hydrotherapy, and exercise, preferably in the open air. If these measures do not suffice, esophageal bougies may be used, or the spastic cardiac ring may be dilated by means of instruments designed for the purpose. When there is a concomitant esophagitis measures to allay this should be adopted before, or simultaneously with the treatment of the cardiospasm. Suitable measures are lavage of the esophagus with medicated solutions best determined and controlled by the character of the esophageal sediment. If the esophageal erosion or ulceration has become invaded by bacteria, we can use germicidal solutions, such as potassium permanganate, silver nitrate, or argyrol, until the bacteria have disappeared from the inflammatory desquamation, when more bland solutions, as of boric acid or salt, can be substituted. The use of an autogenous vaccine prepared from cultures grown from the esophageal sediments will facilitate recovery from the severer types of esophagitis. If the latter is sharply localized in the form of ulcerations or erosions, medications may be applied by means of long applicators introduced through a small bore esophagoscope, or a rubber tube just long enough to reach from the incisor teeth to the lower end of the esophagus. When the condition has progressed to the stage of esophageal dilatation and atony, the use of intra-esophageal electricity is indicated, preferably with the sinusoidal or the faradic current by means of a suitable electrode. The negative pole should be attached to the electrode within the esophagus, the positive pole to the external electrode in the form of

a hand sponge, which is carried over the transverse processes from the seventh cervical to the third dorsal vertebra, and over the sternomastoid muscles to stimulate the vagus. Before turning on the current the patient should drink a small glassful of water to serve as a better conductor of the electricity and to prevent burning. Each treatment should not exceed ten minutes and may be given daily in severe cases. The diet should be liquid, of a value of more than 3,000 calories. In very late cases with starvation weakness it may be best to do a preliminary gastrotomy for the introduction of food.

Action of Pituitary Extract.—Citing Shamoff's recent observation that pituitary extracts caused a marked depression of isolated portions of rabbit's intestine in many cases, R. G. Hoskins (*Journal A. M. A.*, March 4, 1916) records his own observations with various samples of the extract, including commercial specimens, on the intestine of the dog. The drug caused depression of tonus and peristalsis in five out of six cases, when given intravenously to the intact animal. Since the extract of the pituitary is often used as a peristaltic stimulant, this opposite action is of importance. It may be in some way related to recent changes in the mode of preparing the extracts. Possibly the failure at times to secure diuretic effects from the drug may have a similar explanation.

Optochin in External Eye Diseases, Excluding Pneumococci Infections.—Jesse S. Wyler (*Annals of Ophthalmology*, January) gives his observations on the use of optochin in two cases of gonorrheal ophthalmia, two of interstitial keratitis, three of vernal catarrh, three of phlyctenular disease, and three of trachoma with pannus and ulcer of the cornea. The mild cases of vernal catarrh responded well to optochin, as did those of trachoma. The influence of the drug seemed to be good in phlyctenular inflammations; but optochin seems to be contraindicated in interstitial keratitis, while in the cases of gonorrheal ophthalmia, one in an infant, the other in an adult, they were so indefinite and unsatisfactory as to leave doubt as to the efficiency of the drug.

Brilliant Green as an Antiseptic.—Archibald Leitch (*British Med. Jour.*, Feb. 12, 1916) cites his own experiments and those of others, which showed that this triphenyl methane dye is five to ten times as actively bactericidal as mercury bichloride. Since, however, these experiments were done *in vitro*, the efficacy of the substance, when used in the presence of the serum in the tissues of wounds, had to be determined by clinical experience; the result was that the drug proved to be of great value. It was used in a solution in the proportion of one to 1,000, the solvent being distilled water, normal or hypertonic salt solution as desired. Wounds were first cleaned with dry gauze, and an ounce or so of the solution was introduced into the wound, which was then packed with gauze saturated with the solution. The dressings were changed daily or oftener in badly infected cases for a few days. The first effect observed was the total disappearance of foul smell. The dead tissues were found to have taken up the

dye, while the living ones remained unstained, giving a clear differentiation, so that dead tissues could readily be removed. After a few days, fresh, healthy granulations sprang up and healing proceeded rapidly in most cases. The dye seemed to have a much greater avidity for bacteria and dead tissues than for other elements in the wounds. It also proved destructive to anaerobic organisms. In a few cases it was followed by the usual favorable effects for a few days, after which the granulations became pale and unhealthy. Then change to iodine water or other dressing brought about prompt healing. In some cases brilliant green failed altogether of good effect, but such cases resisted all other measures. The disadvantages of the drug were its staining properties for clothing and the hands, although the stain could readily be removed by alcohol or even water. It did not produce toxic effects and seemed to act as a decided stimulant to granulation tissue.

Ethylhydrocuprein in Scarlet Fever and Measles.—Arthur D. Hirschfelder and Frederic H. Schlutz (*Berliner klinische Wochschr.*, Sept. 20, 1915) observed a series of cases of scarlet fever, part of which received treatment with ethylhydrocuprein and part of which were reserved as controls. The new drug exerted no beneficial effect, in fact the duration of the treated cases was somewhat longer than of the untreated group. In a similar series of measles the drug gave evidence of being of value, for the duration of the disease was reduced to an average of less than four and a half days compared with almost eight days for the untreated cases. The doses used ranged from 0.1 to 0.5 gram, three times a day, depending on the age of the patients.

Katazid Tablets.—These tablets, composed of a compound of carbamide and hydrogen peroxide to which is added some citric acid, were introduced for the purpose of rapidly and harmlessly sterilizing water for drinking purposes. W. Weichardt and Maximilian Wolff (*Medizinische Klinik*, Jan. 23, 1916) subjected them to a series of tests to determine their efficacy. It is stated that each tablet is capable of sterilizing 250 c. c. of water in fifteen minutes. The experiments were conducted with water contaminated with measured amounts of the common pathogenic organisms found in polluted drinking water, and efforts were made to determine the time required and the number of tablets necessary to effect sterilization. The experiments proved the tablets to be exceedingly feeble in action, uncertain, and of no practical value. In addition they imparted a very unpleasant taste to the water and rendered it irritant to the mucous membrane.

Medicamental Treatment of Dysmenorrhea.—P. Kroemer (*Zeitschrift f. ärztliche Fortbildung*, Feb. 15th) emphasizes the fact that there is no specific treatment for dysmenorrhea, but that in each case the entire clinical picture presented must be analyzed carefully. The so called mechanical form is perhaps the most common, but in many patients no anatomical fault can be found. In both forms he recommends to keep the bowels empty, as constipation increases the pain, rest in bed, and hot com-

presses to the abdomen. Antipyretics and antirheumatics should be given in small doses and sparingly if at all. The use of narcotics is discredited, except in inflammatory or congestive dysmenorrhea in women suffering from abdominal trouble. He considers organotherapy with ovarian substance, mammin, pituitrin, etc., to be without foundation.

Physics of a Surgical Dressing.—This neglected phase of dressings is treated in one of its aspects by A. Primrose (*Brit. Med. Jour.*, Feb. 12, 1916), who cites both animal and purely physical experiments to show the irrationality of impermeable coverings where drainage is required. Such coverings promote absorption of toxic and other substances and prevent drainage under the best of conditions. If moist gauze dressings are used and their free surface is exposed to the drying influence of the air, drainage will be greatly hastened. It is only in the absence of infection or where it is exceedingly slight that impermeable coverings may safely be employed, and their functions are essentially to prevent drying and adhesion of the dressing materials to the tender wound surfaces.

End Results in Umbilical Hernia Operated in at the Massachusetts General Hospital.—Channing C. Simmons (*Boston Med. and Surg. Jour.*, March 9th) gives these conclusions: Small umbilical hernia in thin adults, and umbilical hernia in children, may be cured by any operation which removes the sac and closes the defect in the abdominal wall. Cases of umbilical hernia in stout adults are difficult to cure. The Mayo operation of transverse closure of the ring with an overlap of the aponeurosis, gives the best results. In adults, closure of the ring by any other method than the Mayo, in a general hospital, is followed by 46.4 per cent. of recurrence. Recurrence, if it is to take place, does so usually in less than a year. The suture material employed has no relation to the liability to recurrence. Skin sepsis is likely to occur, but apparently has no relation to recurrence.

Embarin in Sympathetic Ophthalmitis.—According to G. Hirsch (*Medizinische Klinik*, Jan. 30, 1916), the subcutaneous injection of embarin is the most satisfactory treatment for this condition. If begun promptly on the first signs of sympathetic involvement of the sound eye, it is capable of preventing destruction in a large proportion of cases. The drug is a mercurial compound which is suitable for hypodermic administration. Where the ophthalmitis has already developed, enucleation is the only treatment.

A Remedy of Precision in Influenza.—Charles H. Duncan (*Medical Standard*, March) states that autotherapy will usually cure an acute attack of influenza within twenty-four hours if the following simple technic is employed properly. The formula will often have to be altered somewhat to suit the individual. Mix sputum one dram, distilled water one ounce, in a two ounce bottle, shake well, and allow to stand for twenty-four hours. Filter through a Berkefeld filter. Inject twenty minims of the bacteria free filtrate into the loose cellular tissue over the biceps muscle. Give no further dose until

the patient ceases to improve under the preceding dose. In chronic cases this may be from the third to the fifth day, although the condition of the patient should always be the guide. In very weak patients, and in very chronic cases proportionately less should be given. One injection usually will cure an acute or subacute influenza within twenty-four hours.

Infection of the Ear with Vincent's Microorganisms.—J. A. Mulholland (*Annals of Otolaryngology, and Rhinology*, September, 1915), used salvarsan locally and intravenously, with remarkably satisfactory results, in four cases of infection of the ear with Vincent's microorganisms. One of the cases gave two negative Wassermann examinations. The author suggests the use of salvarsan in cases of noma, where Vincent's organisms are characteristic. It has already been recommended in the treatment of Vincent's angina.

Treatment of Laryngeal Tuberculosis.—Malcolm F. Lent, in *Medical Record* for March 4, 1916, insists upon vocal rest; even whispering must be forbidden, while smoking and the use of alcohol are prohibited. Local cleansing of the larynx by an alkaline spray followed by vaporized oily sprays of camphor and menthol may suffice in some cases, while in others cicatrization of a sluggish ulcer is hastened by the intralaryngeal application of lactic acid, or argyrol. In selected cases the electrical cautery gives excellent results. The use of cocaine in the larynx should be avoided in advanced cases with marked dysphagia, but suffering may be relieved by the insufflation of powdered orthoform within the larynx before eating. A tablet of orthoform one grain, menthol one tenth grain, and camphor one tenth grain, dissolved on the tongue, gives temporary relief of dysphagia.

Anesthesia in Nose and Throat Operations.—J. C. Beck (*Annals of Otolaryngology, and Rhinology*, September, 1915), suggests the routine employment of sodium bicarbonate from thirty to sixty grains, in six ounces of water, by rectum, one half hour before the administration of ether, as recommended by Lynch. The purpose is to prevent acetonemia from the ether absorption. This condition, however, is not serious unless the patient is a diabetic.

A New Colloid Laxative.—Pier F. Arullani, in the *Gazzetta degli ospedali e delle cliniche* for February 13, 1916, highly recommends a new colloid laxative which contains in each fruit spoonful,

Concentrated grape juice,	6.5 grams;
Agar agar,	2.5 grams;
Saturated hydrocarbons,	1.25 gram.

The grape juice is concentrated by freezing and straining out the ice and repeating the process until a thick mass is obtained, which must be prevented from fermenting. The hydrocarbons of the general formula distilled at 300° C. are of the wax group and nonirritating. Arullani has used this mixture extensively in mucomembranous enteritis in syphilis and obstinate constipation and gives

from one to two spoonfuls daily, warning the patient not to drink anything for some time afterward. The mixture is of a wine red color, aromatic odor, and agreeable taste and has the power of absorbing large quantities of water. In addition to its laxative action it seems to encourage increase in body weight and to raise the hemoglobin content of the blood.

Human Serum and Blood in the Treatment of Psoriasis and Other Skin Diseases.—Howard Fox (*Jour. Cutan. Dis.*, September, 1916), after a trial of autogenous serum in sixty cases of psoriasis, seems to be convinced that the serum has no effect in this disease. He seems to lean toward the view that the serum, in combination with the local treatment by chrysarobin ointment, yields better results than the use of the ointment alone. The exact cause of this is unknown. It may be due either to the operation of bleeding or to the mental attitude of the patient, because of his feeling that a new and possibly successful method of treatment is being employed in his case. The technic of giving serum is simple and devoid of danger. In other skin diseases, the use of autogenous or heterogenous serum seems to be disappointing, excepting in dermatitis herpetiformis, where its use is rather encouraging.

The Treatment of Gastric Ulcer.—Albert F. R. Andresen (*Medical Record*, March 11, 1916) writes that in simple ulcer, acute or chronic, the indications are threefold: To remove the cause of the infection, to procure rest for the infected part, and to aid nature in overcoming the infection and repairing the damage. In a series of ninety-six cases observed by Andresen, 78, or eighty-one per cent., had infections of teeth and gums, fifteen had infections of the nasopharynx and accessory sinuses, while in the remainder other infections, as boils, carbuncles, fistula in ano, and pelvic disease had preceded the onset of ulcer symptoms. In practically all cases *Streptococcus viridans* was isolated in pure culture. Therefore focal infections should be sought out and cleared up, and prolonged and adequate medical treatment should be tried before resorting to surgery. When necessary, the operation of choice should include excision of the ulcer with or without gastrojejunostomy. Rest of the affected part may be obtained in many ways, of which proper diet is the most important. At first it is sufficient to give milk every three hours with three or four raw eggs a day, cereals, gelatin, crackers, and stale bread with butter and olive oil. Meat should be forbidden for at least six or eight weeks. Rest in bed is beneficial and is necessary for a week or two in severe cases, while rest of the ulcer is obtained by giving bismuth subcarbonate ten grains in one dram of liquid petrolatum twenty minutes before each feeding. Neutralization of hyperacidity may be accomplished by giving sodium bicarbonate or milk of magnesia one half to one hour after feeding. Atropine up to physiological effect quiets gastric hyperexcitability, while duodenal feeding must be condemned on account of the excitation caused by the tube. To aid nature, autogenous vaccines are of service, and in thirty-eight cases of the writer's the results were constantly good.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

September 29, 1915.

The Miostagmin Reaction, by O. Wissing.—Using a modified and perfected technic, which is described in full, the author subjected to test serums from 350 persons who were free from evidences of malignant neoplasm. Positive reactions were found in all forms of febrile affections, but disappeared in a few days after the cessation of the fever. Practically all cases of pregnancy in the last three or four months gave a positive reaction, which disappeared approximately two weeks post partum when the puerperium was normal. Positive reactions were also found in decompensated cardiac cases, cirrhosis of the liver, icterus gravis, and in a few advanced afebrile cases of pulmonary tuberculosis. Some cases of severe diabetes, of chronic polyarticular rheumatism, and of chronic nephritis and uremia also gave positive reactions. With the exception of cirrhosis and grave jaundice, none of the conditions in which the reaction was found positive were such as would probably be confounded with cancer. In conditions in which a differential diagnosis from cancer might be difficult, such as benign neoplasms, gastric ulcer, chronic gastritis, chronic enteritis and colitis, and surgical tuberculosis and syphilis of the female genital tract, the reaction was found to be negative. It seems, therefore, that, although the reaction was not specific, it was still of value in the differential diagnosis of cancer, for it was positive in most proved cases.

Influence of Inoculation on Typhoid Fever, by Goldscheider and K. Kroner.—In the concluding paper on this subject it is shown that the general condition of inoculated persons ill with typhoid fever was generally much better than in the uninoculated, the toxic mental symptoms, particularly, being diminished. Such complications as involvement of the heart muscle, thrombosis, phlebitis, and intestinal hemorrhage were much less common among the inoculated, and when present were less severe than in the uninoculated. The favorable influence was the greater the more the inoculations given. Convalescence was often strikingly rapid and easy among the inoculated, and the mortality was greatly reduced in this group compared with the uninoculated. From the study of a large series of cases it is suggested that perhaps better results could be secured if the method of inoculation was modified. The interval between inoculations should be lengthened to ten or twelve days, the second dose made of the same size as the first, and a fourth inoculation given.

MEDIZINISCHE KLINIK

November 10, 1915.

Determination of the Size of the Heart, by A. Weber.—Analyzing the results of the several suggested methods, including percussion and palpation of the apex impulse, Weber finds that there are but two trustworthy means available. The first is by orthodiagraphy, the second by means of röntgenograms taken with the tube about two metres from

the patient. The former of these methods is technically not easy and requires special apparatus, but it gives the most trustworthy results. The second method is simple and does not demand any special apparatus, but it has the slight disadvantage of not always giving a clear image of the apical portion of an enlarged heart, since this portion may be overlaid by the shadow of the diaphragm.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

January 25, 1916.

Tetanus Confined to a Single Extremity, by Courtois-Suffit and René Giroux.—A man of twenty-eight years sustained three wounds of the left thigh from a hand grenade. A metallic foreign body was removed on the next day and a preventive injection of ten c. c. of antitetanic serum given. Subsequent radiography showed seven or more foreign bodies still imbedded in the tissues. Ten days after the injury brief and painful muscular contractions on the inner aspect of the knee were experienced, recurring about every two minutes. These became progressively worse, all the muscles in the wounded area going into a cramp three or four times a minute. Two weeks after the start of the convulsions trismus was noted for the first time. The limb condition showing no progress in spite of a thirty c. c. serum injection, some of the remaining foreign bodies were dissected out and ten c. c. of serum was injected beneath the sheath of the anterior crural nerve. Daily subcutaneous injections of ten to sixty c. c. of serum were continued for two weeks, after which the convulsive seizures gradually disappeared, leaving the limb rigid, with poor function at the knee and ankle. Peculiarities were a distinct exaggeration of the knee jerk and patellar clonus, coupled with lowered contractility of the muscles and nerves under faradic and galvanic stimulation. There were no signs of spinal disease. Reflexes were normal in the upper extremities. The sharply localized type of tetanus witnessed is ascribed to incomplete serum immunization, the bulbar centres having been protected and the disease expending itself upon the nerves or spinal segment of the injured area.

PRESSE MÉDICALE.

January 27, 1916.

Graphic Representation of Atonic and Paralytic States of the Limbs, by L. Lortat-Jacob and A. Sézary.—The device employed consists of a strip of lead two mm. thick, 1.5 to two cm. broad, and twenty to forty cm. long, according to the part to which it is to be applied. The strip is moulded on the most deformed aspect of the limb, acquiring a curve which represents the degree of error in its most naturally assumed position. The curve is transferred to paper by drawing a pencil along the metallic strip and is compared with other similar curves later secured from time to time. In radial paralysis, for example, the lead strip is applied to the posterior surface of the forearm and wrist forming an angle which becomes small in proportion to the degree of atony of the extensor muscles. Records of the maximum range of movements possible at given joints can also readily be obtained.

The procedure is more accurate and less time consuming than photography. Definite information is afforded of the degree of progress made in traumatic paralysis subjected to physical therapeutic procedures or surgically treated, and also of the degree of improvement secured through reeducation in cases of impaired function. Observation of an aggravation or of the *status quo* in paretic states is of assistance in deciding upon surgical intervention in cases of nerve wounds.

PARIS MÉDICAL.

January 22, 1916.

Alcoholism and Mortality in Typhoid Fever, by Marcel Labbé.—Among 136 men, eighteen to twenty-four years of age, belonging to the French active army, who were under treatment in the author's hospital for typhoid cases, the mortality was 10.3 per cent.; among 141 men of twenty-four to thirty-four years belonging to the reserve army, the mortality was 15.6 per cent., while among twenty-seven men of thirty-four to forty-five years belonging to the territorial army, no less than 33.3 per cent. succumbed. The fact that a larger proportion of the men of the first group had been subjected to antityphoid vaccination than was the case in the other groups accounted only in part for the differences in mortality. In spite of the fact that the proportions of vaccinated reserve and territorial men were the same, the mortality was twice as great in the latter. Examination into the causes of death showed that whereas the younger patients were generally carried off in the febrile period by the intensity of the infection or complications such as peritonitis, intestinal hemorrhage, or diphtheria, the older ones went through a prolonged course of the disease and, after affording hope of recovery, succumbed to cardiac collapse, myocarditis, and protracted pulmonary congestion, with imperfect renal elimination or signs of hepatic insufficiency. Thus, the older patients died because of weakening of their vitality, perhaps in part through the greater number of infections and intoxications previously experienced, but largely owing to alcohol, most of the patients of the third group who died being found to have been heavy drinkers, not only through the histories given by themselves or their relatives, but through the significant intense delirium, extreme restlessness, tremor, hallucinations, and subicteric condition noted during the course of the disease. Evidently alcoholism accelerates aging of the tissues and lowers the resistance to infections after the thirty-fifth year of life.

BRITISH MEDICAL JOURNAL.

February 12, 1916.

"Trench Fever," by J. W. McNee, Arnold Renshaw, and E. H. Brunt.—Primarily, the condition was proved to be a definite disease entity, presenting two clinical types. There was a type with short fever, lasting about a week and often followed in a few days by a single brief relapse. The second type was of longer duration and marked specially by several sharp, regularly periodical relapses. In both types the symptoms were clinically identical, being, aside from the fever, chiefly headache and

pains in the back and legs. Most painstaking examination of the blood by all available methods failed to reveal any visible etiological organism or parasite, and there was no typical alteration in the blood, except a marked grade of punctate basophilia. The natural modes of transmission of the disease could not be determined, but evidence suggested either direct transmission from man to man, or transmission through the agency of insects. Experiments on volunteers showed that the disease could be transmitted directly from man to man by intravenous or intramuscular injection of small amounts of blood taken from an active case. Serum failed to transmit the disease and the virus was removed from the blood, even after laking, by passage through a filter. The evidence derived from human transmissions seemed to point to the virus being contained in the blood corpuscles, either red or white.

LANCET.

February 12, 1916.

Aerial Conveyance of Infection, by Frederic H. Thomson.—Studies carried on in a small open ward for over three and a half years and covering a material of 497 patients with 657 individual diseases, have led to definite conclusions. Thomson is convinced that scarlet fever is not conveyed by the air, and that the same is true of diphtheria. The evidence is strong, also, against the aerial conveyance of rubella. Mumps seems, in all probability, not to be carried through the air, and there is some doubt about aerial conveyance of whooping cough. The latter disease may occasionally be so transmitted. On the other hand, early in the disease, chicken pox is certainly air borne, but such conveyance is uncommon after the third day of the disease. Contact infection from chicken pox did not seem to occur after about the eighth day, although scabs remained much longer. These observations serve to point the way to many economies in the provision of isolation quarters for the several diseases studied, but in order to treat safely two or more of these diseases in the same ward nurses must be trained in the technic of absolutely preventing intermediary transmission.

Urea Content of the Cerebrospinal Fluid, by R. G. Canti.—Examinations of the spinal fluid both ante mortem and post mortem from a considerable number of cases with and without uremia gave some valuable facts upon which to base prognosis. The normal urea content of the spinal fluid was found to lie below 0.05 per cent. as determined by the hypobromite method. Among the clinical cases of uremia, all those showing a high urea content in the spinal fluid were fatal. Most of those with low urea content survived, and in several the diagnosis was found to have been erroneous. Among cases not clinically classed as uremic there were two groups, one having a high urea content and being complicated with disease other than renal which masked the signs suggestive of uremia; the second, those with a low urea content, not cases of uremia, but including many different forms of disease, showing that high urea content is usually absent in the absence of uremia. A certain proportion

of uncompensated cardiac cases were diagnosed as uremia but they revealed low urea content. The treatment of such cases along lines adapted to uremia was not well tolerated, but treatment directed to the heart gave good results.

February 19, 1916.

Trench Nephritis, by W. Langdon Brown.—Analysis of the records of similar epidemics of acute nephritis in the American civil war and other recent wars and close study of fifty-eight cases from the trenches in the present war lead the author to the conclusion that the disease is a true acute nephritis as shown by edema with albumin in the urine, the nature of the urinary proteins, tests of renal permeability and the post mortem findings. There seems to be a common cause for all of the cases, since they are too prevalent to be merely accidental and since the factors of exposure, polluted water, metallic poisons, etc., can be excluded. Curves of incidence from the civil war and the present conflict suggest some infective agent as the cause. No etiological organism has yet been found and search for a filter passer has been inconclusive, though suggestive results have been secured. The causative agent seems to resemble closely that of scarlet fever.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

March 4, 1916.

The Spleen, by William J. Mayo.—Mayo concludes that the functions of this organ are to remove bacteria and certain toxic agents from the blood, to conserve the food values of the broken down blood corpuscles, and to send their remnants to the liver for utilization. The gland has no important internal secretion and is not essential to life. It is not an obsolete organ, however, as often suggested. Owing to the functions just mentioned, splenectomy may cure certain diseases, especially those connected with the liver and the blood. Removal of the organ has cured a certain number of cases of so called primary splenic tuberculosis. Splenectomy has given relief or possible cure in Hanot's cirrhosis and great relief in portal cirrhosis. Cases of splenic anemia may be cured by removal of the organ, and benefit is often derived from splenectomy in other anemias associated with splenic enlargement. Three cases of Gaucher's disease were cured by the operation. Nine cases of hemolytic jaundice were treated by splenectomy with striking results. The jaundice began to disappear in twenty-four hours, the complexion was clear in a few days, the anemia was rapidly corrected, and the patients remained well. Splenectomy also has given the best results yet observed in pernicious anemia.

Certain Aspects of Infantile Paralysis, by Robert W. Lovett and E. G. Martin.—Study of two series of cases led to the appreciation of the need for some means of measuring accurately the degree and extent of muscular involvement in this disease. A muscle test was devised, consisting of measuring by a spring balance the power of a large number of individual muscles of the upper and lower extremities. Application of these tests revealed the fact that often considerable power re-

mained in muscles thought to be completely paralyzed. In fact, it was discovered that paralysis is much more commonly incomplete than total. The test was also found valuable in determining the suitability of different methods of treating the paralysis, and the improvement or harm caused by different exercises could be accurately measured by it from week to week. Study of the results of suitable exercises showed that many muscles almost totally paralyzed for years were still capable of recovering a considerable degree of functional power.

MEDICAL RECORD.

March 11, 1916.

Influenza, by Alvah H. Doty.—In dealing with influenza or colds precautions should be taken to prevent the transmission of infectious organisms from one person to another. Carriers are so common that the protection gained is limited. Improper foot covering is responsible for a large percentage of cases, while another feature is superheated apartments with poor ventilation, which lower resistance to cold. It is better to wear outer garments of practically the same weight and texture throughout the year with the addition of heavy wraps when going out in the cold.

Influence of Electricity on Metabolism, by Matthew Steel.—Elaborate experiments carried out on the writer himself in the chemical laboratory of Long Island College Hospital, showed that a stimulation of metabolic processes always followed electrical treatment. The volume of urine is increased by currents which do not have a pronounced thermic effect and is decreased by currents which have a strong thermic effect, while all the currents increase the quantity of solids in the urine. Urea was increased most markedly by the static wave current, while the greatest increase of creatinin occurred with the faradic sinusoidal current.

AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

December, 1915.

Latent Chorionepithelioma, by G. W. Outerbridge.—The case is reported of a woman aged forty-three years, in whom there developed a vaginal tumor having the histological structure of a malignant chorionepithelioma eight and a half years after the last pregnancy. Reference is made to the work of Polano, who collected from the literature eleven cases in which the interval between the last pregnancy and the advent of chorionepithelioma exceeded five years. Outerbridge accounts for this peculiar latency of certain cases of chorionepithelioma on the theory that, in exceptional instances, fetal epithelia may remain dormant for a long time in the maternal organism, either at the placental site or elsewhere, and then, by some obscure agency, be stimulated to proliferation. Intact chorionic villi have been found in the uterus no less than eighteen years after the last pregnancy. In some cases of long latency, chorionepithelioma has developed after the menopause, thus disproving the view that in all instances of this form of tumor an undetected pregnancy must have intervened. It should be kept in mind that chorionepithelioma may occur even in an elderly patient.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE. PROGRAM ARRANGED BY THE SECTION IN OTOTOLOGY.

Stated Meeting, Held December 16, 1915.

The President, Dr. JOHN ALEXANDER ROBINSON, in the Chair.

Orientation and Equilibration.—Dr. ARTHUR B. DUEL read this paper, which appears in full on page 577 of this issue of the JOURNAL.

Dr. FRANK H. PIKE, of New York, by invitation, confessed to a certain hesitancy in speaking on anything apparently so well known as the otic labyrinth. The subject was so familiar that the man in the street immediately associated the otic labyrinth and the cerebellum with the maintenance of equilibrium. And so firmly was the belief that the cerebellum was the great central mechanism for the maintenance of equilibrium fixed in the mind, that there was a strong tendency in some quarters to assert that the disturbances following lesions of the cerebellum and lesions of the labyrinth were essentially similar. But if they were to distinguish in clinical diagnosis between lesions of the labyrinth and lesions of the cerebellum, it appeared to him that it was far more important to point out certain constant differences in the effects than to dwell so strongly upon the resemblances.

Their knowledge of the effects of lesions of the labyrinth and of the cerebellum was derived partly from clinical observation and partly from experiments. They might point out that the difficulty of limiting the effects of a pathological lesion to the area primarily involved was great. They might have first the effects of pressure resulting from an intracranial growth and also the increased secretion of cerebrospinal fluid which usually accompanied an intracranial tumor and which would in its turn give rise to abnormally high pressures. This fact was announced from this platform about a year ago by Dr. Charles H. Frazier. In the case of intracranial or mastoid abscesses they had the spread of toxins and other effects upon remote parts of the nervous system. Secondly, there was the difficulty of getting human material for post mortem examination at the time when such examination would be most desirable for the pathologist.

The necessity for the experimental method of attack lay in the necessity of overcoming, in part at least, these difficulties. In the experimental method they might, if they so desired, avoid the effects of increased intracranial pressure and bacterial toxins upon other parts of the nervous system. Further, they might control the extent, both of the primary and of the associated experimental lesions within certain limits. They must recognize that when a nerve fibre was separated from its cell of origin, a degeneration would proceed to the furthest limits of the fibre, and to this degree the extent of the lesion might be beyond their control. And finally, the experimenter might control the length of life of his animals and get his material for post mortem examination at the time which he

considered most opportune or advantageous. As an experimentalist he would therefore urge upon them the need for greater collaboration between clinical and laboratory workers. It was not his idea to supplant clinical observation, but to supplement it experimentally.

In all animals so far studied the effects of experimental lesions of the labyrinth resulted in a torsion of the head to the injured side. Immediately after the operation, the animal might turn or roll over and over to the injured side. When both labyrinths were removed at once, the animal, e. g., a dog, might refuse to stand unassisted, but lie with the limbs and head as closely applied to the floor as it could. The animal learned to stand after a few days, and to walk about without falling. But even months afterward, it would be unable to jump from even a moderate height to the floor without falling in a heap. This observation was originally due to Schiff, and they had repeated it many times. There were always certain deficiencies of this kind which might be discovered by careful examination of animals from which the otic labyrinths had been removed.

When they looked at the central nervous system from the point of view of its evolution, it was seen that in the lower forms of vertebrates the cerebral hemispheres formed an inconsiderable portion of the whole nervous system. But as successively higher animals were taken, they found that the anterior end of the nervous axis, i. e., the cerebrum, showed a greater and greater degree of development. Experimental findings agreed closely with the anatomical development, and all the facts so far gathered pointed to the increased importance of the cerebrum in the daily life of the animal. And on the basis both of the anatomical development and of the considerable number of experimental facts it was their belief that they must look more and more to the cerebrum as the great central mechanism for orientation in space rather than to the cerebellum.

Dr. FRED WHITING, of New York, asked why the subject chosen was so difficult of practical treatment? Because it involved an explanation of complex conceptions and confusing manifestations which were of almost boundless variety and extent, and because it required the reconciliation of numerous conflicting theories, many of which played an important role in any explanation which might be offered as a solution of the perplexing problems of equilibrium and orientation.

In this appreciation of its relation to space as indicated by recognition of restraint or freedom of motion they might consider that they found their earliest suggestion of the function of orientation. That an organism existing under primordial conditions should find some method, however simple, of determining its position in space essential to its survival, naturally suggested to the scientific mind a proposition which might be formulated in the following law, namely, in the progress of evolution through the succeeding higher grades of differentiation of structure there must inevitably be found a development of this faculty (the sense of position) proportioned in its intricacy to the complex conditions governing the environment of this higher or-

ganism. Such were in fact the logical steps whose orderly succession followed through the lower organism thence upward to the human being with its highly specialized central nervous system, had resulted in their present conception of their position in space or orientation. With increased complexity of structure and differentiation of the body form, into head, trunk, and extremities, there was developed a more accurate sense of balance, whether at rest or in motion associated with a well defined sense of direction. Thus little by little through an infinite series of gradations keeping pace with the physical needs requisite for the preservation of the animal, the sense of adjustment to surroundings was formulated, and under the stimulus of the will and intelligence at length fully established.

Intricate as were the physical sensations and nervous impulses, the correlation of which were required for the maintenance of equilibrium among the higher animals, they still were wanting in many of the complex conceptions which constituted essential factors in the function of orientation in man. So remarkable were the functions attributed to the vestibular apparatus in its relation to equilibrium and orientation, as to suggest that this organ might properly be regarded as the guardian of the sixth special sense.

That the function of equilibrium was a congenital possession of the human being there seemed every reason to doubt, for it was common observation that the infant, although strong enough to stand firmly on its feet and to jump vigorously when supported, could not maintain its equilibrium unassisted until it had gradually mastered the difficulties of equilibration.

In orienting himself a man readily found his relation to an object that he could see by employing the aid of his visual powers, to an object that he could feel by the aid of his tactile sense and to the direction and source of sound by the function of his auditory mechanism, numerous additional afferent sensory impressions, however, contributed to the establishment of effective orientation. Of the above mentioned factors each bore an important relation to its fellow in the function of equilibration, and the derangement of any one element of the group was sufficient to disorganize the correlation of all; it was in disorders of the vestibular apparatus, however, that they encountered the most severe and sudden disturbances in equilibrium.

The infinite complexity of the afferent impulses whose harmonious correlation was essential to orientation had been clearly indicated by the writer of the evening's paper and he would not weary them with attempts at recapitulation, confining his further remarks merely to a brief comment upon those manifestations of disharmony in which as clinicians and otologists they were interested and which ensued upon a disturbance of those components of equilibrium, over which the vestibular apparatus presided.

The history of systematic and scientific investigation of the physiology of the inner ear and especially of the complex function of equilibrium, dated back for over a century. The questions involved were so intimately related to other chapters of physiology, notably of the visual perception, the sense of space,

direction, and position, and were so often suggested by the practical experience of the clinic and operating room that observers in the most widely distributed fields had contributed to their present knowledge.

It was only within the last decade, however, that the widely diversified and often fantastic views entertained regarding the complex functions of the various organs concerned in the establishment of equilibrium had received proper interpretation, and even at the present moment there remained an embarrassing array of incompatible theories and hypotheses, each with its enthusiastic advocates, which were absolutely irreconcilable upon the basis of established knowledge. Whether they could accept the views that the stimulation impulses in the static labyrinth were aroused by gravitational pressure or were the result of the movement of columns of fluid (endolymph), was not essential clinically to their interpretation of the manifestations which ensued in consequence of irritation of the vestibular apparatus, however interesting such studies might prove to the student of physiology.

The writer of the paper had considered in its broadest physical application the significance of equilibrium and orientation as related to the vestibular apparatus, and some of his suggestions would, the speaker thought, provide food for mature reflection for their neurological colleagues. On such a nature was the perplexing problem presented by the deaf mute, who with the destruction of both labyrinths acquired a compensatory sense of equilibrium largely dependent upon visual impressions supplemented by the tactile and kinesthetic sense; his orientation, however, always remained defective. Such a person found it impossible to maintain his sense of direction when swimming under water; moreover, owing to the bewilderment of his faculties from loss of orientation, a deaf mute, although a capable swimmer on the surface, would be in danger of drowning from his own misdirected efforts if he were suddenly plunged into deep water.

If a man would appreciate in a slight degree the difficulties of orientation when undertaken without the aid of sight and hearing, let him close his eyes, hold his fingers in his ears, and attempt to walk straight ahead for any considerable distance; he would begin his walk with assurance, lifting his feet for a few steps with his usual confidence, but before he had proceeded many paces he would begin to slide or push his feet along the floor instead of lifting them in order to preserve a better grasp of his sense of position. His stride would shorten and his mode of progression gradually degenerate into a lumbering sort of shuffling of the feet, finally terminating in a loss of sense of position which would bring him to a halt. He experienced these difficulties notwithstanding that he was assisted in his experiment by a normally functioning vestibular apparatus. A person suffering with any structural vestibular changes would exhibit an exaggeration of these various manifestations and would deviate toward the affected or weaker side and with the application of von Stein's test, the disability would become progressively more apparent.

To the practitioner of medicine an enumeration

of the complex array of motor and sensory phenomena, whose harmonious adjustment or correlation resulted in the function of orientation, was of interest chiefly as an exposition of a scientific demonstration; but he attached far more importance to one practical suggestion which would enable him to treat intelligently the manifestations which resulted from the disturbance of this adjustment, and to which they had applied the name of vertigo, than to the elucidation of any theory, be it never so ingenious.

His vertiginous patient was usually a practical and insistent person who demanded assurance that his distressing symptoms would soon be relieved and the doctor must have at his command an understanding of the condition which would enable him to decide whether the case was one of functional derangement which would soon right itself, or whether he was dealing with structural changes in the vestibular apparatus, nerve, or cerebellum, from which he might apprehend a permanent disability or even a fatal termination.

In the first mentioned condition of infective labyrinthitis, except in the event of a metastatic inflammation (an exceedingly rare manifestation), the presence of suppuration of the ear would at once indicate the source of the disturbance, while the concomitant nystagmus and deafness would supply the needful corroborative evidence. With otitic meningitis the history of aural suppuration with rigidity of the neck and the presence of Kernig's or Babinsky's signs when supplemented by the information afforded by spinal puncture, would ordinarily establish the diagnosis. With abscess of the cerebellum they were again guided by the presence of ear suppuration, but with cerebellar tumor there might be no evidence of ear disease. The vertigo associated with these lesions was usually attended by cerebellar ataxia, while the disturbances of balance, instead of diminishing in intensity with the duration of the disease, were disposed in contradistinction to labyrinth inflammations to increase in severity; again, with abscess or neoplasm of the cerebellum the direction in which the body fell was independent of the nystagmus if this was present and did not change with altered position of the head, in addition to which evidence the "pointing by" experiment should indicate a retrolabyrinthine affection.

Hemorrhage of the labyrinth was attended with complete loss of hearing and with vertigo of such violent character as to preclude all attempts at observing the reaction movements; the history of sudden deafness, however, with attendant vomiting vertigo and characteristic vestibular nystagmus would readily indicate the diagnosis.

With attacks of hysterical vertigo the middle ear on physical examination might show no pathological changes, while nystagmus, if present, was not of the vestibular type, nor were the disturbances of equilibrium such as were caused by labyrinthine disease; the body might have a tendency to fall backward or forward or to either side, that was, it followed no definite rule, while in labyrinthitis the tendency was to fall always in the direction of the slow component of the nystagmus whatever the position of the head. In hysteria deafness might be simulated, but

the static labyrinth would react to functional tests. The study of the function of the inner ear and the logical systematizing of functional test was by no means complete, but enough had already been accomplished to show that they were progressing in the right direction.

No doubt an elaboration and critical analysis of all rationally scientific methods would be of eventual service to the practitioner, and the final result of accurate and painstaking investigations in laboratory and clinic would bring theory and practice into much desired accord and correspondence. The objections which had been raised to the errors inherent was this or that test, the exception to minor points of this or that theory were details which were in no wise fundamental and could invalidate the principles involved nor prevent their eventual application. In fact, the practical objections of competent clinicians and surgeons could serve only a beneficent purpose in correcting errors while they stimulated anew the search for truth.

Dr. ARNOLD KNAPP, F. A. C. S., of New York, observed that among the nervous impulses which acted in preserving equilibrium, those obtained from the eyes were mentioned as important. According to Gowers, the knowledge of the relation of external objects to the body gained from the contraction (i. e. innervation) of the eyeball muscles was one of the most important sources of guidance to the centres that regulated the muscular contractions for maintaining bodily equilibrium. Another important accessory to their sense of equilibrium was the static labyrinth. There was a close association between the eyes and the labyrinth; this association, however, was not directly connected with equilibration, but had a different purpose, as was shown in the following:

The posterior longitudinal bundle which connected the various nuclei of the ocular muscles was in close relationship with the vestibular nerve. The vestibular nerve thereby was closely associated with the ocular muscles, just as it was with all the muscles of the body. It served the purpose of maintaining the muscles in a state of tonic contraction. If this nerve was divided on one side, it would result in a complete loss of tone of the muscles of the body of the opposite side and in nystagmus. The vestibular apparatus was also in close relationship with the cerebellum, by means of Deiter's nucleus, so that the cerebellum was a further active factor in the regulation of our ocular movements. Bing called it a reflex apparatus serving for the preservation of equilibrium, not only for the muscles of the body, but for the eyes. It received centripetal impulses from the static labyrinth and from the ocular muscles by means of Deiter's nucleus, which assisted in its regulating activity. On the other hand, it sent forth centrifugal impulses through this same nucleus, which preserved the position of equilibrium and controlled the ocular movements.

In certain animals the position of the eyes and their movements were governed nearly exclusively by the ear. The eyes in these animals, if the head was not moved, were practically motionless. As the head moved, the eyes made a compensatory move-

ment in the opposite direction which originated in the labyrinth. There was a constant action of the labyrinth on the ocular muscles. It held the ocular muscles in check, giving them a definite tone, so that a lesion of one labyrinth caused a preponderance of the action of the opposite one. In man this association between the eyes and the labyrinth also worked for producing compensatory movements, though these were not as important as in the lower animals. The purposes of these compensatory movements, according to Sherrington, were presumably for maintaining the normal relation of the eyes to the horizontal. These movements, Wilson and Pike had shown, were a direct reflex response, independent of the cerebellum, to insure that the retinal images should not be disturbed by each movement of the head. It was well known that if both labyrinths were destroyed, these compensatory movements were abolished.

The chief symptom, as far as the eyes were concerned, which resulted from a lesion of the labyrinth, was nystagmus. Nystagmus, however, was a symptom which did not disturb their sense of equilibrium. In other words, those suffering from nystagmus did not complain of vertigo, unless, of course, there were other agencies which affected the centre of equilibrium.

Ocular vertigo was a very unusual symptom and difficult to explain. Vertigo occurred unquestionably in ocular paralysis, owing to the confusion resulting from false projection; this, however, was a symptom which was frequently absent. Muscular anomalies, such as insufficiencies of the ocular muscles, were practically never accountable for vertigo. It was stated by some that certain errors of refraction were apt to cause vertigo, particularly in those who were suffering from astigmatism with oblique axes. The term, dizziness, as used by patients that consulted an ophthalmologist, embraced many conditions and symptoms which had but little to do with vertigo; it was often impossible to analyze these symptoms or to explain their relation to an ocular defect, particularly when other factors which caused vertigo could not be excluded.

Dr. J. RAMSAY HUNT, of New York, recalled that the otic labyrinth was of great interest and importance neurologically, as it was the terminal end organ of an extensive sensory mechanism which had connections with many portions of the central nervous system. This mechanism was frequently involved in affections of the nervous system, organic, functional, and psychic, and when the seat of pathological disturbance produced symptoms which were essentially neurological in character, *e. g.*, vertigo, subjective and objective, disturbances of static consciousness and equilibrium, nystagmus, forced movements, and alterations of the labyrinthine tonus of the muscles of the trunk and extremities. Hence, a knowledge of the functions and relations of the vestibular nerve was essential to a proper understanding of vertigo, equilibrium, and orientation, nystagmus and cerebellar localization.

The nystagmus of vestibular origin was rhythmical in character and consisted of two components, a slow movement in one direction followed by a rapid return movement. The direction of the nystagmus, *i. e.*, to the right or left, upward or down-

ward, always referred to the direction of the rapid return movement. Labyrinthine nystagmus was always more manifest when the eyes were turned in the direction of the rapid nystagmus; it was diminished or suppressed in the direction of the slower component. The slow component was the direct effect of vestibular irritation, while the rapid return movement was of cerebral origin. Pike had shown as a result of experimental study that the rapid phase of the nystagmus was probably produced from the contralateral cerebral cortex. It was of especial interest to note that each semicircular canal evoked ocular movements in its respective plane.

Barany had perfected an elaborate series of tests by caloric and rotation stimulation of the various semicircular canals, which were of great interest physiologically and of great practical importance. These tests indicated the degree of functional activity of the vestibular nerve, and a proper understanding of their detail and technic was essential for the interpretation of the various disturbances of labyrinthine tonus, for the differentiation between vestibular affections of central and peripheral origin, and in cerebellar localization.

It was well to emphasize the fact that a nystagmus of labyrinthine type might also be produced by lesions of the vestibular nerve or of its central connections in the medulla. There was some doubt as to the relationship of cerebellar nystagmus to vestibular nystagmus. Wilson and Pike believed that pure cerebellar nystagmus was essentially an ataxic disturbance, an incoordination or asynergia of the ocular mechanism, and identical with the other asynergic disturbances of cerebellar origin.

While this might be true, it must not be forgotten that clinically most cerebellar lesions exerted pressure on the underlying pons, and in this way might and often did produce true vestibular nystagmus. It would also seem probable that irritation of the vestibulocerebellar fibres might have a similar effect.

That the labyrinth exerted a tonic influence on the voluntary muscular system was clearly shown in the epoch making experiments of Ewald. The labyrinthine tonus was exercised through the connections existing between the vestibular mechanism, the cerebellum, and the spinal cord. It is homolateral, *i. e.*, each hemisphere of the cerebellum stood in direct relation to the corresponding trunk and extremities. The movements of the body took place in the plane of the nystagmus and in a direction opposite to the rapid nystagmus; *e. g.*, if, with the head in the upright position and the right arm extended, there was induced a horizontal nystagmus to the right, the arm deviated slowly to the left. Barany had elaborated with great detail and exactness a series of tests for the determination of this tonus mechanism of the labyrinth and its influence on the movements of the extremities and trunk. It was a homolateral mechanism in its influence, *i. e.*, the right labyrinth and right cerebellum controlled the corresponding half of the body. As a result of these observations he reached the important conclusion that in the cerebellar cortex the various segments (joints and muscles) of the extremities were represented by four centres which were concerned with the direction of movements, *viz.*, horizontal

(right and left) and vertical (up and down). A stimulation of the labyrinth on one side induced a corresponding alteration of tonic innervation and the direction of the movement. As a result, the finger of the patient passed the point, what he termed *pointing by*. (*Vorbeizeigen*.) In other words, the sense of direction of movements in the trunk and the extremities was to some extent under the influence of labyrinthine stimuli, and the induction of nystagmus (rapid movement) in a certain direction produced a deviation of movement to the opposite direction. A very important phase of this question was its relation to cerebellar localization and the practical demonstration of cerebellar disease. It also supplemented the experimental work on cerebellar localization of such observers as Rothmann, Bork, and Van Rynberk, for Barany had shown that investigations along these lines might contribute to their knowledge of the localization of centres in cerebellar cortex. For example, by freezing with ethyl chloride a portion of the cerebellar cortex which had been left exposed after operation, he was able to show that the posteroinferior surface of the cerebellum controlled the inward movements of the upper extremity.

It was important to recognize that vertigo, giddiness, and similar sensations were due to disturbances of the vestibular mechanism, peripheral, central, or psychic, and that clinically they should always think of vertigo in this concrete neurological sense. Just as in visual disturbances they thought naturally of the peripheral organ of vision and its peripheral and central connections. If this was done, much that was vague and uncertain in their clinical conception of vertigo would disappear. For example, in congenital affections of the vestibular apparatus as in some types of deaf mutism, the space sense was lost. These individuals might be rotated with impunity and yet experience no vertiginous sensation. What more practical demonstration could be offered to show the dependence of what they termed vertigo upon this important mechanism?

Vertigo might result from labyrinthine disturbances; from disease or injury of the vestibular nerve in the internal auditory canal and at the base of the brain; and from affections of the central nervous system, more especially of the brain stem and cerebellum. Organic brain disease was one of the most important and most frequent causes of vertigo, e. g., tumor, abscess, multiple sclerosis, encephalitis, and the like. These might act directly on the nuclear and tract connections of the vestibular system, but quite frequently vertigo was produced as a result of secondary circulatory changes or alterations in the pressure of the cerebrospinal fluid.

Vertigo in functional conditions should also be referred to this neural mechanism; so that toxic, gastrointestinal, and neurasthenic vertigo represented limited functional disturbances, toxic or circulatory in nature, from sudden fluctuation in the vascularization of the vestibular mechanism. The not infrequent vertigo of cerebral arteriosclerosis probably had a similar origin. As they had seen, the ocular mechanism was in close anatomical relationship with the primary vestibular nuclei in the medulla, so that ocular vertigo, especially in association with visual defects and diplopia was rela-

tively frequent. Ocular vertigo, however, was not purely vestibular, as vision itself was an important factor in static equilibrium and orientation.

A word in regard to psychic vertigo. They had seen that a distressing mental impression was one of the important accompaniments of a vertiginous seizure. It was an acute painful consciousness of disorientation produced by disturbances of the vestibular apparatus a disturbance of the judgment of the relation of body to space, a sensory deception as to posture, direction, and distance; in brief, a hallucination of the body sense in its relation to space. They had all experienced vertigo in some of its forms and retained a more or less vivid memory of the psychic impression. So that especially in neurotics and in neurasthenic and hysteroneurasthenic states, psychic vertigo might become a dominating symptom. This might persist long after vertiginous seizures had ceased, as a phobia or obsession, and was a pure psychic disturbance, requiring psychic treatment for its relief. A rare and very severe form of this variety was that known as continuous vertigo, *Vertigo permanens* (*Status vertiginosus*) of Weir Mitchell. Oppenheim had also described similar states as *Dauer Schwindel*. This form of vertigo was essentially psychic and is closely allied to the minor psychoses.

They should always bear in mind then, that the higher cortical associations played an important role in vertigo, which in organic vertigo was the highly unpleasant realization of what was taking place, and in certain functional and psychic states was largely a mental image with associated fear and anxiety.

The treatment of vertigo in general need not be considered in a discussion of this kind. He would, however, emphasize the good results which had occasionally been obtained by lumbar puncture in cases of labyrinthine vertigo. This method was first suggested by Babinski, and Putnam and Blake in this country had reported favorable results. Barany also recommended this procedure, and he could vouch for its occasional efficiency from personal experience. From five to ten or even twenty c. c. of cerebrospinal fluid were removed by lumbar puncture with the usual precautions. It might be necessary to repeat the procedure once or twice at intervals of one or two weeks.

The exact mechanism by which the favorable result was produced was still somewhat obscure. Probably, however, the changes in intracranial pressure, either circulatory or of the cerebrospinal fluid, was an important factor. It was also not impossible that the tension of the fluid in the semi-circular canals might be relieved to some extent by this procedure.

Dr. LEWIS F. FRISSELL, of New York, considered that the role of the general practitioner in discussing the subject of vertigo, especially after listening to the brilliant expositions from the special points of view of aurist, physiologist, otologist, ophthalmologist, and neurologist, was a trifle difficult. Why was he here at all? The answer seemed to be that as ancient Rome gave her successful general a triumph with captives at his chariot wheels, so their first consul had consented to accentuate the papers of the evening by insisting on the violent contrast of an internist discussing the specialist's pet field.

The general man was deeply concerned, however, in that to his inexperienced hand came the patient seeking relief from real symptoms, and here came both his perplexity and his duty—to which branch of the dazzling array of specialists should the patient be referred? Was it a case of labyrinthine vertigo and was the aurist to be called upon; or was muscular weakness of the eye the predominant factor? Was it a cerebellar tumor or a disease of the central nervous system which demanded the special attention of the neurologist? Or, more difficult still, was it one of those threshold cases on the borderland of epilepsy simulating labyrinthine disease, so admirably described by Gowers?

Fortunately, the dissensions of the internal groups somewhat helped the perplexed practitioner. Menière's original description of auditory vertigo was of a symptom complex, of sudden vertigo associated with nausea, vomiting, and deafness on the affected side; in other words, a disease showing the same symptoms as their experimental animals in which the semicircular canals of one side had been extirpated, the reasons for which had been so admirably described by other speakers.

But gradually it was found that all cases did not have either the classical symptoms of Menière's disease, or the classical cause—destruction of the labyrinth—but varied in intensity from slight tinnitus with vertigo to the severe type originally described. So arose the classification into Menière's disease and pseudo-Menièr's, the former having as its pathological base the destruction of the labyrinth, while the latter was attributed to slighter forms of disease, such as otitis media, changes in pressure of the endolymph, cerumen in the external meatus, disturbances in the vestibular nerve in its course to the central nuclei, or even more remotely to tabetic changes and the functional explosive irritation of the higher centres in the epileptic aura and attack.

But if vertigo might be attributed to so many diverse sources in which the ear was affected directly or indirectly, what of those cases in which muscular incoordination in the eye produced diplopia and a false and uncorrected concept in the brain, the vertigo of multiple sclerosis—that psychic type caused by looking down from a height by one unaccustomed to mountaineering; the common incoordination of acute alcoholism, and that distressing form met with in *mal de mer*? Must the general practitioner be relegated to the undignified position of Mother Sill and be altogether eliminated from the diagnosis and treatment of this common malady?

In its ultimate analysis, the causes of these symptoms were in many, if not in most cases, a distinctly medical affliction, such as syphilis, arteriosclerosis, aortic insufficiency, the various types of anemias, diseases of the gastrointestinal tract, which were directly responsible, not only for the appearance of the symptoms, but in many cases for the pathological base of the symptom complex, the latter forming only a localizing symptom of a constitutional disease.

They must conceive it to be the duty then of the general practitioner in the presence of vertigo, by careful examination of his patient, including par-

ticularly blood, urine, blood pressure, and serological examinations, first to determine the presence or absence of underlying constitutional disease, and secondly, by careful examination of the eye, ear, and nervous system to determine in which special field the immediate defect causing vertigo lay. If, as was probably the case, he was himself unable to apply the more complicated rotation and caloric tests in the ear or make a thorough examination for muscular strain or defective vision in the eye, he should refer such a case to the better trained specialist for a more thorough examination.

But with his broader field of vision, he should be able to coordinate the examinations of his technically more skilled confrères and would often be enabled to arrive at a more correct diagnosis in a difficult case.

In treatment, too, where a cure might not be obtained by a correction of muscle palsy, a regulation of pressure in the labyrinth or by operative procedure, his handling of the hypertensive and anemic conditions might greatly improve, or in syphilis brilliantly cure the underlying conditions. Therefore, the internist's plea was that even in this field he might be allowed some slight recognition from his more skilled brethren and might be able to retain his place in the care of so obscure and puzzling a condition.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Mosquito Control in Panama. The Eradication of Malaria and Yellow Fever in Cuba and Panama. By JOSEPH A. LEPRINCE, C. E., A. M., Chief Sanitary Inspector, Isthmian Canal Commission 1904-1914, and A. J. ORENSTEIN, M. D., Assistant Chief Sanitary Inspector, Isthmian Canal Commission. With an Introduction by L. O. HOWARD, LL. D., Entomologist and Chief, Bureau of Entomology, United States Department of Agriculture. With 100 Illustrations. New York and London: G. P. Putnam's Sons (The Knickerbocker Press), 1916. Pp. xvii-335. (Price, \$2.50.)

To any one interested in the mosquito, either in its relation to the prevention of disease or merely as a pest, this book is fascinating and full of information. It deals with the measures adopted to free Cuba and Panama from yellow fever and to lessen the incidence of malaria in the same localities.

As is well known, yellow fever is transmitted by *Aedes calopus* (*Gestomyia fasciata*), and malaria by at least three species of anophelids. The authors have collected a great many data concerning the life histories of these mosquitoes; conditions under which the eggs are deposited, and best suited to the development of the larvæ; flight determinations of the adults, periods of the day in which they feed, and their relations to the transmission of disease. They give us a detailed account of the manner with which they dealt with the various problems which arose in their campaign of mosquito destruction and show the necessity of intelligent cooperation, particularly on the part of municipal authorities.

The results obtained by sanitation in Cuba and Panama under the leadership of General Gorgas are known to the whole civilized world, but the detailed character of the work, and the difficulties encountered and surmounted, have not received sufficient publicity. Therefore this well written book, which discusses every phase of the work, should prove interesting reading to all concerned in the science of sanitation. It is profusely illustrated, which adds greatly to the interest in, and elucidation of the problems discussed.

Every one studying the problems of mosquito control will find the book, not only interesting but full of practical information.

The Aftermath of Battle. With the Red Cross in France. By EDWARD D. TOLAND. With a Preface by OWEN WISTER. New York: The Macmillan Company, 1916. Pp. xiii-175.

It is not often that we have the opportunity to listen to an account of the effect on an intelligent layman of the methods of a hospital; when the hospital is a French ambulance in a war of continental proportions, and the layman is of the mental calibre of Mr. Toland, the product is indeed of exceptional interest. Mr. Owen Wister, in his preface to the volume, insists that it is written without art, yet with the effect of high art. We do not see why we may not admit the high art; numerous writers and other artists have done great work without the long and arduous training required of most of us. The style is simple, indeed, and extraordinarily effective, and we must insist that the writer has a genuine gift for letters. His description of the wounds he has seen, infected and gangrenous, is horribly gruesome, his tribute to the surgeons unaffected and sincere, and his account of his meetings with the most distinguished personages is devoid of snobbery or any apparent attempt to be impressive, and the whole book is absorbing enough to prevent many a reader from laying it down before it is finished. It should be read by physicians and laymen, particularly the young, who need an accurate portrayal of war *à rebours* or on the seamy side.

Painless Childbirth, Eutocia, and Nitrous Oxide-Oxygen Analgesia. By CARL HENRY DAVIS, A.B., M.D., Associate in Obstetrics and Gynecology, Rush Medical College in Affiliation with the University of Chicago; Assistant Attending Obstetrician and Gynecologist to the Presbyterian Hospital, Chicago. Chicago: Forbes & Company, 1916. Pp. 134. (Price, \$1.)

Nitrous oxide-oxygen analgesia gives actual painless childbirth without loss of consciousness, whereas the scopolamine-morphine treatment or twilight sleep method simply produces amnesia or loss of memory of pain. Therefore the former prevents shock to the nervous system, while with the latter the patient actually has sensation of pain, but has no recollection of it later. The maternal mortality with Dammerschlaf is about one in 250 while with nitrous oxide it is from one in 100,000 to one in 250,000.

A study of 154 consecutive cases of nitrous oxide-oxygen analgesia at the Presbyterian Hospital, Chicago, shows a reduction of twenty-five per cent. in the duration of labor, while milk secretion was favored by lessening of shock, and there were fewer and less severe lacerations. This method seems to be the method of choice for the production of eutocia, and with the modern simplified apparatus the patient can be intrusted with self administration of the gas.

Transactions of the American Pediatric Society, volume XXVII.

This volume contains the record of the twenty-seventh annual meeting at Lakewood in May, 1915, and gives in addition to the constitution and bylaws of the society, lists of past presidents, of the officers for 1915 and 1916, and the dates and meeting places since 1888, with the roll of members. The papers read at the meeting are reproduced in full, together with the discussions thereon, and there are many tables, charts, photographs, and skiagrams in the text.

Transactions of the American Urological Association. Fourteenth Annual Meeting at Baltimore, Maryland, April 13, 14, and 15, 1915. Brookline, Mass.: Riverdale Press, 1915. Pp. viii-479.

The transactions of the American Urological Association of the year, 1915, are ahead of the standard set by previous years. These transactions, by the way, are the most noteworthy collection of urological papers that appears in America. In this volume the symposium on bladder tumors is especially valuable.

Burger's article on the pathological diagnosis of tumors of the bladder with reference to papilloma and carcinoma is an admirable contribution; his photomicrographs are wonderful. McCarthy's cystoscopic pictures are beautiful. Of special interest in this series are Geraghty's fulguration

in the treatment of bladder tumors and Keyes's desiccation treatment of bladder tumors. Gardner gives a review of 1,702 cases in which he discusses the clinical results in operations on tumors of the bladder by various operators for the last fifteen years. Lowsley's article on the anatomy of the human prostate gland is excellent.

Interclinical Notes.

Diet is beginning to assume in literature the enormous importance which belongs to it by rights, not only in the treatment of disease, but in the maintenance of health. How little is known positively of the subject will become apparent to anyone who undertakes to study it. The *Scientific Monthly* for March has four excellent papers on the Energy Content of the Diet, which were read before the American Association for the Advancement of Science, last December, in Columbus, Ohio. They are: Proteins in Growth, by Ruth Wheeler; The Mineral Nutrients in Practical Human Dietetics, by E. B. Forbes; The Chemical Nature and Physiological Significance of so called Vitamins, by Professor Carl Voegelin; and Food Selection for Rational and Economic Living, by Dr. C. F. Langworthy. We commend these papers to our friends for careful perusal.

* * *

Dr. Louis R. Welzmillier, of the west side New York Y. M. C. A., is quoted in the *Outlook* for March 15th as saying that "man grows old only as he ceases to play." This sounds wise and epigrammatic, but it is the converse which is true, and in that form it is painfully obvious. We might as well say that "man acquires middle age only as he puts on reading glasses." Torturing the eyes or goading the stiffening muscles will not prolong youth, alas!

* * *

Among the interesting things in *Leslie's* for March 16th is a picture of hospital boats in Poland, used during the present war to transport the German wounded from battles along the Russian line. Fritz Arno Wagner, *Leslie's* special correspondent, gives a vivid description of the wonderfully equipped ships used as hospitals. He states also that he had recently seen the Kaiser, who looked strong and young, except that his hair and moustache had gradually become quite gray.

* * *

The *Survey* for March 18th contains an editorial review of one of the plagues of Egypt, ophthalmia; since the war broke out, the hospitals that were devoted to the care of ophthalmic patients have been largely given over to wounded soldiers.

* * *

The new process pictures struck us as the most noteworthy feature of the *Outlook* for March 8th. They included Paul Manship's Flight of Night, Raphael's Colonna Madonna, Paxton's Letter, a photograph of the living Caryatides, one of the model of the shaft of the Aztec fountain of the Pan-American building at Washington, a court martial of a Frenchman by Germans, Italian artillerymen in the Dolomites, skiing in Sweden, skating in Newburgh, N. Y., sheep in Australia, French artillery in Egypt, a German princess and her son, recording the songs of the American Indians on the phonograph, and a portrait of Cardinal Mercier, of Belgium.

Meetings of Local Medical Societies.

MONDAY, March 27th.—Medical Society of the County of New York; Poughkeepsie Academy of Medicine.

TUESDAY, March 28th.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Therapeutic Club.

FRIDAY, March 31st.—Academy of Pathological Science, New York; Hospital Graduates' Club, Brooklyn.

SATURDAY, April 1st.—Benjamin Rush Medical Society, New York.

Official News.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending March 18, 1916:

Bowen, Albert S., Captain, Medical Corps. Ordered to proceed at once to Douglas, Ariz., and report to the commanding general, Southern Department, for assignment to temporary duty in that department. **Chase**, Chauncey L., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed at once to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for duty in that department. **Cook**, Otto J., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report by telegraph to the commanding general, Southern Department, for assignment to duty in that department. **Demmer**, Charles C., Captain, Medical Corps. Ordered to proceed at once to Columbus, New Mexico, and report to the commanding officer, Southern Department, for assignment to temporary duty in that department. **Dowdle**, Edward, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Fort Ontario, New York, for temporary duty, and upon completion thereof, will return to his home, and upon arrival will report by telegraph to the adjutant general of the army. **Dunbar**, Lee R., Captain, Medical Corps. Ordered to proceed to Fort Meyer, Virginia, and report to the commanding officer of that post for duty. **Fletcher**, Harry Q., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Fort Oglethorpe, Georgia, for duty. **Frick**, Euclid B., Lieutenant Colonel, Medical Corps. Ordered to proceed at once to Columbus, New Mexico, and report to the commanding officer, Southern Department, for assignment to temporary duty in that department. **Gosman**, H. R., Major, Medical Corps. Ordered to proceed at once to Columbus, New Mexico, and report to the commanding officer, Southern Department, for assignment to temporary duty in that department. **Jervey**, Allen J., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Fort Moultrie, South Carolina, for duty. **Jones**, H. W., Captain, Medical Corps. Reports departure from Fort Sam Houston, Texas, on leave for one month and twenty days; address, care of adjutant, Fort Sam Houston, Texas. **Mansfield**, Elmer E., First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service and will proceed to Fort Screven, Georgia, and report to the commanding officer for duty with the Engineer Troops in the field. **Meraux**, Louis A., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Jackson Barracks, Louisiana, for duty. **Miller**, E. W., Captain, Medical Corps. Reports departure from Brownsville, Texas, and arrival at Pharr, Texas, March 2, 1916. **Peck**, Luke B., First Lieutenant, Medical Reserve Corps. Reports departure from Fort Mead, South Dakota, for two months; address 685 Bergen Avenue, Jersey City, N. J. **Sanford**, J. L., First Lieutenant, Medical Reserve Corps. Reports departure from Fort Oglethorpe, Georgia, on one month's leave of absence on account of sickness; address Clifton Station, Va. **Thearle**, William H., Captain, Medical Corps. Ordered to report to the commanding officer, Coast Defenses of San Francisco, Cal., for temporary duty at Fort Winfield Scott, California.

The following named officers of the Medical Corps will proceed at once to Fort Sam Houston, Texas, and report to the commanding general, Southern Department, for assignment to temporary duty: Major Carroll D. Buck, Major William R. Eastman, Captain Larry B. McAfee, Captain John S. Coulter, Captain John R. Bosley, Captain Glenn I. Jones, Captain William L. Hart, Captain Clemens W. McMillan, Captain Taylor E. Darby, Captain Joseph E. Bastion, Captain Edward C. Register, Captain Robert C. Loving, Captain Charles F. Morse, Captain William A. Wickline, Captain Louis H. Hanson, Captain Ralph S. Porter, Captain George F. Juennemann, First Lieutenant Henry F. Lincoln, Medical Reserve Corps; First Lieutenant John M. Hewitt, Medical Reserve Corps; First Lieutenant Madison H. Bowman, Medical Reserve Corps.

Births, Marriages, and Deaths.

Born.

Hastings.—In Brookline, Mass., on Friday, February 25th, Dr. and Mrs. Robert W. Hastings, a daughter.

Married.

Brown—Beverly.—In Somerville, Mass., on Monday, February 28th, Dr. Samuel Ritty Brown, of Honolulu, Hawaii, and Miss Ida Gertrude Beverly. **Irish—Hartley**.—In Athens, Ohio, on Wednesday, March 1st, Dr. Cullen Irish and Miss Pauline Hartley. **Stanley—Williams**.—In Racine, Wis., on Saturday, March 4th, Dr. Court R. Stanley, of Minneapolis, Minn., and Miss Mary J. Williams. **Walthall—Taylor**.—In San Antonio, Texas, on Saturday, March 4th, Dr. Thomas J. Walthall and Miss Marjorie Taylor.

Died.

Bailey.—In Los Angeles, Cal., on Tuesday, February 29th, Dr. Charles A. Bailey, aged sixty years. **Barry**.—In Carroll, Iowa, on Thursday, March 9th, Dr. Patrick J. Barry, aged fifty years. **Betz**.—In Brooklyn, N. Y., on Sunday, March 12th, Dr. Henry Betz, aged fifty-eight years. **Blickensderfer**.—In Denver, Colo., on Saturday, March 4th, Dr. James C. Blickensderfer, aged sixty-eight years. **Blood**.—In Auburn, N. Y., on Saturday, March 11th, Dr. Nelson D. Blood, aged seventy-two years. **Bozeman**.—In New York, on Friday, March 17th, Dr. Nathan G. Bozeman, aged sixty years. **Bush**.—In Indianapolis, Ind., on Friday, March 10th, Dr. Ernan A. Bush, aged thirty-four years. **Campbell**.—In Brookline, Mass., on Thursday, March 9th, Dr. Benjamin F. Campbell, aged eighty-two years. **Cass**.—In Dresden, Ohio, on Thursday, March 9th, Dr. Edward Cass, aged eighty-six years. **Chaffee**.—In Waverly, Iowa, on Sunday, March 5th, Dr. Orlyn L. Chaffee, aged forty years. **Conyngton**.—In Decatur, Ala., on Saturday, March 4th, Dr. Enoch J. Conyngton, aged fifty-eight years. **Darwin**.—In Memphis, Tenn., on Friday, March 3d, Dr. James L. Darwin, aged fifty-six years. **Dewey**.—In Detroit, Mich., on Saturday, March 4th, Dr. B. M. Dewey, of Nashua, N. H. **Dorland**.—In Pueblo, Colo., on Wednesday, March 8th, Dr. Walter L. Dorland, aged sixty-five years. **Eldridge**.—In San Diego, Cal., on Wednesday, March 8th, Dr. Edward Fayette Eldridge, aged fifty-nine years. **Fortin**.—In Waltham, Mass., on Wednesday, March 15th, Dr. Edmund R. P. Fortin, aged fifty years. **Goodson**.—In Kansas City, Mo., on Tuesday, March 7th, Dr. Jesse N. Goodson, aged sixty-nine years. **Harris**.—In Carson, Wash., on Sunday, March 5th, Dr. Oscar V. Harris. **Hill**.—In Lyons, Neb., on Wednesday, March 1st, Dr. Allen T. Hill. **Himmelwright**.—In Philadelphia, on Tuesday, March 7th, Dr. Francis E. Himmelwright, aged seventy years. **Hutton**.—In Valley Falls, N. Y., on Tuesday, March 7th, Dr. Matthew B. Hutton, aged sixty-two years. **Jacoby**.—In Agricola, Va., on Tuesday, March 7th, Dr. Frederick Jacoby, of Columbus, Ohio, aged eighty-six years. **Krauss**.—In Trenton, N. J., on Thursday, March 16th, Dr. Gustav Adolph Krauss, of Jersey City. **McNeil**.—In Whiteville, N. C., on Saturday, March 11th, Dr. J. A. McNeil, aged sixty-five years. **Matthias**.—In McComb, Ohio, on Monday, March 6th, Dr. Albert C. Matthias, aged seventy-two years. **Mersfelder**.—In Dover, Ohio, on Tuesday, March 7th, Dr. Frederick H. Mersfelder. **Moore**.—In Brooklyn, N. Y., on Sunday, March 12th, Dr. Julius Henry Moore, aged seventy-eight years. **Nellis**.—In Utica, N. Y., on Wednesday, March 8th, Dr. Irving O. Nellis, aged sixty years. **Patten**.—In Mineola, Texas, on Tuesday, March 7th, Dr. Alfred Patten, aged sixty-nine years. **Pfau**.—In Cincinnati, Ohio, on Wednesday, March 8th, Dr. Antoinette C. Pfau, aged sixty-six years. **Pfefferkorn**.—In Lawrence, Mass., on Wednesday, March 8th, Dr. Ferdinand C. L. Pfefferkorn, aged seventy-five years. **Porter**.—In Shousetown, Pa., on Wednesday, March 8th, Dr. Elias Porter, aged seventy-six years. **Southard**.—In Jonesville, S. C., on Tuesday, March 7th, Dr. W. O. Southard, aged sixty-five years. **Specht**.—In Minneapolis, Minn., on Wednesday, March 8th, Dr. John Specht, of Superior, Wis., aged fifty-four years. **Temple**.—In Marshallton, Pa., on Thursday, March 9th, Dr. John R. Temple, aged eighty-eight years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal ^{and} The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 14.

NEW YORK, APRIL 1, 1916.

WHOLE No. 1948.

Original Communications.

OUR DUTY TO MENTAL DEFECTIVES OF THE PRESENT GENERATION.*

By C. E. DE M. SAJOUS, M. D., LL. D., Sc. D.,
Philadelphia.

Eugenics, as we know, aims to improve mankind through heredity. The breeding of horses, chickens, corn, wheat, cotton, and many other animals and plants have been reduced to a science and found very fertile in results, the experiment is being carried out on the human race. Nature had long tried the process by instilling in each sex the love of beauty, strength, and efficiency, but Man promptly vitiated the whole plan by propagating or introducing unexpected factors in the shape of venereal diseases, alcohol, narcotics, etc. He thus shifted the biological make-up of his offspring in a direction quite other than that intended by Nature. Inasmuch as "like begets like" and our ancestry is represented by thousands of generations, it is probable that not one of us has escaped the effects of parental sins. Four or five generations or thereabout are usually taken as basis of study when the inheritance of family traits is in question, but in practice we meet surprising examples of this recrudescence of a remote taint, a defective infant dropping out of a clear sky, as it were, into the lap of a family whose pedigree, as far back as it can be traced, seems free of all blemish.

This cannot but suggest that man-breeding, owing to the multiplicity of morbid factors which have compromised the human germ plasma throughout time immemorial, will not prove as rapidly productive of results as the breeding of lower animals and plants. The very mass of humanity it is the praiseworthy purpose of the eugenists to improve, will require a long time to be influenced to any material degree. Even the laws that have been passed in several States forbidding marriage to those deemed unfit for parenthood, will not hasten matters; they will ultimately be found to increase clandestine unions, common law marriages, the number of illegitimate children, and worse than all, the proportion of foundlings. They will thus, by breeding antagonism, defeat the aims of those who advised such legislation. All European experience proves that any impediment to marriage, even such trivial factors as official red tape, tends to promote immoral conditions, not only such as those just mentioned, but others in which unbridled lust is given

full sway. Such laws first will fail to be strictly enforced, and will then be shelved, along with the multitudes of other ill advised measures with which our statute books are laden.

The sterilization laws passed in fourteen States are already beginning to meet their well deserved doom. Repealed in one State, they are either scarcely enforced in some or purposely overlooked in others. Institutional segregation with separation of sexes, will alone deal fairly with these unfortunates (since they are happy in well organized institutions) and check reproduction in at least the small proportion of defectives that are amenable to this measure. We must not, however, overlook the fact that the vast field constituted by the higher grade defectives, who drift readily into criminality, the backward children of our schools, etc., are far more numerous than these individuals who may be segregated, and quite beyond State support.

Again, as I have urged editorially in the NEW YORK MEDICAL JOURNAL, dissenters from the tenets of eugenists are not infrequent among those who habitually consider all sides of a subject, particularly when hardships are to be inflicted upon human society, good as the motive may be. These urge that sickly offspring from sound parents, and sound children from ailing parents, are not uncommon; that genius is not incompatible with certain affections or parental old age—witness the Darwin and many other family records; that a neuropathic offspring by no means always results from a union in which one of the parents suffered from a neurosis; that many who at one time suffered from diseases now under the ban in many States and had been cured, had procreated normal children; that several of these diseases are increasingly yielding to our therapeutic measures, etc. On the whole, the horizon seems clearly to indicate that, as with all great movements, eugenics will have to undergo a prolonged period of developmental experience.

It has been estimated that several centuries would elapse before the efforts of eugenists proved fruitful to any material degree. Doctor Kehoe, superintendent of the Kentucky Institution for Feeble Minded Children, estimates that four hundred years will be consumed before statistics show much progress. While this estimate is probably too high, the fact remains that several generations will have passed before any serious advance is made. What this would mean may be illustrated by a few statistical figures. Dr. M. W. Barr, of Elwyn, states that there are 350,000 *avowed* mental defectives in the United States, and that 328,000 of these are at large "perpetuating unrestrained the defilement of the

*Address read by invitation before the New York Polyclinic Clinical Society, February 7, 1916.

race." The Russell Sage Foundation has shown, moreover, basing its estimate on a study of the schools of thirty-one American cities, that over one fifth of all the children in the public schools of the United States belong to the retarded class—to say nothing of those who do not attend school. Again, in practically every phase of physical degeneracy, from one cause or another, we are forced to recognize a more or less serious increase. So marked, indeed, in some directions is this increment, that we cannot but agree with Doctor Kehoe when he states that the time is not far off when "to see an individual of natural poise, normal mind, and healthy body will be the exception and not the rule."

The steady increase applies also to cases of dementia præcox, a disease which strikes later in life, i. e., adolescents of both sexes. These young subjects are committed to asylums in this country alone at the rate of about 20,000 a year. Their accumulation is such in the institutions for the insane of forty-eight States, that in 1900, when the last census was taken, about 120,000, over one half of the total inmates were cases of dementia præcox. All these poor beings are merely stored at present—buried as it were—with death as their only redeemer.

How could this evil be stemmed? How could we, physicians, while supporting the praiseworthy effort of the eugenist on behalf of the child of the future, *protect the child of today, and the unborn but doomed of tomorrow*, for whose welfare we are, more than any one else in the world, responsible? We know that soon after birth, one year, two years at most, the erstwhile plastic material of which the organ of mind is composed, will have been moulded into its permanent shape, that of the feeble-minded; we know also that puberty may so disturb the psychic equipoise as to transform an erstwhile bright child into an asylum inmate. How could we relieve our generation of fetters so harmful to its development, so prolific in suffering for innocent victims of the "iniquity of the fathers" visited "upon the children unto the third and fourth generation"? A searching study of the subject has imposed upon me the conclusion that we have means for the salvation of a large proportion of the infants of our day from feeble-mindedness and of many children doomed to precocious insanity through an adequate conception of the meaning of the ductless glands in the morbid process. I do not hesitate to state, moreover, that we have in the functional disorders of these organs the underlying cause of several of the most common mental diseases, and that it is because these glandular disorders are virtually overlooked in the pathogenesis of many psychoses, that we can still read in textbooks concerning such ubiquitous conditions as mania and melancholia, for example: "As is true of mania, there is also no known pathological anatomy for melancholia. It is a functional nutritional disorder of the brain, a diminished or perverted metabolism, supposed theoretically to rest upon a cerebral anemia, or, possibly, an autotoxemia." The painstaking labors of innumerable psychiatrists during the last sixty years would not have remained so sterile of results in this direction had some basic factor not been missing.

Referring my readers to more elaborate articles in the NEW YORK MEDICAL JOURNAL on the subject, I will submit a few examples of the intimate connection between the ductless glands and insanity in its various forms, including idiocy, with the functions I have attributed to these organs as foundation. It is now thirteen years since I urged that the adrenals took part in metabolism and in the general autoprotective process. We know that in Addison's disease, in which organic lesions of the adrenals predominate, we may have melancholia and, when the autotoxemia is marked, mania. Where, as in anencephaly, little or no psychic activity prevails, the adrenals are correspondingly defective in development. In various types of delayed mentality, Kastan found considerable diminution of adrenaline in the blood. In 1903, I pointed out also, on the basis of methylene blue injections that the adrenaline secretion circulated in the nerves, including the cortical neurons. Five years later, Lichwitz also found that adrenaline circulated in nerves, while at the last International Congress, A. B. Macallum referred to experiments which pointed in the same direction. The importance of this discovery asserts itself when, with me, the adrenal product is looked upon as the carrier of oxygen to the tissues—the very life, in the present connection, of the cerebral neurons.

The thyroid apparatus is no less a participant in psychic pathology. I have long urged also that the thyroid cooperates with the adrenals in carrying on metabolism and in protecting the body at large against intoxication. Among the many facts indicating its connection with oxidation and metabolism, which no one doubts today, may be mentioned the observation of Andriezen that in myxedema, the power of the blood to take up oxygen from the air is diminished, both the intake of oxygen and the output of carbonic acid being reduced. As to the antitoxic power, my view that the thyroparathyroid secretion acted as do opsonins, has been confirmed in Europe by Fassin, Marbé, and others. We thus have the two features of melancholia and mania that psychiatrists have long recognized, but have been unable to trace to their source. Indeed, the two striking mental disorders witnessed in deficiency of the thyroid apparatus are precisely melancholia and mania, in addition to the idiocy of myxedema in children, cretinism.

Disorders of the pituitary also give rise to psychoses. As stated by Cushing, referring to his cases and quite in accord with my own observations, "one form or another of psychic irregularities have manifested themselves in the larger number of the patients." Whether we grant that this organ produces a secretion, or accept my own view that it coordinates the functions of the other ductless glands through the sympathetic system, does not modify the fact that it also controls metabolism. Here again we meet psychasthenic states of a melancholic type sometimes attended by delusions of persecution, convulsions, etc., all due to defective destruction of tissue wastes.

The thymus is so important an organ in this connection that it may be said to stand, in respect to idiocy and dementia præcox, as the thyroid does to myxedema and cretinism. It is the gland upon

which from my viewpoint, the brain cells depend for their developmental supply of phosphorus-laden nucleins; if it fails, through organic disease, defective development or premature involution, to furnish its product, the organ of mind remains undeveloped and idiocy results. So evident is this connection that Bourneville found the thymus absent in twenty-eight idiotic children examined post mortem, while the organ was found normal in sixty-one children of normal mentality who had died of various diseases. Clear evidences of idiocy are also obtained in animals deprived early of the thymus.

Much the same process prevails in dementia præcox—owing primarily, from my viewpoint, to inhibition of the thymus too early at puberty, i. e., before the completion of the development of the brain. The thymus being also a participant in the antitoxic processes of the body, with the thyroid and adrenals, its untimely deficiency entails likewise the accumulation of toxics which produce the morbid mental phenomena. Kraepelin, Tyson and Pierce Clark, Benedik and Deak, Laignel-Lavastine, and others have held that the disease was of toxic origin—again, however, without accounting for the process.

Even the pineal gland has imposed itself upon the psychic field, a teratoma of this organ having caused, in a five year old child whose case was reported by Fränkl-Hochwart, so rapid a mental development that he reasoned as would a young man with a predilection for ethical and philosophical questions. Another boy of four years, observed by Ostreich-Slavyk, also showed extraordinary wisdom. Indeed, so remarkable are the evidences of psychic development when this little organ is hypertrophied or the seat of a tumor, that one wonders whether the great Swiss philosopher and physician, Haller, who, before he had reached his tenth year, had written a Chaldee grammar, a Greek and Hebrew vocabulary, and a large collection of Latin verses and biographies—was not, after all, the happy possessor of a tumor of the pineal gland!

This brief survey affords an idea of the intimate functional relationship between the principal ductless glands and mental disorders. In the two forms to which this paper is limited, functional idiocy and dementia præcox, the ductless glands are not only the determining factors, but are also those through which our profession can, I believe, prevent the development of at least a large proportion of such cases. The two disorders mentioned stand, as it were, at opposite ends of the developmental scale so far as the ductless glands are concerned, idiocy being initiated at the beginning of life, while dementia præcox appears at puberty.

Idiocy here is meant to include the various degrees of this condition, ranging from idiocy proper to the highest type of the backward child in our schools. Of course, as in insanity in general, we must recognize two great classes, the organic, in which traumatism, hemorrhage, gummatas, etc., have caused more or less localized lesions of brain tissue, and compromised psychic functions; and the functional, in which no organic lesions are present to account for the mental defect. It is in this functional type that heredity finds its greatest field. An

important fact in its relation to heredity (and which seems to me to open a vast field for prophylactic measures in view of the defensive functions I have attributed to a joint action of the major ductless glands) is that the main causal agents traceable back, through family records, to their original source, belong to the category of intoxications. Of the neuroses, for example, epilepsy is the most prominent as etiological factor. L. Pierce Clark, whose vast experience in the study of this disease is well known, states that "the two predominating lines of advance in recent years are the hereditaryness of the disease, and disorders of metabolism due to perversion of the internal secretions of the ductless glands"—precisely what I had pointed out five years earlier. Indeed, Claude and Schmiedergeld had found modifications of structure in the ductless glands in all of seventeen cases examined post mortem. Even the cortical and subcortical instability, through which the toxic brings on the convulsions by raising the blood pressure, as shown by Spitzka, is traceable back to some ancestral toxemia in the form of alcoholism, migraine, gout, lead poisoning, and infectious disease, which all, we know now, impair the functional activity of the ductless glands, either by provoking organic lesions in them or in their nervous supply or exhausting them functionally. Syphilis has been shown to do so by Fournier, Lacaze, Sirena, Furst, Gulecke, Marfan, and others. Tuberculosis is a notorious offender in this connection, Addison's disease, in fact, being in most instances due to tuberculosis of the adrenals; but, as Rénon states, all the ductless glands, the thyroid, adrenals, pituitary, etc., are the seat of degenerative changes. Rheumatism is so frequently accompanied by disorders of the thyroid that the connection is now generally recognized. Alcohol, lead, and other poisons are obvious excitants of the ductless glands when we grant these organs the protective functions which belong to them. These few examples could be multiplied almost indefinitely. They will suffice, however, to show how exposed are these organs to functional deterioration by the very pathogenic factors to which idiocy has been traced.

How can so many different diseases awaken what amounts on the whole to a single condition of various forms and degrees of mental deficiency? The answer is briefly that *any disease capable of injuring the ductless glands sufficiently to inhibit their functional activity impairs correspondingly the development and functional activity of the brain, by reducing the supply of secretions this organ requires to carry on these physiological processes.* We have seen that the adrenal secretion circulates in the nerve cell and the neuron; the thyroid being necessary to cooperate with the adrenal secretion to carry on oxidation and the thymus supplying the nucleins which are oxidized, it is plain that deficiency of these glandular products must entail deficient nutrition of the cerebral cells and a correspondingly defective mental power.

There is thus a solid foundation for my belief that what in reality a mentally defective child inherits from his parents and ancestry is, 1, a tendency to defective physiological nutrition and development of his cerebral neurons; 2, inability to break down

adequately various endogenous toxics capable of awakening active psychical disorders; and, 3, that both these morbid conditions are traceable back to the degenerative disorders caused in the ductless glands of parents or ancestors by the diseases and intoxications known to lead to the genesis of mentally defective offspring. Briefly, *the main underlying cause of defective mentality in both parent and offspring is inherited deficient activity of the ductless glands.*

Under these conditions, a pregnant defective fails to supply her fetus with the ductless gland secretions it requires. If the father is also a defective, we know that the product of conception, when developed, will prove to be a defective. Why permit this? Why seal the child's fate through inactivity? I believe that with what knowledge we have of the ductless glands even at the present time, *we should start a campaign having in view the salvation of these unfortunate infants by supplying, through the intermediary of their defective mothers, and, after birth, through their food, the secretions they lack to complete their development.* This could be accomplished by administering organic products to the mother during pregnancy and while she is nursing her infant, or, if as is the rule, the latter is fed artificially, by the addition of the organic products to the cow's or goat's milk used. On what ground could we hope to benefit the child by these measures?

The fact that the ductless glands play an important role during pregnancy is so well known that a brief summary of some of the evidence is all that will be submitted. As to the pituitary, it was found to be overactive during pregnancy by Comte, Launois and Mulon, and others. Swale Vincent states in fact that it may enlarge to two or three times its normal size. The thyroid is so active also that its enlargement is often noticeable—108 times in 133 cases of pregnancy studied by Lang. If deficiency of the thyroid is present, convulsions occur, but these may be arrested by administering thyroid gland, a fact observed by Verstraeten and Vanderlinden, Nicholson, and others. This applies also to the parathyroids, as shown by Zangrognini, Ernheim, Thaler, and Adler. The adrenals are also known to be enlarged and overactive. Neu, moreover, found that the proportion of adrenaline in the blood corresponded quantitatively with the activity of the gestative process including the period of pregnancy. As regards the thymus, it is known to take an active part in the development of the genital organs and, in certain animals, undergoes resolution only when this process is accomplished.

As to the effects on the child of defective maternal glands, the salient feature to be apprehended is that *in the majority of functional cases of feeble-minded and backward children met in current practice, the predominating pathogenic factor is hypothyroidism*, though deficiency of other internal secretions is also discernible in most instances. The far reaching meaning of this fact—beside the opportunity it offers for timely prophylactic measures—may be instanced by the statement of Hertoghe that “where the mother, for instance, has at her disposal a sufficient store of thyroid secretion, the child does well, whereas if there is thyroid insufficiency,

especially if there is a history of inherited disease, alcoholism, etc., the child will probably be a myxedematous cretin. . . . Should the maternal taint be slight, the child will be merely very backward.” Again, “the weakness of the thyroid gland is usually hereditary and it is rare that one does not find traces of milder defect among the ascending, descending, or collateral relations of a person suffering from well marked myxedema.” This remark of Hertoghe's recalls that in my own practice I have treated for hypothyroidia three patients, brother, sister, and daughter of the former, and that the same family includes another brother who suffers from Fröhlich's disease. Yet it is not only the thyroid gland which is capable of promoting, when given to the mother, the development, physical and psychical, of her offspring; other glands, including the pituitary do likewise. The feeding of anterior lobe of the pituitary to parent rats was found by Goetsch recently, in the course of an experimental study of growth and sexual development, to exert its stimulating influence on the offspring in intrauterine life and during lactation. When the feeding to the young was continued after weaning, it was found to have even a greater effect upon growth, weight, and development.

On the whole, the intimate relationship between the ductless glands and everything that concerns reproduction, the greater relative size of these organs in the product of conception, and the teachings of practical experience in organotherapy, all tend to indicate that *whenever the father or mother is a mental defective, or both parents show any sign of deficient activity of one or more ductless glands, or are mental defectives, organotherapy should be instituted as soon as pregnancy is recognized.*

To determine the course of treatment indicated, the main stigmata of deficiency of each of the major ductless glands should be ascertained. In most cases the signs of deficiency of one of the glands predominate, and such being the case, the use of that gland therapeutically as dominant constituent of the combination employed, will procure the best results. These main signs are as follows:

Stigmata of thyroid deficiency. 1. Subnormal temperature, cold extremities due to defective oxidation and metabolism, the thyroid collaborating actively with the adrenals and thymus (before puberty only as to the latter gland) in sustaining this process. Tendency to obesity.

2. A doughy dry skin, with at times cervical or axillary fat pads due to plasmatic infiltration and circulatory torpor; also in very marked cases, scaly skin and dry brittle hair and nails due to deficient nutrition of these structures.

3. Mental torpor or deficiency where true thyroid stigmata are discernible, complete development of the brain requiring perfect coordination of the thyroid, adrenal, and thymic functions.

Stigmata of thymus deficiency. 1. Deficient development of the osseous system with defective development of epiphyses and deformities suggesting rickets or osteomalacia, due to deficient assimilation of calcium owing to the deficiency of thymic nucleins which take part in the building up of calcium phosphate; undersized stature.

2. Deficient mental development due to the in-

sufficient production of thymic nucleins to supply the neurons of the central nervous system during its development.

3. A low relative lymphocyte count due to the inadequate formation of these cells by the thymus.

Stigmata of adrenal deficiency. 1. Muscular weakness and emaciation, pallor, deficient hair growth, sensitiveness to cold, subnormal temperature, all due to deficient tissue oxidation and recession of the blood mass into the splanchnic area.

2. Weak heart action and pulse, low blood pressure, and constipation due to deficient peristalsis, the result in turn of torpor of the intestinal muscular layer.

3. Pigmentation, sometimes limited to bronze areas on the back of the hands, and freckles.

4. Mental torpor, slow intellection or even idiocy where the adrenal deficiency is initiated *in utero*.

The stigmata of pituitary deficiency are shown mainly by cases, including some reported by Fröhlich, Fränkl-Hochwart, and Cushing, and also my own, in which destructive tumors or injury of the organ impaired its functional activity. The list given below does not include the symptoms due to pressure on neighboring structures, such as headache, hemianopsia, optic atrophy, etc. From my viewpoint, the symptoms of hypopituitarism are not due to deficiency of a secretion, but to inadequate activity of the thyroid, adrenals, and thymus, the result, in turn, of vascular dilatation and circulatory torpor in these organs the circulation of which is co-ordinated by the posterior or neural lobe of the pituitary, as sympathetic centre. Hypopituitarism thus becomes the expression of pluriglandular deficiency, but mild in type, as a rule, death in such cases being due to the lesions caused by the growth in the neighboring cerebral structures. The stigmata in a case of hypopituitarism are as follows:

1. Subnormal temperature; low blood pressure; pigmentation (symptoms of deficient activity of the adrenal medulla); muscular weakness and scanty hair growth; also in a preadolescent case, undeveloped or infantile genital organs (symptoms of deficient activity of the adrenal cortex).

2. Tendency to adiposis; smoothness, but in some cases roughness and dryness of the skin (symptoms of deficient activity of the thyroid).

3. Undersized growth owing to deficient skeletal development and imperfect ossification of the epiphyses (symptoms in a preadolescent cases of deficient activity of the thymus).

The pregnant mother having been carefully treated organotherapeutically according to the stigmata she presents, the infant will be supplied *in utero* with the secretions required to build up, not only its nervous elements, but also its osseous, muscular, cardiovascular, cutaneous, and other systems. It will also be prepared to develop normally after birth, provided that the treatment is continued. This may be done, as previously stated, either through the maternal milk or, if the infant is fed artificially, by adding the organic agents to its milk.

The milk of a normal woman does more than feed her suckling; it is now known to protect the infant against infection by means of ferments which correspond, in their physicochemical properties,

with those of the ductless glands found in the blood and in the phagocytes. In a mentally defective woman, however, the probability (shown by autopsies) that one or more glands may be defective, gives her milk a doubtful character; hence the need of continuing the use of organic products. Cow's milk contains all the defensive ferments referred to, but unless it can be administered absolutely fresh, its defensive properties disappear. Cow's or goat's milk fed to the infant immediately after being drawn from the udder, and not pasteurized—since this measure destroys some of the ferments—will alone sustain the effects of the treatment begun *in utero*. Even under these conditions, however, the use of organic products in the milk is advisable, the tendency of all children thus treated being to recede, at least until their own organs themselves acquire sufficient power to carry on their functions normally.

The thousands of purely functional defectives which the country contains, as we have seen, are not, judging from personal cases, the children of parents in whom, in most instances, clearly defined stigmata can be discerned. This means that any infant may become a defective unless its development is closely watched by the attending physician. At the present time, the evil trend is discovered too late to save the child's mind. Were every infant closely watched from birth, and its development, physical and mental, compared with that of a normal child (standard tables being available in most works on pediatrics), timely treatment could be instituted and a large proportion of them be redeemed. In addition to the use of organic products indicated by the stigmata discovered, the special senses should be cultivated, external impressions being all important factors in psychic development. It should be remembered also that disorders of eyes, ears, nose, and nasopharynx may be the underlying cause of defective mental development in infants.

By the phrase "purely functional defectives" I mean infants in whom the ductless glands though congenitally debilitated, are not the seat of organic lesions, and in whom also the cerebral tissues, though undeveloped, are susceptible to development through organotherapy. Unfortunately, as is well known, a large proportion of idiots post mortem show lesions of the brain, such as sclerosis, atrophy, softening, etc., which no longer are cultivable soils. Yet, distinct improvement is often obtainable, even in such cases. This is because the degenerated areas are seldom bilateral and the corresponding areas on the opposite side of the brain can thus be made, through improved nutrition and oxidation, to compensate, to a remarkable extent sometimes, for the shortcomings of the functionless areas. Even these lesions are sometimes subject to improvement, Cattani, Klebs, and others having shown that regeneration occurs occasionally when the lesions are comparatively slight and of recent formation.

Organic lesions of the ductless glands of the infant may also complicate the situation. Both these and the brain lesions may be caused by an accumulation of toxic wastes during pregnancy—the same intermediate wastes which cause nephritis and puerperal convulsions. The intense vascular tension

awakened gives rise to hemorrhagic foci in the brain and ductless glands, with resulting impairment of both the organ of mind and of the glands which sustain its nutrition and development. This emphasizes anew, the commanding importance of the advice of obstetricians, to watch the kidneys closely during pregnancy. The most frequent sources of lesions of the ductless glands, however, are the diseases of childhood. It is but a few years since some textbooks of practice condemned precautions to avoid measles on the plea that the sooner it was over with, the better for the child! But we know today how pernicious was such advice. Not a small proportion of the cases of idiocy we meet, date from some children's disease during which hemorrhage into the ductless glands compromised their functional integrity sufficiently to arrest cerebral development. Here again, however, pessimism as to results is not warranted if the child is seen early enough. A characteristic feature of the ductless glands is their tendency to hypertrophy when the normal glandular tissue left after local lesions is sufficient to carry on their functions. One eleventh of the adrenals is sufficient to insure this and one fifth of the thyroid also, provided that the parathyroids are unharmed. If, however, what remains of the ductless glands of the child is not sufficient to sustain adequately general nutrition and brain development, organotherapy will serve to compensate for the glandular deficiency. We recognize these cases by the fact that they soon recede after distinct improvement, as soon as the remedy is stopped, and resume progress when the treatment is restored. But perseverance elicits the fact that smaller doses will meet the needs of the case after a time—evidence that the ductless glands themselves are increasingly meeting the demands of the organism. If the little patient is young enough, the time may even come when no treatment will be required.

Of the organic agents indicated in these cases, my preference has been so far for the desiccated gland in powder form. Experience has shown that where simplicity prevails in the use of these agents, the patients tend better to persist in their use. Again, powdered glands of a different kind can be conveniently combined and given to adults in capsules or mixed with the milk given to infants, unless they are breast fed, when the gland is administered to the mother, her milk, as we have seen, transferring the remedy to the suckling. In some instances, the unpleasant taste given to the milk causes the child to refuse it; then a fluid preparation may be used when such is available.

In cases of maternal hypothyroidism, one grain of desiccated thyroid gland may be given three times a day. For infants the dose must, of course, vary with the age of the little patient; one twelfth grain is a suitable dose for an infant one month old; this may be increased by the same quantity for each month; a two months old infant being given one sixteenth grain, etc. As a rule, a year old baby stands one grain daily without trouble. Adrenal gland may be given to adults in whom adrenal stigmata are present, in two grain doses, gradually increased to five grains, unless constipation follows its use. For the infants of such subjects, pituitrin—a liquid ex-

tract of the infundibular portion of the pituitary—in drop doses in the milk to begin with, and increased as required, is more effective than any preparation of the adrenals. Thymus gland may be given in from five to fifteen grain doses to the mother, and one grain doses to the infant, gradually increased to the point of tolerance. The compound syrup of hypophosphites is helpful when given with thymus gland. Often, a combination of these agents will hasten improvement. All cases in which organotherapy is resorted to must be watched closely to obviate untoward effects. The doses must be adjusted to each case, susceptibilities to organic agents, notably thyroid, varying considerably.

The last subject we shall consider is the prophylactic treatment of dementia præcox. I have so recently described the intimate connection between this disease and the ductless glands that I will merely recall the conclusions reached, referring the reader to the article mentioned for details.

Dementia præcox is primarily due from my viewpoint, as previously stated, to inhibition of the thymus before the physicochemical development of the brain has been completed. The metabolism of the cerebral cells being deficient owing to the inadequate supply of nucleins resulting from the untimely arrest of thymic functions, the development of the brain is inhibited. The stigmata of this morbid process are plainly shown by the symptomatology of the earlier or simple forms of the disease, viz., the depression and exhaustion, the readily fatigued mind or inability to labor mentally, the loss of will power, memory, and judgment, the early confusion hypochondriasis, the dilated pupils, etc., shown by the boy or young girl, the periods of low temperature and low blood pressure, sometimes to the point of cyanosis, the feeble pulse, the anorexia notwithstanding a possible increase in weight (due to slowed catabolism), the slow eliminative processes with foul tongue, the asthenia, the leucopenia, etc. These signs are closely those of deficient, slowed, or at least perverted metabolism. Thymus gland would doubtless prove prophylactic here, since developed cases, when not too far advanced, yield to this remedy, and others to thyroid gland. As this article is restricted to prophylaxis, the catatonic stage will not be entered into.

Summarizing all the foregoing statements, I would submit the following conclusions:

1. Eugenics, which aims to improve the human race, and to inhibit the propagation of mental defects through heredity, cannot attain its object before several generations.
2. In the meantime, the already enormous number of mental defectives will steadily increase, unless some other preventive measure is found to control it.
3. The ductless glands, owing to their controlling influence over nutrition and development of the body, including the brain, supply the means to this end in respect to the mental defectives represented by the various grades of idiocy and dementia præcox.
4. The mental and physical status of all pregnant women as regards the functional efficiency of their ductless glands, which may be determined by the

stigmata of deficiency of these organs, should invariably be established. If found deficient, organotherapy should be used to protect them against renal disorders and convulsions through toxemia, and also their offspring against imperfect development and mental deficiency.

5. The development of all infants should be closely watched by the family physician, particularly if the family history is tainted, the physical and mental growth being compared with that required by normal standards. Any departure from the latter should be the signal for a careful examination of the organs of special sense of the child, the manner in which it is fed, etc., and if its condition cannot be accounted for through these factors and removed, organotherapy should be instituted. The latter is always indicated when either parent is a mental defective.

6. Twenty thousand cases of dementia præcox are committed to insane asylums each year. If all general practitioners familiarized themselves with the early symptoms of these cases, they could by means of organotherapy, arrest the morbid process in at least a large proportion of them.

In closing, I wish to state that all this can be considered only as the initial step in an effort to overcome a deplorable situation. Even though the foundation is of the strongest and sustained by data which could be multiplied many times, it is only by cooperative work that great results can be attained. Were the 100,000 general practitioners of our country to make up their minds to check the appalling sacrifice of young minds that is going on yearly, they could easily do it in very few years and confer a blessing upon the world at large by creating an example which other countries would undoubtedly soon follow.

2043 WALNUT STREET.

COLON BACILLUS INFECTION OF THE BLADDER.*

By ROBERT T. MORRIS, M. D.,
New York,

Professor of Surgery, Post-Graduate Medical School.

Some years ago a man about thirty years of age came under my care, with symptoms believed to be those of tuberculosis of the bladder. Tubercle bacilli were not found in the urine, but we did not employ the centrifugal process at that time, nor did we commonly look for colon bacilli in the urine.

In this case there was a ragged ulcer occupying the posterior wall of the bladder cephalad from the trigone. Through a suprapubic incision I curetted this ulcer, packed the bladder from above with iodoform gauze, and the patient eventually recovered and became a strong and well man. It was my opinion that we had cured him of tuberculosis of the bladder.

Four or five years later, a young man was sent to me with a case of tuberculosis of the bladder and urethra. At that time I was using the old Leiter cystoscope and obtained only a dim picture of what

appeared to be an ulcerated area in the region of the trigone. In this case also tubercle bacilli were not found, but the laboratory reported the presence of many bacteria, including some of the colon bacillus type. The record has been mislaid. This patient recovered under treatment aimed at his cystitis. It was presumably a case of colon bacillus infection, and when compared with the first case quoted, led me to feel that we sometimes mistook *Bacillus coli* cystitis for tuberculosis. Since that time I have had a systematic search made for *Bacillus coli* in many cases of cystitis of obscure origin, but have not seen another one in which actual ulceration of the bladder wall occurred.

Hess, however (*Mittheil. a. d. Grenzgeb. d. Med. u. Chir.*, 1913), describes a series of experiments in which he injected cultures of the colon bacillus into the bladders of rabbits, and in one rabbit a necrotic focus with ulcerated margins was found to extend through the mucosa to the muscular coat of the bladder. Ordinarily we assume that colon bacillus infection of the bladder stops short of actual ulcer formation. Hess showed that the colon bacillus is sometimes pyogenic, although Baumgarten was convinced that the colon bacillus could not primarily cause suppuration. This dispute perhaps may be due to the fact that different races, species, or varieties of the colon bacillus may not follow the life history of the original *Bacillus coli* of Escherich. It is known that *Bacillus paracoli* causes pus formation of virulent character in the urinary organs.

In the experiments of Hess, who injected colon bacillus cultures into the bladders of rabbits, many leucocytes and a few red cells, together with some bladder epithelium, were voided, and the bacillus persisted for a long time. When the rabbits were killed however, some weeks later, no naked eye changes were present in most of the cases, and the microscopic changes were superficial (leucocyte formation and epithelial desquamation). The colon bacillus in pure culture, together with microscopic suppuration, was found in the bladders of rabbits killed soon after injection. It is probable that bacteriologists must make a more elaborate report upon the particular type of colon bacillus found in any given case.

Wulff (*Centralblatt für Bakteriologie*, 1912) raises the question if other bacilli may sometimes assume the coli form, and this question is brought before us more acutely by our knowledge of the recent work of Rosenow, who obtained wide range in morphological forms of *Streptococcus viridans*. Wulff, by means of varying culture media, made five groups of colon bacilli, comprising seventy-eight forms.

This same author (*Zeitschrift für Urologie*, 1913) describes the case of a boy nine years of age with urinary retention, albumin, pus, and colon bacilli in the urine, who made no response to vaccine treatment, and who was finally relieved by means of a suprapubic fistula.

Uncertain action of vaccines in cases of colon bacillus infection may relate to a wide difference in the toxic output of bacilli that are closely related. If a botanist cannot distinguish a bitter almond tree

*Read at the meeting of the Section in Genitourinary Surgery, at the Academy of Medicine, Wednesday, February 16, 1916.

from a sweet almond tree, excepting by the fruit of the one which stores up prussic acid to a degree highly poisonous, we may readily understand that lower organisms which are simple and much alike morphologically, but highly organized chemically, may give widely different products from their internal chemistry.

Birk (*Münchener med. Wochenschrift*, 1912), citing a number of case histories of chronic relapsing pyelitis in childhood due to the colon bacillus, believes that the cystitis is secondary to the pyelitis. His belief may have been based upon the fact that we so seldom find changes in the bladder which may be recognized through a cystoscope in cases in which colon bacillus invasion of the bladder was really primary.

In the experiments of Hess it was found that the kidney pelvis usually became involved with colon bacillus infection of the bladder, and that changes in the kidney pelvis were much more marked than the changes in the bladder, although direct extension from the bladder to the kidney pelvis was proved by examination of ureters.

Among odd effects of colon bacillus infection of the bladder, Schönberg (*Frankfurter Zeitschrift für Pathologie*, 1913) reported emphysematous cystitis as being sometimes due to bacilli of the colon group, with purulent cystitis and extensive hemorrhage as symptoms. This author states that a number of cases were recorded in which bacilli of the colon group have formed gas, as in gas phlegmons elsewhere in the body. He decides that members of the colon bacillus group may sometimes cause emphysematous cystitis, but it is possible that capsulated anaerobes associated with the colon bacillus may have been overlooked.

In many of our cases of colon bacillus invasion of the bladder, the presence of this bacillus is entirely unsuspected. The reason for that is because until recently bacteriologists did not systematically look for the colon bacillus in the urine. A little different technic outside of the routine was required for bringing out bacilli of this group. The route by which the colon bacillus enters the bladder is perhaps a question of small importance so far as the actual cystitis is concerned. We know that in many cases of gastroenteric disturbance living colon bacilli are excreted by the kidneys in large quantity, and these may persist in a bacilluria of intractable form until the gastroenteric focus has been eliminated.

Kodarna and Krasnogorski (*Zentralblatt für Bakteriologie*, 1913), in a study of colicystitis, state that *Bacillus coli* in pure culture cases, particularly in children, may cause obstinate and chronic relapsing inflammation of the bladder. They state that the chronic colicystitis leads to disturbances of nutrition which resist all nutritional therapeutics. It is my own feeling that the matter may sometimes be stated the other way, and that the colon bacilli are found in the bladder, arriving by way of the kidney, because of nutritional disturbances.

In other cases there is undoubtedly direct ascending infection by way of the urethra, particularly in women with colon bacillus invasion of the vagina,

a condition which occurs much oftener than some diagnosticians suspect, and a common cause for sterility because the highly acid vaginal secretion destroys spermatozoa.

The question of allergy enters into some of these cases. We may fairly assume that one patient makes more decided response to the influence of the colon bacillus than does another patient, because the first one happens to be sensitized. This point must be taken under consideration by therapeutists of tomorrow. Another question to be taken under consideration by therapeutists of tomorrow, is the relative resistance of one patient over another in relation to colon bacillus influence, along lines of natural defense. This thought comes to mind because of one of my patients, a girl with nocturnal enuresis, who had colon bacilli in the bladder, and highly acid urine believed to be due to their presence. She made no response to treatment aimed at the colon bacillus until symptoms of hypothyroidism led to the employment of thyroid extract. Under this treatment her own resistance was raised sufficiently to dispose of the cystitis and enuresis. It may be that a number of cases of nocturnal enuresis supposed to be due to hypothyroidism alone, may have colon bacillus cystitis as a secondary complication.

In some cases of linear ulcer of the urethra in young women, and in some cases of chronic inflammation of the prostatic urethra in men, we find the colon bacillus present, and the question arises if in these cases it is a terminal infection made possible by primary infection by some other bacterium, or if the colon bacillus was the primary malefactor, followed by other bacteria for which the field had been prepared. These appear to be new questions, which belong to the laboratory, but without which the philosophy of our therapeutists of today would be disabled.

Practically we may assume that colon bacillus infection of the bladder calls for attention not only to direct treatment of the cystitis, but to a consideration of distant foci of infection, to allergy, and to the factors of lack of normal resistance toward the colon bacillus shown by different individuals.

616 MADISON AVENUE.

THE TREATMENT OF PERSISTENT OCCIPITOPOSTERIOR POSITIONS.*

By GEORGE L. BRODHEAD, M. D.,
New York.

In spite of frequent discussions in medical societies, and in the medical press, the diagnosis of occipitoposterior position is frequently not made, even by men who are skilled in diagnosis, and the proper treatment of the position is therefore not carried out. The result in many instances is loss of valuable time, unnecessary laceration of the perineum, and increase in fetal mortality. In forceps work, it is a matter of vital importance to be sure of the position in which the head lies,

*Read before the New York Medical Association, November 1914, and the American Obstetrical Club, February, 1915.

and we cannot have too much experience in ante partum and intra partum diagnosis. Many infants, each year, could have been saved, had correct treatment for the faulty position been instituted, and it is with the idea of stimulating further interest in this class of cases that my paper has been written.

At the outset it should be understood that the paper will deal with persistent occipitoposterior positions only, for the reason that the large majority of posterior positions are eventually converted normally into anterior positions, or the head is born spontaneously with the occiput posterior. With normal pelvic conditions, strong pains will usually flex the head, a firm pelvic floor will rotate the occiput to the front, and spontaneous delivery will follow. The operation of rotation, to be described later, is intended to supply in an artificial way precisely what Nature brings about in the larger number of patients.

Let us first consider the question from the standpoint of the mother. The head in posterior position enters the pelvis with greater difficulty, and more pain is usually required to cause rotation, hence the patient, particularly the primipara, becomes exhausted and operative interference is made necessary. If the head is extracted with the occiput posterior, there is the prospect of a severe perineal laceration, with post partum hemorrhage and a tardy convalescence. Should the membranes rupture early, the pelvis be contracted, the soft parts be unusually rigid, or should the patient have uterine inertia, with possibly an overdeveloped child, the prognosis becomes more grave. The ease with which the diagnosis may be made depends upon a number of conditions, namely, the degree of engagement of the head, the amount of dilatation of the cervix, the thickness of the caput, and the sensitiveness of the patient.

The importance of making the correct diagnosis has already been emphasized, and indeed in some instances the child cannot be born alive unless the occiput is rotated to the front. Several years ago the writer was called in consultation to perform a craniotomy. Several men of considerable experience had tried unsuccessfully to extract a child with the head in the pelvis in what they had diagnosed as anterior position. The occiput was found to be posterior, and had rotation been attempted, craniotomy would probably not have been necessary. On several occasions in my own experience, I have applied forceps to the head in supposedly anterior position and, failing to make progress, have removed the blades in order to reexamine for possible posterior position. This having been found, rotation was easily performed, with subsequent rapid advance. It is sometimes surprising to observe how rapidly the head is born after it has been rotated. In a forceps operation, when little progress is being made, it is advisable, in my opinion, to make another thorough examination, for, indeed, the position may have changed from occipitoanterior to occipitoposterior.

Upon external examination, we are unable to palpate distinctly the back of the child, or we may feel it well down in the lumbar region. Small parts felt anteriorly should arouse our suspicion at once, for

if the small parts are well to the front, the back must be in the rear. The fetal heart may be heard low down in the inguinal or lumbar region, but we must not conclude that if the heart is heard, for example, low down on the right side, that the position must be right occipitoposterior. The heart is not infrequently heard on the opposite side. In other words, if the position is right occipitoposterior the heart may be heard most distinctly, if not entirely in the left lower quadrant. In making the vaginal examination, the anterior fontanelle is the most important landmark. When this fontanelle can be easily reached in the middle of the vagina, the diagnosis of occipitoposterior can be made with comparative certainty. From this fontanelle may be traced the four sutures, and search for the posterior fontanelle should then be made. This is more frequently found on the right side, but left occipitoposterior position is not infrequent. It is a matter of indifference whether the position is right occipitoposterior or left occipitoposterior, so long as we know with which we are dealing.

If the caput is too thick to enable us to feel the sutures and fontanelles, we should feel for the ear of the child. When it is recalled that the convexity of the ear points toward the occiput, the diagnosis can be easily made. Too much emphasis cannot be laid upon the vital importance of recognizing the position, for with incorrect diagnosis proper treatment cannot be given.

TREATMENT.

The operative procedure to be used will depend naturally upon the position of the vertex, above, in, or below the brim of the pelvis. In the first class of cases, when the head is above the brim, three plans of treatment may be considered; first, the application of forceps to the head in occipitoposterior position; second, manual rotation of the head, followed by the application of forceps; and, third, podalic version. In the choice of operation, by one who has had little operative experience, it is my belief that where the head is above the brim, and where there is still amniotic fluid present, version is a safer operation for the mother than the high forceps operation, but it is equally true that the fetal mortality in version will be greater than by the forceps operation properly performed. With reference to the internal manual rotation of the occiput forward, prior to the application of forceps, it may be said that in the hands of men accustomed to intrauterine manipulation the occiput can, in some instances, be rotated anteriorly, but in many cases, especially those in which the membranes have been ruptured for many hours, the operation is difficult, and in cases where the head is firmly grasped by the lower segment of the uterus, which may have been thinned by protracted labor, even dangerous. In the latter class of cases, forceps carefully used would be safer than version, even in the hands of men of comparatively small experience. For operators of considerable experience, possessed of the proper knowledge of the technic of the high forceps operation, the following plan seems to me the best for both mother and child.

Under deep anesthesia an attempt should first be made to rotate the occiput to the front by the intro-

duction of the hand into the uterine cavity. Failing in this, the forceps should be applied to the sides of the head in the posterior position, and the head should be brought down and extracted in a manner which will be outlined later. The high forceps operation is always to be undertaken with a proper appreciation of its difficulties and dangers. Nevertheless, in careful hands, I believe that the forceps, in posterior as well as in anterior positions above the brim, will give better results than version as far as the child is concerned, and results equally good for the mother. Failing to deliver by forceps, the child being alive, version must be tried. Whether, however, in this class of cases, version is the usual elective operation or not, I believe that when there is little amniotic fluid left, and the uterus is tightly contracted about the fetus, careful tentative use of the forceps is much safer than podalic version. Very little difficulty may be experienced with forceps, whereas version may result in a rupture of the uterus, an accident which occurs not infrequently.

The treatment of the second class of cases, in which the vertex is engaged in the brim of the pelvis, is much less debatable than the treatment of cases where the head is above the brim. We agree with the majority of operators that the forceps should be used to bring the head down slowly and carefully to the pelvic floor. If rotation occurs naturally, and the position becomes anterior, the difficulty has been overcome, but if the position remains posterior, treatment should be carried out as indicated in the consideration of the next class of cases.

The treatment of the third class of cases, with the head in the pelvic cavity, may be, first, rotation of the occiput to the front by forceps; second, manual rotation; and, third, delivery by forceps, the occiput remaining posterior. In multiparæ, where the soft parts have been thoroughly stretched, and where the head is of average size, the forceps may be applied and the head extracted in occipitoposterior position. In primiparæ, on the other hand, or in multiparæ where the soft parts are not relaxed, or where the head is large, the rotation of the occiput forward is highly desirable, for it is easier, as a rule, to extract the head with the occiput to the front, and there is less danger of extensive laceration of the soft parts. Then, again, in some instances, it seems almost impossible to extract the head with the occiput posterior, and rotation by some method is imperative. Manual rotation has repeatedly been used successfully and, indeed, pressure upward upon the forehead, to increase flexion, has frequently caused rotation. Imperfect flexion is often responsible for failure to rotate, and pressure upon the forehead tends to bring the occiput lower down, so that the pelvic floor may act upon it favorably, rotating it to the front. In the treatment of these persistent occipitoposterior positions, with the head in the pelvic cavity, I have used instrumental rotation as a routine procedure.

In October, 1900, I read a paper on this subject before the New York Obstetrical Society, and at that time, nearly every book spoke of the operation of instrumental rotation only to condemn it. At the meeting, however, the fact was brought out that

several of the teachers in obstetrics in this city were constantly using the method with excellent results. Since that time the operation has grown in popularity and is now a well recognized obstetric procedure.

The conditions which should be fulfilled before the operation of rotation is undertaken are these: 1. The head should be as well flexed as possible; 2, the vertex should be well down in the pelvis, and preferably at the vulvar outlet; 3, the membranes must be ruptured; 4, the vertex should be fully dilated or dilatable; 5, the bladder and rectum should be empty; 6, last, but not least, the operator should be positive of his diagnosis of the position. The genitals are prepared in the usual manner, but no vaginal douche is given unless there have been frequent examinations, unless the vagina is dry, or if there is reason to suspect infection from careless examination.

Wherever it is possible, the patient should be placed upon a table, otherwise the buttocks should be brought to the edge of the bed. The legs are held up with leg holders, a sheet, or by assistants, and light chloroform anesthesia is used. For the operation of rotation and subsequent extraction I have invariably used the Tucker solid bladed forceps, an instrument which I believe to be superior to any other for a number of reasons. The head, which is frequently moulded to an extreme degree, often fits the pelvis so tightly that it is difficult to introduce a fenestrated blade. The same difficulty is experienced in removing the blades, preparatory to reapplication after rotation has been accomplished. The solid blades are more easily introduced, more easily applied to the sides of the child's head, are removed with greater ease, and, finally, mark the child less than others. The forceps, after sterilization, is immersed in a one per cent lysol solution, which answers admirably as a lubricant. The blades are introduced laterally at the sides of the pelvis, each blade being rotated so as to occupy a position at the side of the head, after which the forceps is locked. I believe that it is safer to apply the forceps in the usual manner (the concavity of the pelvic curve looking forward) than to attempt rotation with the forceps in the reversed position, but in the hands of an expert the latter method may be safely used. One of the greatest objections to rotation with forceps has been the danger of laceration of the soft parts with the tips of the blades. Laceration would surely occur if rotation were to be made with the handles of the forceps held in the median line, but this can be easily avoided by careful attention to the details of the operation as they are given below. Straight blades would perhaps be preferable for the purpose of rotation alone, but with care we can get equally good results with the curved instrument. By carrying the handles of the forceps toward the thigh of the patient toward which the concavity of the pelvic curve looks—or in other words, toward the right side of the operator if the position is right occipitoposterior—the blades become, for all practical purposes, straight blades.

The fingers of one hand of the operator are placed upon the sagittal suture, and kept there during the operation in order to note whether the head is turn-

ing with the blades, or whether the blades alone are being rotated. The handles of the forceps are seized with the other hand and the blades are held firmly against the sides of the child's head. The fingers of one hand being kept in position on the sagittal suture, the head is rotated from the posterior to a transverse position, or until the concavity of the pelvic curve faces the lateral wall of the pelvis. The head is then held in the transverse position for a few moments, until several contractions and relaxations of the uterus have taken place. During the relaxed periods the body of the child will usually adapt itself to the position of the head—in other words, the back rotates forward. The head is then rotated to the right occipitoanterior or left occipitoanterior position, as the case may be, by rotating the handles, at the same time carrying the handles still further backward and downward. By so doing the tips of the blades are kept constantly in the middle of the pelvis and therefore cannot lacerate the vagina. The head is held in the oblique anterior position for several moments more, in order to allow the body to rotate anteriorly to accommodate itself to the position in which the head is held. The rotation of the body may be verified by palpation and auscultation, and by the fact that after removal of the blades the occiput will remain anterior. After rotation it is surprising to note the advance which often takes place immediately, and indeed, in many cases, when the head has been turned even to the transverse position; the rest of the rotation is spontaneous and delivery is easily completed. After the rotation and removal of the forceps the delivery may be left to natural forces, but as a rule it is better to reapply the blades and complete the operation in the usual way. If rotation takes place easily, as it generally does, much has been gained, especially in the primipara; but if the rotation cannot be accomplished except by the use of force, the head should be extracted in the posterior position, the forehead being brought down under the pubic arch, and the head made to advance by using traction in such a way as to cause flexion. When it is evident that delivery can be completed by the natural forces the blades are removed and the delivery is completed in the usual manner.

Let me emphasize the great importance of a thorough examination to determine the precise position of the head before any forceps operation is undertaken, and again, the most favorable conditions for successful forceps rotation, viz., the well flexed head, the low position of the vertex, and careful attention to the technic of the operation as described.

144 WEST FIFTY-EIGHTH STREET.

Arsenobenzol in the Treatment of Syphilis.—The American preparation, given to the profession by Schamberg, Raiziss, and Kolmer, has been used 184 times in the treatment of seventy-five cases of syphilis in various stages. Oliver S. Ormsby and James Herbert Mitchell, who used it in this series of cases (*Journal A. M. A.*, March 18, 1916) gave half gram doses and made the injections intravenously. They found it uniform, nontoxic, and highly efficient.

MEDICINE OF THE FUTURE.

By A. L. BENEDICT, A. M., M. D.,

Buffalo,

Consultant in Digestive Diseases, Columbus Hospital; Attendant, Mercy Hospital; Etc.

I. ECONOMICS.

Mainly by educational requirements, the medical profession is being reduced in numbers proportionately. The present ratio of actual practitioners to population, is about one to 700. Twenty years ago, it was estimated at about one to 600. The reduction in sickness, decline of consultations for minor ailments, decrease in births, and the development of a large proletariat which seeks hospital and dispensary care, where more cases can be seen by each physician, allows the estimate that one physician per 1,000 population suffices for present needs, and that the further reduction of sickness and systematization of services will soon enable one physician to care for 2,000 population.

The profession, except for survivors of an earlier regime, is already well educated and trained, probably nearly to the practical maximum. On the one hand, it will demand an average compensation greater than at present, and those who fail to secure such compensation will probably drift into other lines of work for which their general training fits them. On the other hand, the standards of comparable occupations and of more or less public medical services, as well as intraprofessional efforts toward equalization, will probably reduce the opportunities for occasional high degrees of financial success. About ten per cent. of the profession is, at present, working on salaries in public or semi-public employ, and about twenty per cent. of the total earnings of the profession is thus obtained. There will almost certainly be a further increase of proper contract employment. Whether the entire profession will be employed as public officers, is a question which depends upon unforeseeable tendencies of social and political nature.

Specialization has, apparently, reached nearly the maximum of development compatible with actual needs and convenience. What is termed general practice, however, will undoubtedly be increasingly dependent upon diagnostic and therapeutic specialists in connection with apparatus too costly to be generally distributed, not to mention the skill and conservation of time and energy required for its management.

II. CHANGES IN PROBLEMS OF PRACTICE.

The native population is, in States representing the normal development, almost entirely educated up to the first year of the high school, and ten per cent. or more is educated through the high school course. Facilities for education without conflicting with labor are generally offered and more and more widely accepted. Popular education, along hygienic, scientific, and other lines, is also being accomplished by printed matter and lectures. Immigration has in the past, introduced many ignorant along with many well educated persons. The war has almost put a stop to immigration and will almost surely allow a period of five years during

which this problem will be suspended. It is doubtful whether immigration will, in the near future, be resumed in anything like its past extent, and still more doubtful whether it will ever again assume importance from the introduction of an ignorant and oppressed human element. In practically all professions and businesses of an influential nature, the standards of education average as high as for the medical profession. These facts mean, on the one hand, that the population will be increasingly able to maintain its health and, on the other, that it will be more critical of the medical profession. But the critical attitude of the general population, with further education, will undoubtedly be fairer than at present, in that it will recognize the limitations of human ability and will institute a more just comparison between the actual accomplishments of medicine and those of other sciences and industries.

Specific infections.—There are only two essentially water borne diseases common in European and American practice—cholera and typhoid. So far as their ordinary method of conveyance is concerned, experience has already shown that they may be reduced to a minimum. Owing to neglect and accidental failures of protection of water supplies, typhoid is still frequent, but vaccination is quite efficient against failure of prophylaxis applied to water and may, indeed, supplant the expensive details of water engineering. In Paris, typhoid is rarer than diabetes.

Tuberculosis is diminishing almost exactly at the rate of the total death rate. The ratio of deaths from this disease still remains about ten per cent. of the total and, for this reason, many fail to recognize that it is diminishing. The diminution of tuberculosis depends largely on social factors. With a generally educated population, working fewer hours than formerly, under better conditions, more intelligently fed and often overfed, with much greater opportunities and incentives to outdoor life than formerly, tuberculosis deaths will still continue to decline. But the disease will probably not be stamped out until general provision is made for the segregation of cases. The bacillus is not a particularly resistant germ when subjected to extracorporeal environment, nor is it diffused to any great extent except by pretty direct contact between one human being and the next. It should be recognized that hygienic measures reduce not so much the incidence of tuberculosis as its development to a serious stage. The available supply of infectious matter is reduced, but ample fomites remain, and it is scarcely possible for any person to pass through a normal lifetime without occasionally being in a state of reduced resistance, so that his escape from tuberculosis is largely accidental. Great harm is being done by emphasizing the evils of phthisiophobia and the conception of the cleanly consumptive. No consumptive can, at all times, especially when asleep or in the final stages of the disease, carry out the bacteriological principles necessary to prevent some slip when we count the millions of bacilli available and the thousandfold repetition of acts which allow them to reach places not con-

plated in the system of prophylaxis. The phthisiophobe may exaggerate the danger of contact, but he is like the careful driver who stops and looks at every railroad crossing, without considering how many trains pass, whether there are gates or not, whether there is a man on duty or not, how conscientious the gate keeper is supposed to be, whether it is the time for a train to pass or not. There may be expected a moderate further diminution in tuberculosis, or at least of fatal tuberculosis, from the operation of existing measures in a greater degree of perfection. But the disease will not be stamped out until it has been subjected to segregation for about a generation. Under this plan, it ought to disappear as did leprosy from Europe, under the same plan, long before the time of scientific medicine.

Smallpox is usually cited as the exemplar for all infections. As we read the signs of the times, personal liberty advocates, in the comparatively near future, will force the determination of the question, whether vaccination alone will prevent the disease in those wise enough to be vaccinated or whether, this method being not perfectly reliable, even in the human sense, general compulsory vaccination will be necessary with quarantine measures in addition, as at present. If the question is thus forced to a decision, there will undoubtedly be a marked increase of smallpox for a few years, but thereafter, with a retrieval of the evidence under modern conditions and with a generally educated population, smallpox will again be a nearly negligible factor.

It should be recognized that smallpox vaccination cannot be taken literally as a standard of expectation with regard to other infections. First of all, it is almost absolutely a semelincident disease. Vaccination against a recurrent disease cannot be expected to provide so nearly absolute protection nor protection of such long duration. Again, while we do not feel so certain about some points of variolal parasitology as we did a few years ago, the germ of variola, whatever its classification, is almost certainly permanently modified by passage through cattle. Vaccination with dead or artificially mitigated bacteria—and the smallpox germ is probably not a bacterium—cannot reasonably be expected to prove so efficacious. Practically the only hope of vaccination in the sense which applies to variola-vaccinia, lies in a small group of semelincident diseases, mostly exanthematous like smallpox. Thus the prophylaxis of infections rests, so far as the method of immunization is concerned, in repeated applications, or possibly in the applications of the principles of antivariolal vaccination to a small group of infections of which we must first secure an exact knowledge of the cause. It is not at all probable that the exanthemata can be controlled to more than slight further degree by methods of quarantine and disinfection.

One of the great practical problems of the near future, is the relation of prophylactic and therapeutic applications of immunization. During the middle of the nineteenth century, the matter of vaccination after the development of smallpox was

widely discussed. While antivariolar vaccination as a means of treatment of established smallpox has been almost entirely discontinued, it cannot be said that the question has been settled from the standpoint of scientific research and the elucidation of the general principles involved. It should be admitted that, except for the underlying theory which really cannot be regarded as proved, the use of biological products, vaccines, serums, is mainly empiric, and that very little is known either theoretically or practically to determine the choice of methods under the general category, or as to many details, doubtless exceedingly important, applying to the preparation and application of these products. Critical analysis will astonish many who regard the general problem as close to perfect solution. Many reports are biased as to facts and many with regard to deductions from facts. For example, allowing for the fact that diphtheria now implies a definite infection without regard to severity, and that twenty to twenty-five years ago the term was practically limited to marked cases, including infections not of this nature—it is extremely doubtful whether the results of antitoxin are better than those secured from properly conducted antiseptic and supporting treatment.

Thus, while it is reasonable to hope for a great reduction of incidence and mortality in the case of infections, from the development of biological prophylaxis and treatment, we must not delude ourselves into imagining that more than a crude beginning has been made—except, indeed, as to antivariolar vaccination.

In certain instances, perhaps mainly represented by the venereal diseases, far greater advances have been made in therapeutics than in prophylaxis. Considerable skepticism may be entertained as to moral prophylaxis. Taking into account the historic evidence and human nature, it may be doubted, first, whether social and legislative attacks on prostitution will be more than sporadically and temporarily successful and, secondly, whether, if successful, prostitution will not merely yield to a more widespread, nonmercenary, but ultimately equally dangerous immorality, even so far as venereal diseases are concerned. Yet, looking beyond the near future, we may reasonably hope that most of the specific infections will become as rare as typhus, smallpox, and leprosy in the civilized communities in temperate climates.

The future will undoubtedly witness a very marked and generally approved decline of the birth rate, with a corresponding lessened loss of children born. Indeed, the world is within 300 years of being filled to the point of inadequate food supply, unless productiveness is greatly increased. There is already noted a change in the make-up of population as regards age groups. The average longevity is twenty years greater than it was half a century ago, some say twenty years greater than it was thirty years ago. We are working toward a condition in which the highly vulnerable infantile portion of the population is becoming fewer in proportionate numbers and less vulnerable absolutely. We are also approaching—though we never shall

reach—the ideal of a population of children past infancy, adolescents, and young and middle aged adults, free from disease of importance and protected against accidents except as they inevitably occur by the law of chance. But, in spite of, really on account of the average increase in longevity and the saving of life from infections, etc., our population is changing with considerable rapidity to include a much larger proportion of older persons, and the death rate of the corresponding age groups, beyond fifty years, is increasing. This fact should not cause alarm nor reproach. In the past, the survivals beyond middle life have been those most fit to withstand disease in general and those who are likely to escape death from any cause on account of prudence. To put the matter concretely, a great many persons now die of cancer, renal or cardiac disease, and from causes operative mainly in the senile, who would have died at an earlier age of tuberculosis or any one of many other infections.

Without speculating as to how far the Biblical standard of three score years and ten or four score represents the inevitable limit of average human viability, no one will deny that man must die some time, of something, and that there is an average age beyond which viability is impossible for more than a few exceptional cases. Thus, the most that can be hoped for, is a moderate increase in the age groups at which vastly greater mortality rates will prevail than in the past, and a limitation of the causes of death to what may best be grouped under the nontechnical term of wearing out. It is worth while to reflect for a moment that such apparently diverse diseases as diabetes, chronic nephritis, arteriosclerosis, cerebral apoplexy, cardiac disease in its main subdivisions, hepatic sclerosis, many gastric ulcers in the aged, and a great many other important causes of death are virtually the same degenerative process in protean forms. Cancer accounts for fully ten per cent. of all deaths at and beyond fifty-five years or, if this is an overstatement, it is actually only slightly so, and it is not an overstatement if accidental and directly avoidable causes of death are excluded. If cancer is due to a parasite or is in any other way essentially exogenic, probably an efficient means of prophylaxis will be developed, while if it is essentially endogenic, it is unlikely that prophylaxis will be possible, any more than in the case of strictly degenerative processes. Hope of cure rather than prevention rests, first, on the discovery of some pathogenomic reaction which, in turn, is much more probable for an exogenic than for an endogenic process; such a reaction will enable early eradication to be practised, whereas it does not appear probable that much advance is to be expected along present lines of diagnosis and moral suasion toward early operation in undetermined cases, beyond the ten per cent. of cures now attained in fairly representative series. Secondly, hope of cure depends on the discovery of some radiant or chemical method of treatment which will destroy cancer without regard to its local extent or distribution by metastasis.

FORESTRY AND THE PUBLIC HEALTH.*

A Report with Resolutions,

By HENRY REED HOPKINS, M. D.,
Buffalo,

Former President, Medical Society of the State of New York.

For many years this society has taken a lively interest in the preparedness men must show in order that they might receive license from the State to practise medicine therein. After eight or ten years of delay and disappointment, State license came, and its coming has had a remarkable effect upon our medical recruits.

State examination for State license came in 1891; agitation for its coming began in the Medical Society of the County of Erie in 1871; the reports of the boards for the year 1900 show that thirty eclectics, sixty-eight homeopaths, and 738 regulars were examined; the proportions of rejections were for the regulars eighteen plus per cent., for the homeopaths twenty-three plus per cent., and for the eclectics thirty-six plus per cent. It will be observed that at this time the specialists were more than ten per cent. of the whole number examined.

For years each of these three divisions of the profession was represented by a State Board of Medical Examiners; then the principle of medical unity became effective, and all kinds of doctors, even the osteopaths, were represented in a single board. During this period, more than a quarter of a century, public opinion as to the importance of having in the State competent and more competent doctors was steadily advancing. The State seemed to have a clear conviction that it was not much concerned with the size of the dose of calomel or other drug which a given doctor should use in a given case, or much concerned with whether the given remedy should come from the chemical laboratory or be found in the realm of the botanist; in fact, the State seemed more and more convinced that these questions were to be discussed, considered, and decided by doctors, as the men most competent for such consideration and decision; that the State was chiefly concerned in providing that these same doctors should have a given standard of educative preparation for their work.

The results of State examination and license for the practice of medicine have been distinctly interesting and to some of us rather surprising; in short, it may be stated that in proportion as the standard of entrance to the medical profession has been raised, the number of the medical profession has been steadily lowered.

In the years 1909, 1910, and 1911, our State licensed to practise medicine twenty-nine eclectics, seventy homeopaths, seventeen osteopaths, and 1,013 regulars. In 1912, nine eclectics, twenty-six homeopaths, two osteopaths, and 369 regulars were licensed. In 1913, three eclectics, thirty-four homeopaths, five osteopaths, and 450 regulars were licensed. It will be noted, possibly with distinct pleasure, that the number of specialists licensed during the two years last reported is less than one per cent. of the total (*sic*). The committee calls attention

to these facts because they are facts of distinct historic significance, and further for the reason that the agitation for the establishment of State license to practise medicine was initiated in this society and this society was persistently prominent in the long and arduous campaign for its accomplishment. The statistics of rejections of candidates for State license are also interesting and throw a flood of light upon the question of the relative competency of our various medical schools, some of which are proved to be so poor as to be a distinct disgrace to our profession and in immediate need of improvement or of extinction. Again, these statistics of rejection are a source of congratulation in that they show that the proportionate number of specialists rejected are more than twice the number of physicians.

In concluding this portion of our report, the committee takes pleasure in noting the fact that the last decade has seen the closing of a large number of our poorer medical schools; without a doubt, the State examination previous to the State license to practise medicine is to be credited with this much needed house cleaning.

So much of retrospection by way of introduction of our present topic, forestry, to which we invite your earnest consideration. To Americans no subject is of more vital importance than that of forestry. Without our forests the fertility of our soil, the profits of our farms and gardens, the building, the operating, the profits of our railroads, the operations of our mines of coal and iron, the building and the maintenance of our homes, our industries, in fact our civilization disappears, and what the traveler now sees in many parts of the old world in Palestine, Greece, Northern Africa, Northern China, and Central India will be seen on the plains of America.

Our minds may possibly open to a more proper evaluation of this matter as we recall the past rapid growth of our population and then forecast that within a couple of centuries, a brief period in the growth of nations, America should be the home of some 500,000,000 of prosperous, free, and independent citizens. We know of no facts more potential in our future possibilities than the facts of the relations of forests to climate, to productiveness of soil, to industries, to the prosperity of nations, to civilization.

We now invite earnest consideration of some of the well known principles and facts upon which the foregoing inferences and conclusions are predicated. During the last twenty years the problems of forestry in our country have been enthusiastically studied, and the literature is rapidly growing in interest and in scientific value. Some acquaintance with this literature prompts us to call attention to the following data, the groundwork of our opinion as to the timeliness and the fundamental importance of our subject.

First, let our minds enjoy the exercise of a biological excursion; let us recall that our forests are the royal family, the princes and the monarchs of that kingdom which includes all varieties of beautiful plants and flowers, of edible grains and fruits, and that this forest kingdom had possession of the surface of the earth for many millions of years before

*Presented to the Council of the Buffalo Medical Society at its meeting of June 10, 1913.

the appearance upon the earth of man, or of a single specimen of animal life. In fact, during this long period, forests and their kind were preparing the way for animal life—for man. The thought we would chiefly emphasize is that this long and complicated evolutionary development by forests for man's residence upon the earth was in entire harmony with the laws and vital principles of man's nature and possible progress, and that those same laws and vital principles—man's material environment—are here and in operation today and for all time. Neither should we overlook the important biological fact of man's intimate dependence upon the food, oxygen, without which he lives but a few moments, and also that man in his more important metabolic processes is constantly producing large quantities of carbonic acid, a poisonous gas, the presence of which in a certain proportion in the air makes the same unfit to breathe; and we may recall that our forests exhale vast quantities of oxygen and generously absorb like quantities of carbonic acid.

Let us direct our thoughts for a moment to something possibly more plainly practical, more distinctly economic in its significance; we refer to the distressing phenomenon of many of the rivers of America of breaking out into destructive, devastating floods of increasing frequency and severity. The National Conservation Commission, in its report for 1908 and 1909, gives much space to an interesting discussion of this matter of floods. From this we learn that these disasters are steadily and surely increasing in duration, in frequency, and in severity. For instance, we are told that in the year 1900, the losses from floods was some \$45,000,000. That this loss steadily grew year by year, until in 1908 it was more than \$237,000,000; and we are further told that this annual waste is constantly increasing and will yet increase until care of our forests and reforestation again provides our hills, mountains, and water sheds with that protection which was theirs by Nature's provision and which alone prevents floods.

Speaking of water sheds reminds us to call attention to the unusual and interesting topography of the State of New York, the water sheds of which in very fact make it the Empire State. On our northern border from the extreme west to the far east our streams find the way into the Gulf of St. Lawrence; on our eastern slope the Housatonic river empties into the Long Island Sound; the Hudson river into New York bay; on our southern side the Delaware river into Delaware bay; the Susquehanna river into Chesapeake bay; and the Allegheny and Ohio rivers into the Gulf of Mexico. All of these streams with a southerly direction are subject to more and longer floods; the responsibility of the State of New York is distinctly far reaching and of wide proportions.

Another destructive feature from want of a proper proportion of forests is denudation—the washing away of the soil itself; the loss from denudation like the loss from floods is enormous every year and these losses are steadily on the increase. The authority last cited gives our yearly loss from denudation as over 270,000,000 tons of dissolved

matter and 513,000,000 tons of suspended matter. This total of 783,000,000 tons represents more than 353,000,000 cubic yards of rock substance, or 610,000,000 cubic yards of surface soil. If this erosive action had been concentrated upon the Isthmus of Panama at the time of American occupation, it would have excavated the prism for an eighty-five foot level canal in about seventy-three days. Space will not permit us to present exhaustively many of the important arguments of this case; the economic value of inland water transportation; the importance of the constant flow of springs and streams; the importance of our large investments for purposes of irrigation; why in so many countries deserts replace civilization; the prevention of droughts and hurricanes; why this matter should have a prominent place in all medical colleges where preventive medicine is properly taught; the proportions of forests to farm lands in various places; each of these is a subject on which interesting paragraphs or chapters could be written.

The purely economic side of the subject alone makes it a matter of transcendent importance. Added to this the relation of forests to business, to the manufacturer, and the arts of civilized life, and the question becomes second to none in supreme and all embracing significance. And yet we believe that more intelligent consideration will show that a more important relation of the forests to mankind is biological rather than economic—the existence of human life, the perfection of mankind, the prevention of disease; this is the more important side of our subject, the side that should and does appeal to medical men and the side which medical men should intelligently, emphatically, and persistently acclaim.

This dogmatic statement is based upon a consideration of the role played by forests in the production of climate and the importance of climate—air, light, humidity, and temperature, the environment of man, the factor of supreme importance in man's existence and welfare. Therefore, be it

Resolved, that the Medical Society of the County of Erie, State of New York, hereby makes record of its conviction that to Americans the subject of forestry is a matter of enormous vital significance; that to the medical profession of America the subject should appeal as to no other group of our citizens; that record should be made and repeated by medical societies, county, State and National, urging upon those in authority the importance of the most intelligent study of this question of forestry to the end that suitable action by our Governments, State and National, be taken in this our most vital problem. And be it

Resolved, that these resolutions be transmitted under the seal of this society to the Medical Society of the State of New York, with the request that the same receive due consideration, and if approved that the matter be brought to the attention of the American Medical Association at its next meeting.

(Signed) JOHN V. WOODRUFF, president, 1914;
JAMES FRANKLIN WHITWELL, president, 1913;

HENRY REED HOPKINS, chairman, honorary life member, 1909.

THE CAUSES OF PROLONGED DISABILITY FROM FRACTURES.

By S. BERNARD ROSENZWEIG, M. D.,
New York,

Instructor in Surgery, Fordham University; Assistant in Clinical
Surgery, Polyclinic Hospital; Assistant Surgeon,
Knickerbocker Hospital, O. P. D.

The voluminous character of the literature on fractures which has developed during the last decade is a striking signal that the study of the traumata to our bony framework is at last coming into its own. Prior to this period, fractures (as with amputations) did not enjoy the interest that they deserved. The discovery of the bacterial origin of disease and the far reaching effects of Lister's observations paved the way to marvellous achievements in the realm of visceral surgery. The old, uninteresting study of fractures was forsaken for a new and spectacular field. Gradually, however, with the extension of asepsis to bone operations, wonderful progress was made possible and once more the attention of the profession began to centre upon this important subject. A distinguishing feature of most of the papers has been discussions and reports of operative procedures, and unfortunately, prolonged disability, from the general practitioner's standpoint a particularly pertinent phase, has received only casual mention. It is for that reason that the writer has attempted to glean the most important facts relating to this condition and to present them as a résumé of the principal factors in the causation of prolonged disability following fractures of the extremities.

It has been remarked that there are today more cases of deformed and ununited fractures as secondary conditions than any others in surgery (1). The difficulties which Nature thrusts into the path to recovery do not receive sufficient attention. Students recite from textbooks, and fractures are shown them from the amphitheatre. Up on the benches, with faint recollections of anatomy and unable to apply what they know, they are helpless in a sea of "mechanics" and displacements. The various procedures are just so many words to be committed to memory. They may witness the application of plaster casts, but how many see an extension apparatus? How many have the opportunity of assisting when the mole skin is cut and applied? In our various hospitals the house staffs give fractures only casual attention, in their feverish anxiety to fill the beds with abdominal cases. The junior men take entire charge of the treatment, and far too frequently the victims are hurried from the wards. In our dispensaries, irregularity of attendance sends the ambulatory patient from one surgeon to another. This cumulative neglect results to the patient in stiff limbs, malunion, and diminished earning capacity; to the physician the loss of invaluable experience. The education of the public and the rigidity of compensation companies demand early return of function. Good anatomical results are required as well, and not only the external appearance, but the x ray plate must satisfy them that these have been obtained.

Let us inquire into what is meant by a reasonable length of disability, and when disability should be

considered prolonged. No arbitrary length of time can be designated to divide the normal from the abnormal. Individual factors, some of them impossible to appreciate in advance, may enter into the case. Textbooks quote various figures on consolidation, ranging from two weeks for a phalanx to ten weeks for a femur. Very little experience is required to show that completion of consolidation is not synchronous with return to function. One day in our courts or in the dispensaries will dispel any ideas of the accuracy of the figures given. The necessary reports of disability are either incomplete or infrequent; we are too firmly entrenched in the idea that fracture implies persistent disability. There can be no reliable statistics until a sufficiently large number of cases are reported along special lines, using a universal scheme of reporting, with special attention to the minutest details. No record will add to our fund of knowledge which ignores this essential point, and it is only by careful general cooperation that some light will be thrown upon this phase of an important subject.

The causes of prolonged disability may be general or local. The general causes are less frequent, and for the sake of brevity will be mentioned only in passing. The most important are: Cachexias, as in tuberculosis, malignancy and the severe anemias; circulatory disturbances, as in cardiorenal or hepatic diseases; nerve disorders, as in tabes, paresis, or myelitis. Old age plays an important role in some cases: the rarefying changes in the femoral neck are particularly to be feared. Still other factors are sometimes given, but they are generally unimportant and rare. Locally, however, there are three groups of causes, depending on the character of the lesion, the reduction, and the aftertreatment.

Group 1 includes extensive bone injury or damage to the soft parts. Marked comminution of a bone, at or within a joint, naturally means a longer period of disability. Perforation of the skin from without or within may set up inflammatory changes which are apt to interfere with an early successful outcome. Crushing of the skin with subsequent sloughing and cicatrization are not uncommon. Muscles and tendons may be extensively lacerated and exposed. Veins and arteries are occasionally torn and frequently occluded, and nerve structures may be lacerated or included between the sharp ends of the fragments. In the second group there are the sequelæ of poor reduction; malunion, delayed fibrous union, and nonunion, pseudarthrosis, and excess of callus and its results. The results of insufficient or improper care occupy the third group: pressure ulcers, muscular atrophy, ischemic contracture, and adhesions within the joints and tendon sheaths.

Skin.—Bulke rarely influence the duration of disability. The infections are superficial, and it is only in rare instances that untoward symptoms arise. Extensive lacerations, especially those due to a crushing force, are sometimes troublesome. Compound fractures need not necessarily offer any added trouble, but any gradation from primary union to extensive suppuration or gas bacillus infection may be encountered. In these cases, off-

cient drainage must be instituted, and delayed union, because of the difficulty in splinting and the resulting general cicatrization, offers a vexatious complication. Gangrene is not infrequent in the large hospitals. Direct trauma may be responsible for a loss of tissue by sloughing; it occurs more frequently than gangrene from injury to the larger vessels. The result is often an adherent and possibly a sensitive scar. Pressure sores from insufficiently padded splints or pressure over bony prominences, are frequently met with and obstinately resist treatment. The heel is perhaps the favorite site for their appearance.

Muscles and tendons. Atrophy is present in all cases where immobilization has been complete for any length of time. The muscles shrink in volume and power, and the atrophy may persist for months or be permanent. The exudate surrounding the tendons and muscles becomes organized and offers a resistance to restitution of function which demands unrelenting energy and limitless patience. Atrophy is most marked in fractures of the lower extremity; here immobilization is more efficient, and besides, the general health suffers as well. Adhesions within the tendon sheaths are responsible for one of the most common causes of disability from fractures of the upper extremity. The arm or forearm is encased in plaster or other snug appliance, and the distal portion is unprotected from the mechanical damming up of serum and exudate. Moreover, nothing is said to the patient about exercising his fingers. By the time that the splints are discontinued, the exudate has had time to become organized, and what a little extra bandaging, or a few bakings or massage would have prevented, is now a constant source of worry to both surgeon and patient. Occasionally, Volkmann's ischemic contracture is seen in this type of injury. It is a rapidly advancing atrophy and paralysis of the muscles of the forearm with a flexion contracture of the wrist and fingers, caused by interference with the blood supply by reason of tight splints. In fractures of the lower end of the humerus, swelling of the arm put up in acute flexion within a snug dressing may result in this irremediable condition. It has been seen after application of a tourniquet to the arm for the control of hemorrhage from a wound of the palm (2). Volkmann's contracture is generally seen in children; patients in whom it has occurred have rarely been older than fourteen years. It is more common than is generally believed. The vascular supply is interfered with and the muscles undergo ischemic necrosis—*sclérose en masse*. The damage is done in a day or two. The preliminary pain is severe, but is attributed to the fracture itself. A few days after the splint is removed, the contracture begins to manifest itself. Rapidly the condition becomes worse, until the maximum deformity is reached. When fully developed there is no more pain, and sensation is normal. Trophic disturbances are rare. The affected hand and arm are colder and darker than the other, and the surface temperature is lowered. Microscopically, nerves and vessels are surrounded by dense fibrous tissue, and the muscles have under-

gone more or less complete connective tissue replacement.

Circulation. Thrombosis of the deep veins is not uncommon and is the cause of persistent edema after fractures of the lower extremity. Injury to the arteries and veins may be caused by the pressure of a displaced fragment or by penetration by some sharp spicule of bone. Traumatic aneurysm and peripheral gangrene are the results of arterial injury. In compound fractures, injury to an artery may not be noticed until several days have elapsed, a profuse hemorrhage at that time indicating the damage. Venous injury may lead to extensive hemorrhage, either internal or external, but is less liable to cause gangrene than is arterial injury. Should this occur it results secondarily and is of the moist variety. The blocking of lymph channels is present in every fracture, but with appropriate treatment should not offer any difficulties.

Nerves. Von Bruns states that eight per cent. of fractures are complicated by injuries to nerves. Riethus (3), of Leipsic, thinks that half this number is more nearly correct. Of 189 nerve injuries complicating fractures, collected by the former, 138 occurred in the upper extremity, and of these seventy-seven were the musculospiral. Much less frequently involved were the radial and ulnar. The brachial plexus is rarely wounded despite its exposed position in fractures of the clavicle. The peroneal is perhaps the most frequently injured of the lower extremity—it may be torn or compressed in fractures of the upper end of the fibula or be compressed by the plaster cast. It is an unusual complication. The exact pathological condition in nerve injuries is hard to determine. The nerves may be contused by the direct violence causing the fracture, or they may be lacerated or compressed by the displaced fragments. Very often, they are involved secondarily by the exuberant callus formation. The musculospiral is oftentimes injured because of its peculiarly exposed position as it winds about the humerus in close contact with the bone. In primary cases, sensory paralysis is noted earliest; in the secondary variety motor paralysis is most frequently the symptom which attracts attention to the condition. The first is characterized by sudden onset with the fracture; the other is insidious, with pain and numbness. In the diagnosis it is important to know whether there was an interval between the bone injury and the onset of the nerve disorder. It is self evident, that the earlier the onset, the greater the probability of the more serious injury. In the absence of observations bearing upon an interval of functional activity, once the condition has appeared, no neurological examination can differentiate between the two forms. Nor is this of paramount importance, because ultimately most cases must be operated in, and the sooner this is done, the better the prognosis. True neuritis from compression by scar tissue has been described; adhesions to muscles and tendons give rise to severe pain when the member is used.

Joints. The involvement of joints, whether primarily or secondarily, radically alters the prognosis as to early return of function. Any displacement of the reparative callus, no matter how slight,

"causes a derangement of the joint surface and hence of the normal joint relations." Fortunately, a large number end in recovery from the effects of the injury, but there are many joints, so affected, which determine a loss of earning power. Fracture dislocations offer no insignificant difficulties; the lesser dislocated fragment cannot be manipulated except by open operation. Hemorrhagic effusion into a joint may be absorbed or become organized. In this condition, adhesions are apt to form and seriously limit the arc of subsequent motion. Relaxation of the ligaments and hydrops of the knee are the rule in fractures of the femur. The extension treatment is a factor, even when the traction is exerted higher up by carrying the mole skin well up on the thigh. Atrophy of the muscles removes an effectual splint from the joint, and when the patient tries to get around on his limb, the relaxed ligaments will not protect the synovial membrane from traumatism. This accounts for the increase in the fluid when the patient leaves his bed for the first time. Circulatory disturbances are additional etiological factors. Stiffness of a joint, beside being caused by adhesions within a joint itself, is oftenest due to loss of muscular and ligamentous tone. Proper treatment will prevent or rapidly overcome this. Traumatic fibrous arthritis is a chronic and obstinate condition, and may appear after the injury. At first the joint is comparatively painless, but in about ten days it begins to ache, the pain increasing in severity for three or four weeks. At the end of a few months there is ankylosis. This condition may appear alone or complicate fractures of either extremity. It is said to be due to idiosyncrasy to connective tissue formation (4) in joints and has been compared to the tendency of some skin to form keloids. Le Breton (5) reported seven cases recently in which this condition appeared after fractures. The diagnosis of arthritis deformans has been offered on account of bony irregularity shown by the x ray. This is untenable on account of the freedom of the other joints from involvement. Arthritis deformans in a patient suffering from a fracture increases the period of disability; not because of any tendency toward non-union, but by reason of the unfavorable progress made by the arthritis.

Callus. Callus may interfere with early recovery, by being excessive or weak. It is a phase of the subject not under control of the surgeon. Exuberant callus may arise from comminution, from an abnormal tendency to reproduce in excess, and as an involucrum. Splintering of the bone calls for a large amount of callus to bridge the various fragments into one solid structure. The presence of dead loose fragments, and in compound fractures, sequestra, stimulate excessive callus formation. Near a joint, by "destroying the normal relations of the joint, filling normal depressions, and causing abnormal prominences," callus will mechanically interfere with restitution of function. In the shaft of the long bones, it may include nerve structures, interfere with the proper leverage of muscles, prevent complete pronation and supination of the forearm, or cause ossification of the interosseous membrane.

This is of no consequence in the leg or ribs, but is very distressing in the forearm. It is most common in the young in whom the osteogenic function is greatest. Callus may undergo retrograde changes and diminish in size and strength during intercurrent illnesses. It may be weak from suppuration in infected compound fractures and in diminished thyroid and parathyroid activity. Many persons complain of pain in the injured member for a varying length of time, especially when the weather changes. Unless nerve structures are involved or the callus infiltrates ligamentous structures, localization of the pain in the callus *per se* is infrequent.

Delayed union. Considering next the effects of defective ossification on callus, we have delayed union, fibrous union, nonunion, and pseudarthrosis. The terms are practically synonymous and are merely designations of an exaggerated form of defective union. It is stated (6) that delayed union occurs in 1.25 per cent. of fractures and nonunion in 0.5 per cent. The callus may be large and soft or have undergone fibrous replacement. Any gradation may obtain, according to the stage of ossification which has been reached, to the relative uniformity of the process throughout the callus, and to the delay to normal progress. The causes of ununited fractures are generally local, being principally those which prevent exact coaptation of the raw bone surfaces—great separation of the fragments from failure to reduce or as a result of muscular action; from interposition of tissue and from imperfect immobilization of neighboring joints—the latter being one of the most common causes (7). Absence of the so called periosteal bridge and diminished inflammatory reaction against the fracture may be cited. Loss of bone substance from infection or splintering, diminution of blood supply to one of the fragments, as in fractures of the femoral neck, and the presence of bone tumors may determine delayed union in any given case. Injury to nerves associated with trophic disturbances delay union. I recently had the privilege of seeing such a case; the cause was paraplegia from compression myelitis. It is clear that the disability resulting from pseudarthrosis depends largely upon the bone affected and the site of the lesion, as well as upon the degree of instability at the site of the pseudarthrosis. The humerus is oftenest affected. Von Bruns states that thirty-three per cent. of 681 authentic cases which he collected were humeral. It is interesting to note that the humerus is broken in but fifteen per cent. of all fractures.

Malunion. Malunion, that is, union with marked shortening, axial or radial deviation, and vicious union, are due to faulty reduction, improper maintenance of reduction, or to the action of body weight on insufficiently ossified callus. Not every unfavorable result is considered a malunion. Stimson makes this distinction, "its (malunion) use implies a condition which might and should have been avoided." It is important to break up impaction when there is deformity, e. g., in Colles's fracture, and to pay careful attention to traction and countertraction where danger from muscular retraction is great. Angular deformities may be avoided. It may be difficult to obtain end to end apposition, but

there should be no difficulty in securing correct alignment. Vicious union is rarely seen; it may occur in the forearm from muscular contraction or too tight splints. It may be well to mention here the possibility of a deformity being shown by the x ray when there is none; by making a stereoscopic set of plates, this is overcome, and it would be well for every surgeon to have these made in every fracture case to avoid malpractice suits. Secondary orthopedic effects are bound to arise in the lower extremity as a result of the weight bearing function. Flat foot and shortened heel cord are perhaps the most common, and traumatic coxa vara not infrequently adds to our troubles. Appropriate treatment will in the majority of cases prevent these unscientific deformities.

Finally, we come to a group of causes which cannot be guarded against, although we may be able to do good work in the treatment (8). Malingering in negligence cases and unwillingness to return to work in the hope of getting an award for permanent disability in compensation cases, are none too rare. Sympathetic lawyers and cautious friends may influence the patient and seriously retard improvement. Again, the general average of disability will be prolonged by the man who shirks the pain incident to limbering up stiff tendons and persists in using a crutch or cane. There is also a general lack of understanding of the compensation law. Many patients are afraid that their compensation ceases automatically when they return to their former or lighter occupation, irrespective of their ability to remain at work. They do not know that compensation is due them until they can earn their former salaries, and few consider the advantages of returning to work for less pay, perhaps no larger than the indemnity paid them while idle. Employers, also, completely covered by insurance, make no attempt to find easy work for the injured. Necessarily, then, our records of partial disability as deduced from inability to work, must suffer and hopes of accuracy be abandoned.

Roughly, these are the most important impediments to early return of function, and some of their causes. Many of them may be avoided; some of them are impossible to foresee or prevent. It is only by developing an interest in bone injuries in the student, and by bringing the facts home to him in a way that he can comprehend and remember, that delayed restitution will become uncommon instead of the usual thing. Here again, preparedness should be our watchword. The etiology being known, the treatment is often simple. These cases are important from every standpoint of economics; they deserve painstaking care and it is gratifying to note the increasing sentiment in their behalf.

REFERENCES.

1. C. D. MARTIN: A Plea for the More Careful Diagnosis and Treatment of Fractures of the Extremity, *Journal A. M. A.*, December 18, 1906.
2. R. FROEHLICH: Paralyse ischémique de Volkman, *Archives générales de chirurgie*, 19, 1903.
3. VON BERG MANNIGALL: *System of Practical Surgery*, iii, p. 132.
4. J. B. MURPHY: *Analysis*, *Journal A. M. A.*, May 20, 1905, p. 1573.
5. P. LE BRETON: Traumatic Arthritis as a Late Complication in Fractures of the Upper Extremity, *Am. Jour. Ortho. Surg.*, Nov., 1911.
6. LEWIS A. STIMSON: *Fractures and Dislocations*, 6th ed., p. 116.
7. D. N. FENDERATH: *Keen's Surgery*, ii, p. 109.
8. P. GIBBONS: Treatment of Fractured Limbs in Workmen, *Brit. Med. Jour.*, Feb. 12, 1911.

RELAPSING FEVER IN SERBIA.

By J. RUDIS-JICINSKY, M. D.,
Chicago.

In my correspondence, in recounting the experiences of the different missions and organizations of the Red Cross, while in Serbia, I have told the facts and events as they followed each other in the work of relief, refraining from criticism of local help, men, and methods, or the progress of the outside organizations and their work. There were many unpleasant conditions, sometimes even prejudice and incidents unfortunate to relate, but to describe these would not do. We went to help and to be content. The military authorities, having great and seemingly insuperable difficulties, looked askance upon us in the very beginning. But soon they recognized, as they said, our "American ability," and during the suffering, sickness, confusion, and deaths gave us finally a place, where we could in our two pavilions (one surgical and the other for infectious diseases) of our hospital proceed in our own way and observe the results of our surgical technic, medical and hygienic methods, etc. In a few days in the bandaging rooms at Dzevdzelija and the main hospital at Grad in Uskup, we recognized the horror of the battles in trenches, the long marches, the destruction of much found useful during peace, and saw that all this leaves behind a ruin more or less complete with all kinds of dangers. The sanitation itself was about at zero, with all the intricate workings of a poor government, after three terrible wars and the great struggles had exhausted the people and their armies in the field. We knew that it would not be possible to accomplish hygienic victories without thoroughly understanding the people, their living, habitations, and the actual cause of filth and uncleanliness in the field or at home, especially in the newly acquired parts of Serbia, with all the specific dangers inseparable from every armed conflict. To prevent such and similar conditions without knowing the cause would be useless, and therefore in all our actions afterward we always went after the fundamental principles underlying the etiology of diseases, trying to be absolutely clean in treating the wounds, bad and horrible as they were. In carrying out our mission of prevention, relief of suffering, and prolonging and saving lives, if possible, we had to treat all kinds of lesions and all kinds of diseases, but the relapsing fever, febris recurrens, beside the typhus fever and other infectious diseases, gave us not only plenty to do, but enough to worry about, not to mention the possible danger of cholera.

We had hundreds and hundreds of cases of relapsing fever or relapsing typhus in winter, at the same time as and during the epidemic of typhus exanthematicus, and this acute infection came on us as an epidemic outbreak more or less extensive in every place or village. In Uskup, they called it *skopljanska groznica*. There were anatomical changes during the febrile state in the various viscera, as the heart, liver, and kidney, the spleen especially being enlarged with hyperplasia in the lymphoid element of the bone marrow. Jaundice was visible even after death. It appeared in a ma-

jority of the cases, when our wounded were convalescing from their wounds, the wounds being comparatively clean, and we had to come to the conclusion that the disease was due to the famine, overcrowding, and previous unhygienic surroundings that produce typhus. Males were more affected than females.

In nearly every case, making blood examinations, where *Spirillum obermeieri* was not found, we could surely expect typhus, and vice versa, if the specific agent, or spirochete, appeared in our slides, we knew during the febrile period that the case was not so dangerous. The filamentous organism of spiral form, much elongated, following in motion its long axis, was about four times the diameter of a red blood corpuscle and being aerobic could be stained easily with anilin colors in dry blood, but we never could find it in other fluids or secretions of the body. And strange as it may seem, we found the spirochete only during paroxysms in some cases; in others before the crisis the spirilla disappeared from the blood, and were absent altogether during the whole of the succeeding apyrexial period. Otherwise by inoculation of the blood containing this organism the disease was conveyed to rabbits as new subjects. After death we found them in all the organs, but could not cultivate them on artificial nutrient media.

We made our positive diagnosis in those cases right at the start and that with the help of the microscope, that is, in the earlier cases of the epidemic, "before they had passed through their typical relapses," as Anders (1) stated long ago. We obtained a drop of blood from the finger tip, or the ear of the patient, and without dilution made our slide, which was not only clean, but perfectly protected, and made the examination, first with low and then with high power to be sure. On account of their size and motility, the spirilla were always readily detected. Between the red blood corpuscles you would observe at once the peculiar joggling movements, and the real disturbing agent appeared to the eye as a slender spiral with a snakelike motion. Sometimes we made a mistake when the glass was not clean, staining a simple fibre, cotton, wool, or something else, but the lack of motion told us to be more careful. We used anilin colors (methylene blue, etc.) and later injected the organisms into the blood of rabbits. In our own case we found spirilla on the first day of our sickness, ourselves making the examination, but in the case of Doctor Kara, my colleague, who was down with typhus exanthematicus, and also Doctor Guca, we made the examinations only twice, finding distinctive microorganisms in their blood or (as Milman has it, and we verified his statements later on) a diplobacillus, *Streptococcus exanthematicus*. Doctor Kara and one nurse of our unit died, being infected directly by a louse, as we observed. Doctor Guca, though otherwise infected, having a much more severe attack, got well with a slight neuritis in the right leg. I myself had a neuritis in the left hand as a memento of those hard times of our humanitarian work in unhappy and now conquered Serbia, which is but another Belgium, or Poland of "cultured" Europe at war.

In the invasion, the louse, in my own case, seemed to play the main role. After attending one day to many wounded, who had come from the front in a new transport in the evening, I felt in the morning, on awakening suddenly, general malaise, fugitive pains in the limbs, and headache; on the following day, a severe rigor came and passed with shivering, later vertigo, severe pains in loins and legs appeared and physical prostration. My temperature rose to 106° F., the skin was dry and pungent, of dirty color, and yellowish. The cheeks were flushed, the eyes clear but sunken, and perspiration was profuse, while I was in bed with alternating chills. What then followed for about five days I could not describe intelligently, but in other cases I observed the moist tongue coated and fissured with sordes on teeth. Sudamina were observed very often, then ulcerative stomatitis, pharyngitis, and mild tonsillitis, with thirst, anorexia, nausea, and vomiting. The vomitus contained bile and sometimes even blood with gastric secretions. Constipation began with the start and continued throughout the attack. The pulse was rapid, with an increase of temperature in favorable cases, being full and strong; in other cases it became weak, irregular, and sometimes even intermittent, while the heart sounds were feeble and hemic murmurs were audible. The nervous symptoms are usually not grave, but headache persists and we have sleepless nights. The eyes are not injected, there is no stupor or coma, no eruption and no delirium, the mental condition being comparatively good. In the urine we may find some albumin, or casts and bile pigments when jaundice is present. Respiration is accelerated and dyspnea may develop, but physical signs are few; there is pain in the epigastric region and along the nerve trunks, also enlargement of spleen and liver. Sometimes we had bronchitis, lobar pneumonia, and hypostatic congestion of the lungs, but on the fifth or seventh day the temperature turns, the crisis being heralded by a critical rise of temperature to 108° F., then a rapid fall below normal with profuse sweating, and the symptoms disappear with diarrhea, intestinal hemorrhage, epistaxis or not, and the patient feels better. Very often we had three pyrexial stages with marked discoloration of the skin. The duration of the first relapse is shorter than of the primary pyretic stage, and is always lighter in subsequent relapses, each succeeding one being separated from the preceding by the usual apyrexial period. There are not so many and grave complications in these cases, as in typhus, but we may have, especially in wounded patients, septic, pyemic processes, iritis, iridochoroiditis, suppurative parotiditis, mastoiditis, otitis media, laryngitis, tonsillitis, just as in typhus, with enterocolitis and neuritis. Epistaxis in and during the epidemic, nephritis with heart exhaustion or without, and sudden paralysis were the most serious complications, the intensity of infection varying. Septic and pyemic processes were fatal, even in cases where the original wounds of the sick soldiers were dressed every day. Otherwise the prognosis of relapsing fever proper was good, only those with hemorrhagic nephritis dying, and those suffering from privation, bad nutrition, previously enfeebled

system, or the "chichas" and "komity," as they came from the trenches or unclean barracks at the front, full of lice or other vermin, not to mention the many hundreds of prisoners of war, who suffered most.

Apart from the physical discomfort and loss of sleep induced by the attacks of lice, we observed during the epidemic of typhus and febris recurrens that in nearly every case they were the carriers of infection from sick to healthy persons. We especially confined our attention to pediculus, because in typhus it seemed to play havoc in the past, and in Serbia has been a dread accompaniment of three wars in succession. It is self evident, that wherever human beings are gathered together in large numbers, with infrequent opportunities of changing their clothes, pediculus vestimenti is sure to spread, as well as pediculus capitis. The louse does not arise, as many think, from dirt direct, though they flourish best in dirty surroundings. No pediculus vestimenti, or body louse, occurs that is not the direct product of an egg laid by a mother and fertilized by a father. "In considerable collections of men as in war," says Shipley (2), "some unhappy being or other will turn up in the community with lice on him, and these swiftly spread to others." The duration of this fever depends upon the number of paroxysms, since the latter are of definite length. In the majority of our cases there was but one relapse, and in that way the disease lasted from eighteen to twenty days and seldom more.

The treatment and general management were simple, including time and use of stimulants and tonics, especially iron, strychnine, and quinine, opposing fever by cold, or applications of snow, brought from the hills far away. We gave Dover's powder for pain or morphine for sleeplessness, if necessary subcutaneously. With good nursing, the patient during the intermissions was kept indoors for ten days or more, according to the individual case, the prevention of lousiness being a matter of absolute cleanliness. However, the most scrupulous persons may become infected. Lice may be passed directly (3) from one person to another, in vehicles, railroad cars, beds in hotels, clothing, underwear, litter, ambulance wagons, etc.

REFERENCES.

1. ANDERS: Relapsing Fever, *Medicine*, 1898, p. 72.
2. SHIPLEY: Insects and War, *British Med. Journal*, Sept. 19, 1914.
3. RUDJICINSKY: Typhus in Serbia, *NEW YORK MEDICAL JOURNAL*, December 11, 1914.

1900 BLUE ISLAND AVENUE.

AN EYE CASE WITH UNUSUAL COMPLICATIONS.

By F. P. HOOVER, M. D.,
Jacksonville, Fla.

On May 11th last I was called to a neighboring county by a former patient to see his wife, aged twenty years, to whom he had been married one year; she was in her eighth month of pregnancy. For some time there had been in the town an epidemic of smallpox, and both husband and wife had contracted

the disease, and were then convalescent. Both had an eruption on the face; the wife informed me that for nearly three weeks her left eye had been painful and inflamed; it gradually grew worse, and the pain was so intense at intervals that she could not sleep or rest. Light aggravated the pain, the eyelids became swollen, and it was with difficulty that she could close them. There was a constant flow of tears, the lashes matted together, and pus oozed from between them. Two days before a scum had gradually covered the left pupil; on the temporal side of the affected eye what seemed like a pimple appeared on the cornea, about the size of a small pin head. She could sew, but for only a few minutes at a time; she could not read, as it caused too much pain; the vision in both eyes had not been as acute as it was before the attack of smallpox. The patient was anemic in appearance, pale, and nervous; an eczema covered the bridge of the nose, was scattered over the forehead and slightly on both sides of the face and chin. The eye was covered with a cloth which, on removal, showed the lids swollen, the appearance and condition being as described by the patient. There was a covering of mucopus over the entire conjunctiva.

After cleansing the eye with a warm boric acid solution, I could then make a diagnosis of keratitis with corneal ulcer; covering two thirds of the pupil was a pannus, extending from above downward; on the temporal side of the pupil was a non-suppurating ulcer. The patient said, when she first observed the ulcer, it was further away from the pupil and higher up. The conjunctiva of the right eye was slightly inflamed; the sight was perfect. With the left eye she could see the print on a newspaper indistinctly at six inches when looking down, but the print seemed hazy and blurred. She could breathe but slightly out of her left nostril, in which was a hypertrophied inferior turbinate.

The patient also complained of pains in her limbs, especially her lower extremities; her left ankle was considerably swollen, pitting on pressure. She was chronically constipated; since childhood she never had a natural action and had had to take medicine to act on her bowels. Her appetite was fair; she never was a large eater. Never until she had smallpox had there been an eruption on her body; she had always enjoyed good health.

After cauterizing the ulcer, I ordered solution of atropine, four grains to the ounce, to be applied to the eye, also atropine and cocaine to be instilled in the eye when pain was severe; warm applications of boric acid solution, applied locally on cloths to cover the eye, the room to be kept darkened. Specific gravity of the urine was 1.006; albumin present and uric acid in excess. I was with the patient from three o'clock p. m. until the arrival of my train at six-thirty p. m. She was then feeling more comfortable. For the constipation and anemia I ordered aloin, sodium arsenate, equinine, resin of guaiac, one pill after meals. A few days later, over long distance 'phone, I was informed that the patient's eye was feeling easier and that the swelling was entirely gone; the swelling of the limbs was worse, no urine had been voided in two days, there

was pain, especially in the abdomen. The attending physician requested me to have the urine examined and to prescribe; he did not use the catheter. The same day, I sent the following for retention of the urine: Potassium citrate, grains lxxx; tincture of aconite, minims xij; spirits of nitrous ether, drams vi; syrup of tolu, one ounce; water q. s. to make three ounces. One teaspoonful was to be taken every two hours.

Two days later, I was informed that the swelling of the feet and legs was slight; there was no abdominal pain; she was urinating at intervals; the medicine acted after the second dose; there had been two movements daily of the bowels; the patient was feeling comfortable; the pannus was gradually disappearing, and more than half the pupil could then be seen. Two specimens of urine were examined, one taken after dinner, the other between meals; specific gravity of both was 1.016; albumin present; urine highly acid. Atropine was being used four times a day; there was seldom pain in the eye; the ulcer was no longer visible; the eruption on the face had entirely disappeared, with the exception of a very small patch over left forehead. The patient had been using zinc ointment on the eruption.

About June 1st, a child was stillborn. I did not hear again from the patient until July 16th, when she and her husband came to my office, bringing specimens of urine voided during the previous twenty-four hours. They showed specific gravity 1.022; no albumin; no sugar; acid. Every trace of the woman's former eye trouble had entirely disappeared; the left pupil was as round as its fellow, no intolerance to light, no blurring or haziness of sight; in both eyes the vision was 20/20. The patient said that the scum over her left eye gradually vanished and the pupil became clear, her skin was free of scar or blemish; she was still constipated, but using the pills I sent her last May; she was feeling very much better.

In conclusion, I saw the patient once only in May last. I was in almost daily communication with her for two weeks by telephone. The patient's mother unassisted nursed her. The distance was too great as well as the cost for me to make the trip to see the patient a second time, and they could not afford the expense. The husband refused bringing his wife to Jacksonville, where she could have the proper care and attention in an institution. He said she soon would be confined and he wanted her near him all the time; he thought her mother could do all a professional nurse could do, that he would assume all responsibility in the premises. His wife said: "After the baby came and I learned it was stillborn, I cried a great deal; it did not seem to make my eye worse. I was surprised to see how rapidly my eyes returned to their former healthy condition."

Being so prolonged a most interesting and complicated condition, and it was a surprise to me to see the left eye in a perfectly healthy state with normal vision, when all the phases of the case were taken into consideration.

MEYER LEO BERGSTEIN.

SODIUM BICARBONATE.

Old and New Uses, Especially Its Adjuvant Action.

By W. P. HERRICK, M. D.,
New York.

That sodium bicarbonate is one of our most valuable medicinal agents is often realized only on second thought. The increased characteristic efficiency of certain drugs, when combined with sodium bicarbonate, over their use alone, first aroused our interest. On going over the combinations deemed most valuable, it was a veritable surprise to find its position maintained in the first dozen, if not half dozen of most reliable remedies. To name some: Calomel and sodium bicarbonate, rhubarb and soda, sodium salicylate and sodium bicarbonate, with acid salicylic to produce nascent sodium salicylate; with cerium oxalate; in many alkaline mixtures; with acetanilid, in pulvis acetanilidi compositus (U. S. P.); in ferri carbonas saccharatus (U. S. P.); in effervescent iron mixtures, and the preparation of iron arsenate, with bromides, in Seidlitz powder, and effervescent preparations, as magnesiae citras effervescens; lithii citras effervescens, caffeinae citrata effervescens; in Dobell's solution, the British official emulsion of codliver oil, etc. What adjuvant then can be named with it? With its wealth of local applicability and varied internal uses, at times for its excess of carbon dioxide, at times for its reaction, at times for its physiological action proper, and with apparently a still wider field of applicability, a brief consideration of its uses should be worth while.

The physical and chemical characteristics of sodium bicarbonate are evidently connected with its medicinal uses and therefore demand notice. Sodium bicarbonate (baking soda) is a white opaque powder, odorless, of mildly alkaline salty taste, soluble in 11.3 parts of water, insoluble in alcohol and ether, mildly alkaline in reaction, decomposed by acids and acid salts, its excess of carbon dioxide readily liberated by heat when it is changed to a carbonate; permanent in dry, but slowly decomposed in moist air. Its incompatibilities are practically a recapitulation of the foregoing.

a. As acids and acid salts break down sodium bicarbonate, it should not be used with these, unless this action is desired.

b. As heat makes it a carbonate, heat should be avoided.

c. Being insoluble in alcohol, avoid combination with alcoholic preparations.

d. As an alkaline salt, it will precipitate alkaloids.

The physiological action and medicinal uses may be considered together, noting under the latter, the

1. Local.
2. Internal, and of these,
 - (a) Basic uses.
 - (b) Adjuvant actions.

1. Local, on the skin, sodium bicarbonate saponifies and therefore dissolves fatty matters and is mildly anesthetic. These cleansing and soothing properties are valuable in lotions for the skin, where from a one per cent. to a saturated solution or

paste, it may be used to relieve itching, being of especial use in urticaria, where as a paste locally, or in a bath ($\frac{3}{4}$ to $\frac{1}{2}$ lb.), it is most efficient.

On abraded surfaces, in solution, it is slightly anesthetic, its excess alkalinity making it antiseptic to the large majority of germs which grow on acid neutral or faintly alkaline media, an especially valuable quality when present in a nonirritant, slightly anesthetic substance. Thus in smaller burns, plunging the part in a solution to saturation or excess in warm water, of sodium bicarbonate, allays pain in a wonderful way, while excluding the air and contamination, rendering it the best immediate treatment.

In severe and extensive burns, immersion in a bath containing one eighth to one quarter pound of sodium bicarbonate is cleanly and soothing. The head is supported by a rubber ring, the body adjusted as may be necessary or expedient, the temperature of the bath being raised for subnormal temperature and shock, or lowered for pyrexia. This treatment is unequalled.

In the secondary treatment of smaller burns of the first and second degree, some may prefer to use the picric acid method; if not, and the patient will stand a reasonable amount of pain for a limited time to obtain a quick cure, we may dust on a powder of equal parts of sodium bicarbonate and zinc stearate, covering this with rubber tissue strips or perforated rubber tissue, and applying a gauze and cotton dressing, when the drying and protection of the epithelial cells will make healing most rapid. As epithelial cells form, in burns of the third degree, this method will often hasten the healing surprisingly, or should treatment with an ointment be preferred, a ten to twenty per cent. ointment will be found quite the equal of the boric acid ointment so much used.

In granulating wounds and sinuses it is a non-irritant antiseptic, dissolving gradually in the secretion, and is often of great value. It may be used as a powder, its only disadvantage being caking at times. When combined in this way with a wet dressing, its result in checking discharge and promoting healthy granulations is very gratifying.

Ulcers thickly covered with boric acid, with rubber tissue strips or perforated rubber tissue applied, and the dressing left for several days, will often heal with remarkable rapidity. Equal parts of sodium bicarbonate and zinc stearate may be used in this way with similar results.

In the ear, a saturated solution of sodium bicarbonate in warm water (about 100° to 110° F.) is the best method of softening impacted cerumen.

In the nose, it is nonirritant, even in saturated solution, its cleansing, mucus-dissolving, antiseptic actions making it very valuable. Thus as a cleansing alkaline spray it may be used in saturated solution, or in many combinations, as Dobell's solution, etc., beside several valuable more recent preparations. As a douche to the nose, an ounce to a quart of warm water, it is not surpassed, and is so used in the treatment of frontal sinusitis, etc.

In the mouth, checking acid secretions, it diminishes somewhat the flow of saliva and dissolves mucus, gives a cleansing taste. Its chief actions

here are antiseptic and alkaline. Herpes of the mouth and lips is cured by the application of the powder. In herpes of the mouth (canker sore and aphthous mouths of children) it gives us a safer method than the silver nitrate stick or copper sulphate, and one better adapted to the patients' own use.

When applied to the herpes of the lip, there is some temporary smarting, a scab quickly forms, however, under which healing is prompt. A saturated solution used before retiring is strongly recommended to cleanse the mouth and help maintain its alkalinity, and in the event of inflammation, the powder rubbed on the gums is of great use. It is used as a constituent of many tooth powders, and here again in Dobell's solution.

In the throat, as a spray, gargle, or irrigation, it is soothing and cleansing, affording especial relief on account of dissolving the mucus. Thus a warm irrigation (100° to 110° F.) is most grateful in tonsillitis, and should also be useful in diphtheritic throats.

Gastric lavage may perhaps more properly be considered here than under the internal uses. In three to five per cent. solution, its antacid, mucus-dissolving, cleansing, and antiseptic qualities render it valuable wherever gastric lavage is indicated, including certain cases of extreme irritability and vomiting, as in gastric ulcer, when it can hardly be excelled. In the colon and rectum, for the same reasons, it should be very valuable. In the vagina, as a douche, one half ounce to two ounces to the quart of water at 110° to 116° F., to which may be added one dram of five per cent. menthol solution. It can hardly be excelled for ordinary use in simple vaginitis, and even in gonorrheal vaginitis. In the bladder or urethra it should rival boric acid for irrigation. In preputial herpes it is valuable, applied as a powder or solution. In balanitis and balanoposthitis, in saturated solution, it is valuable as a lotion or for bathing the part.

Can we name another remedy for more varied and valuable local uses?

2. *Internal*.—In the stomach it dissolves mucus and, as an alkali, neutralizes acids when present in excess; thus it has an anesthetic action, which is soothing and relieves pain and irritation. After its local anesthetic action (having neutralized abnormal acids or excessive acidity) we have liberated two of the greatest gastric stimulants, sodium chloride and carbonic acid. Their value may be realized when we recall that no condiment for food is so much used, or so necessary as sodium chloride. Further, let us glance at carbonic acid as an aid to assimilation. Take for example, alcohol in a delicate stomach. What is its least irritating form with the quickest and greatest effect for the same amount? Evidently champagne; and for the same reason carbonated waters are generally preferred for diluting whiskey or brandy.

In milk, for the delicate stomach, we recall milk and vichy, kumyss, etc. When carbon dioxide is not freed too rapidly within the body, its action should be similar to that, when it is freed outside the body, which with the formation of sodium chlo-

ride, we believe to be the chemical basis for the stomachic action of sodium bicarbonate.

Let us look further at the stomachics; they may be summed up as:

1. Bitters, aromatics, and pungent substances.
2. More or less irritant volatile substances, as alcohol, ether, chloroform, and spiritus ammonii aromaticus.
3. Alkalies, including the antacids, magnesia and magnesium carbonates, but especially potassium and sodium bicarbonate.

It is interesting, then, to note that of the foregoing, though many act in part reflexly, all are gastric irritants, except some of the alkalies, among which the bicarbonates are preeminently effective. Of these nonirritant stomachics, sodium bicarbonate forming sodium chloride on breaking down, ranks first as a gastrointestinal antacid and sedative. In small doses (grains v to x) before eating, it neutralizes abnormal acid, when present, and stimulates the gastric secretion, while after eating (grains x to xv) it neutralizes hyperacidity, thus relieving acid eructations and pain.

Being especially valuable in the hyperacidity of rheumatic conditions, also combined with peppermint (grains x to one dram in two ounces of peppermint water) it is valuable in flatulency, especially that following laparotomy, which it often promptly relieves. In gastric ulcer, unless all drugs by mouth are contraindicated, it is of value for its antacid and local anesthetic action, alone, or in combination, while in the acidosis of infants or adults its action is specific. In the intestines, it has been found valuable in the diarrhea of infants. Bile is said to be increased and rendered more fluid by sodium bicarbonate though not so efficiently as by sodium salicylate. The alkalinity of the blood is heightened, and if the hemoglobin is deficient, it is said to be increased. These with its antacid properties make it valuable in subacute and chronic rheumatic conditions. Fifteen to twenty grains of sodium bicarbonate with five to ten grains of sodium salicylate after meals, with at least two glasses of water between meals are excellent, while in acute articular rheumatism the proportions may be reversed or equal parts used. A saturated solution to the swollen and painful joints has been said to be of benefit. The alkalinity of the blood being diminished in general infections, it has been suggested in these, and Trousseau asserts that it is of benefit in angina pectoris. It has practically no effect on the nervous system, except for the local anesthetic action, which has been mentioned. It is excreted chiefly by the kidneys, acting as a slight diuretic and rendering the urine alkaline, which use is valuable, (grains xv to xxx after meals) in bladder irritability and urethritis.

Adjuvant action. The basis of a prescription has been defined as "a substance, or substances, to effect the desired physiological action; the adjuvant, that which enhances this action."

Evidently *adjuvant action* must be due to many conditions or better absorption of the body; or, similarly, divided doses increase the total action of a drug. This may be on the stomach, aiding absorption; or on the basis, forming its least irritant, most

readily and completely absorbed and used compound, or both. The most suitable stomachic, possessing these properties, should then be the most efficient adjuvant. Under internal uses we have seen the unsurpassed simple stomachic properties of sodium bicarbonate, which likely are present in many of the combinations. In going over the metals, except those whose salts are mainly insoluble and therefore inert or only protective, as cerium and bismuth, sodium will be found to have the least secondary or remote action. For example, potassium and lithium are depressant, barium and ammonium stimulant, lead and zinc astringent; when we remember the great avidity of the stronger acid radicals for sodium and especially the tendency to form sodium chloride, the general desirability of sodium is evident. Again, in comparing their salts we find the rule that the irritant action is relative to the caustic or irritant action of the combining acid.

In studying sulphuric, nitric, hydrochloric, acetic, lactic, tartaric, citric, and carbonic acids, we will find in general the sulphates, nitrates, chlorides, and lactates comparatively irritating, the acetates, tartrates, and carbonates much less so, and the citrates and bicarbonates least so, and thus the most readily borne by the stomach. The citrates have an analogous action to the bicarbonates, as they are also changed in the body into carbonates, while the mildly alkaline bicarbonate adjuvant has the additional advantage over the carbonate, in being readily broken down into the latter by acids, with the freeing of carbon dioxide, thus developing stronger antacid action at need, and giving the greatest powers of forming a carbonate with the basis. The chemical composition of sodium bicarbonate is therefore practically ideal for this purpose.

Again, as "probably all alkalies circulate in the blood as carbonates" (White and Wilcox), there is a real reason for the empirical rule that carbonates are the most readily assimilated inorganic salts, whether formed within or externally to the body. This is well illustrated by the most used forms of the two most useful metals, iron and arsenic. In the pill *Blaud* there is a combination of iron sulphate and potassium carbonate, so that iron carbonate may be formed within the body, the potassium salt being here preferred to sodium carbonate or bicarbonate, as less deliquescent and more constant in weight. Of iron carbonates, formed externally to the body, *ferri carbonas saccharatus* might be mentioned in which sodium bicarbonate is used; and in *liquor potassii arsenitis* (Fowler's solution) combining arsenous acid with potassium bicarbonate and compound tincture of lavender, a carbonate is probably formed within the body. If we grant this rule, sodium bicarbonate, as the most suitable simple stomachic, most strongly tending to form with the basis an easily assimilable carbonate, should be an unsurpassed adjuvant, and we have seen its many uses.

In working along this line we have found that with phenacetin, and with many coal tar products and hypnotics, the desired action is enhanced by sodium bicarbonate, and we believe that its pre-eminent adjuvant action is in the association of a bicarbonate with the basis, directly aiding its ab-

sorption, or the formation of a more easily assimilable compound, or both, a principle which we believe has a wide field of applicability with many bases.

56 EAST FIFTY-THIRD STREET.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVIII.—How do you treat cyclic vomiting of infants? (Closed.)

CLXIX.—How do you proceed in post partum hemorrhage? (Answers due not later than April 15th.)

CLXX.—How do you prevent laceration of the perineum in childbirth? (Answers due not later than May 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscriber or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXVII has been awarded to Dr. Henry R. Harrower, of Los Angeles, Cal., whose article appears below.

PRIZE QUESTION CLXVII.

THE TREATMENT OF RICKETS,

BY HENRY R. HARROWER, M.D.,
Los Angeles, Cal.

Rickets is a nutritional disorder of children, a form of starvation, hence before it can be treated effectively we must know what factors are prominent in the production of the disturbed metabolism and what elements can be given acceptably to replace those that are deficient. From an experimental standpoint, rickets is now understood to be a result of endocrinous disorder. It has been produced more easily and quickly by the removal or destruction of certain of the glands of internal secretion than by dietetic restriction. In fact, the dietetic element in the etiology of rickets seems to be losing a good share of the importance that was until recently attributed to it.

Direct medication. Five things need to be accomplished:

1. Replace the missing mineral element in the blood and bones—calcium. The best calcium salt is the phosphate, which is conveniently given in the U. S. P. syrup of calcium lactophosphate, two drams, three to six times a day.

2. Replace the missing vitamins, factors which are now being recognized as playing an important part in many nutritional disorders. In nursing chil-

dren with serious malnutrition it is often noted that the mother is badly nourished, and suitable treatment will augment the value of her milk. In therapeutics this is accomplished by suitable dietetic regulation and by organotherapy.

3. Antagonize a tendency to acidosis which is invariably present in rachitic children and is quite frequently overlooked. Sodium citrate is excellent for this purpose and, incidentally, when given with milk, it prevents the formation of large curds and thus favors digestion. When the urinary acidity is high, sodium bicarbonate may be given in small and frequent doses, well diluted and so timed as not to interfere with digestion.

4. Enhance the mineral content of the blood. In addition to the calcium salts we can advantageously give the salts secured from fresh vegetables. This is an extremely important part of the successful treatment of rickets, for these saline elements seem to be urgently needed by the system; and are easily prepared and assimilated.

5. Favor the restoration of the conditions which cause or aggravate the disturbed mineral metabolism. This is best accomplished by suitable organotherapy. Many times small doses of thyroid extract—one quarter to one half grain, three times a day—will influence the nutrition of the rachitic child in a most decided manner. Thymus extract has been recommended upon the theoretical ground that the thymus controls calcium metabolism and that rickets is possibly a manifestation of hypothyroidism (for a characteristic result of thymectomy in young animals is a typical rickets with marked softening and bending of the long bones, especially of the legs). Again, pituitary is occasionally recommended, while total adrenal substance has facilitated recovery after other measures had been tried with little or no benefit.

The stimulation of the endocrinous glands is a matter of special importance, as unless this is done the calcium salts given simultaneously may be excreted and thus be useless, for it is certain that the fundamental factor in rickets is not so much a deficiency of calcium as an inability to fix and utilize it. This capacity is undoubtedly under the control of the ductless glands, those just mentioned being the most important.

Pluriglandular therapy is a useful even if empiric procedure in rickets. The following combination is well worth trying:

Total adrenal substance,	2 parts:
Desiccated thyroids,	1 part:
Thymus gland,	3 parts:
Excipient to make,	10 parts.

Two or more grains of this mixture, depending upon the age of the child, may be given three times a day. The proportions may be varied, or pituitary substance (total) may replace one part of the excipient. A total of one and a half to two grains each of thyroid and adrenal, and ten grains of thymus may be given in twenty-four hours. Carpani (*Lancet*, June 19, 1915) recommends pluriglandular therapy in rickets and gives powdered and dried gland substances *in toto*, in doses suitable to the age, in milk, for fifty days, omitting this for one week after the first month's treatment. He

noticed rapid and striking improvement, especially early in the treatment, the benefit being first noticed in the digestion, then in the nervous manifestations, and later in the blood and osseous system.

Another form of organotherapy which is quite generally used, is the administration of codliver oil alone or in various forms and combinations. The benefit is not due merely to the easily assimilated hydrocarbons, but also to the vitamins which are present and to a substance of a hormone nature which apparently aids in the metabolism of lime salts. Parenthetically it may be remarked that these substances are present in greater quantities in the cruder products, thus explaining the statements of Leonard Williams and others to the effect that the cruder the oil, the better its therapeutic effects in many cases.

Hygienic care. Obviously the general care of rachitic children should be as good as possible. Good hygiene favors all treatment, and usually children suffering with rickets have not had the home care they needed. The emunctories must be watched and regulated by the diet, by an occasional dose of castor oil, and, at the beginning of the treatment, by calomel in divided doses. The skin and circulation should be stimulated by daily cool bathing with friction. Sodium bicarbonate in the water (a heaping teaspoonful to each quart) is often an advantage, especially where the skin is chafed. Gentle massage with almond or olive oil is valuable. Sunshine, fresh air, suitable exercise, and regular rest are all important, especially the first two.

Dietetic management. Most rachitic children have been poorly fed and the malnutrition is not confined to the bones. Digestion is poor and assimilation is reduced. Fresh milk, because of its richness in vitamins and "living salts," is by far the best food. Pasteurized milk is a poor substitute, prepared foods are usually unsatisfactory, and boiled milk is the worst food that could be selected. The value of sodium citrate has already been mentioned, and lime water is also useful in modifying the milk. Limits of space forbid a discussion of the necessary milk modification and its administration. Suffice it to say that the child must be fed with milk modified on the basis of its weight, not its age—at least until digestion is normal and the child is obviously improving. At this stage barley gruel, oatmeal gruel, corn flakes, and other "heavier" cereal foods may be added, and later potatoes (baked) and other foods as a tolerance for them is established.

Between meals plenty of fluid should be given, and it should be planned to carry in this as many of the assimilable, vegetable mineral salts as conveniently can be given. Small quantities of fruit juices, especially orange and prune, may be given two or more times a day. Often idiosyncrasies to these are found, hence the need for caution.

Another excellent dietetic adjuvant, I might better say therapeutic measure, is clear vegetable soup. Sometimes it may accomplish more than any of the direct remedies mentioned previously, since it contains Nature's minerals, which normally form the inorganic skeleton of the cells. The preparation of this soup is important, and, incidentally, it will be

found a most valuable remedy in many metabolic dyscrasias in adults as well as children, including rheumatism, malnutrition, certain neurasthenic conditions, etc.

Spinach, potatoes (or well cleaned potato parings), carrots, turnips, fresh peas (with the pods), and, perhaps, small amounts of onions, are washed, cut up, and covered with two or three times their volume of water. Raw wheat or bran may take the place of one or more of these vegetables, if desired. The exact ingredients or their relative amounts are not of such great moment. Simmer for three or more hours over a slow fire, or, better still, boil briskly for fifteen minutes and place in a fireless cooker for three to five hours. Strain without pressure. The remainder may be passed through a sieve and used as a basis for a palatable thick soup for the table. One to four ounces of this clear liquid may be given four times a day, with or between the feedings. Bran water may be used. It is prepared and given in approximately the same way.

The surgical care of deformed bones is a matter for the attention and care of the orthopedist. Braces may be helpful, osteoclasis is often advisable; but in any event the foregoing suggested outlines for the treatment must be associated with surgical care.

Dr. John MacDonald, of Philadelphia, writes:

Hygienic measures are extremely important in this dystrophy; and among the most important is sunlight. Metabolism and elimination are stimulated by exposing a rachitic child naked to a 500 or 2,000 candle power lamp for ten, or, if an older child, fifteen minutes several times a day. Keep on mother's milk as long as possible.

The treatment must be determined by each individual case. In babies where there is simply a lack of nourishment, while still on mother's milk, I use phosphorus—codliver oil with its added nutriment and enzymes of barley, and thymus tablets. The thymus is the bone building organ, and after the final elaboration of skeletal tissue after puberty, it atrophies. All infants dying of rickets and marasmus show atrophy of the thymus. This statement is further supported by the wonderful results of thymus in osteoarthritis deformans. If the child has been weaned, substitute sodium citrated milk. No curdling of milk by rennin takes place when the quantity of sodium citrate reaches 1.7 grain to the ounce; and in smaller quantities the softness and digestibility of the curd increases with the quantity.

In cases where the condition is predominately marasmic or with atrophic skin changes, thyroid gland (grain one quarter, three times a day, and increased) should be substituted for the thymus. Be certain to use the whole gland preparation standardized with iodine. Never use over one and a half grain daily of an active iodine preparation, for, while thyroid stimulates the growth of the skeleton, yet rapid growth often results in deformity of the bones supporting weight, because the hardening substance of bones is insufficient or not assimilated.

When phosphates, especially calcium phosphate, are not being built into bone or eliminated too freely, splenic extract acts like magic.

If calcium metabolism is at fault, there are two procedures; a hypassimilation is treated with some calcium iodide preparation, the iodine of which stimulates the thyroid and lymphatic glands, which render calcium available for the bodily needs.

If calcium is unassimilable, there is a defect in the thyroparathyroid mechanism. In this case the saliva is invariably acid. Calcium is the principal base in the salts of the saliva, and most abundant constituent of the teeth. Rickety children and cretins have bad teeth. The administration of parathyroid tablets with calcium lactate supplies the calcium in an available form for the bones, saliva, and teeth.

When asthma becomes marked, adrenal substance is the specific. Adrenaline also assists in the absorption of calcium and formation of bone, but probably by stimulation of the thyroparathyroid and thymus glands.

In nervous and mental forms, including spasm of glottis, thymus is a marked advance over the thyroid, as it produces no untoward symptoms. The thymus contains a nucleoprotein with 3.5 per cent. of phosphorus. These types respond promptly. Dentition and closure of the fontanelle are also prompt.

Where growth is delayed and there are abnormalities of structure, often accompanied by imbecility, pituitary tablets produce astounding results, and once started, improvement proceeds satisfactorily.

Dr. Jesse D. Friedman, of New Kensington, Pa., observes:

Rickets is fundamentally a nutritional disease in which there exists some derangement in the metabolic processes, so prophylaxis necessarily plays an important role in the treatment. Frequent pregnancies cause a diminution of lime salts, the latter playing an important role in rickets, so we should aim to prevent frequent pregnancies. There should be a proper observance of diet while a woman is pregnant or in the post partum stage—allowing a generous diet, such as meat, vegetables, cereals, milk, fruits, etc., endeavoring to create a good quality of milk. Unsuitable clothing, lack of bathing and cleanliness, poor heating and ventilation and unsanitary conditions predispose to rickets.

Artificial and proprietary foods make the child more prone and susceptible to rickets, so we should endeavor to have every infant benefited by breast feeding. If the mother cannot nurse the child, a good wet nurse should be substituted or artificial feeding, using clean raw milk with a simple formula.

The diet of the infant for the first nine months should consist entirely of milk, then a little farinaceous food may be added. At the end of twelve months raw beef juice, cream, and eggs should be given in addition to the milk. Lack of fruit acids predisposes to rickets, so we should bear in mind the administration of fruit juices—orange, prunes, or pineapple. Fresh air and sunshine are essential, and the seashore air has been found beneficial. Keep the child warmly clad; a warm water bath each day is beneficial.

Medicinally, phosphorus has been found almost a specific, especially when combined with codliver

oil—it is supposed to increase the retention of calcium. It is given in one per cent. solution. Codliver oil is also to be rubbed into the skin. General body massage helps to allay the pains found in children with rickets. Tonics are to be administered, such as calcium lactophosphate or syrup ferri iodidi or malt. Thyroid extract and adrenaline are recommended by men of experience. Deformities must be prevented by keeping the child recumbent or by the use of splints or apparatus. As the child grows older, a more liberal diet is given, such as vegetables, lamb broth, eggs, scraped beef, cereals, etc.

Dr. W. A. L. Styles, of Montreal, remarks:

The treatment of this condition aims at the correction of causative factors—improper food and method of feeding superimposed upon unhygienic home surroundings. Prophylaxis is based upon a correctly understood and faithfully carried out dietary adapted to the particular age and digestive capacity of the little patient, combined with proper home sanitation and hydrotherapeutic measures.

As the active symptoms of rickets are rare after the first eighteen months of life, so this initial period presents the most effective therapeutic possibilities for treatment. Rickets being principally a diet disorder, our main therapeutic agent is dietetics. The successful dietetic treatment demands a thorough knowledge of the proper diet of the first two years of life, with due appreciation of the cardinal fact that many rachitic children of two years have not the digestive capabilities of a normal year old child. Each individual case is a law unto itself in the rational administration of a dietary.

A liberal amount of fat and protein, capable of assimilation, is essential, while a diminution of carbohydrate is desirable. The absence of an appreciation of this basic principle explains the often occurrence of rickets among proprietary food habits.

Rarely does rickets ensue among breast fed babies, unless the fat and protein proportions are at great variance from the normal standard—a defect which can usually be remedied.

Fresh clean cow's milk is our desideratum as the chief food staple; fresh eggs, butter, raw meat juice, and particularly codliver oil, which is almost a specific, in average doses of twenty minims for a one year old child, thrice daily, combined with extract of malt. A daily bath, followed by massage, is useful. Country air for the well to do, and the park for the poor of the city, with free ventilation of the home at all times is advised.

Treatment of osseous deformity. In active stages the child must be kept off its feet, preferably by long external splints, to prevent onset or progressiveness of deformity of lower limbs. Rest and massage, in conjunction with general treatment, are indicated.

Before resorting to surgical intervention for correction of the deformity—which must never be undertaken before the child is six years old—let us bear in mind that Nature may be depended upon to overcome a surprising amount of deformity. The convulsive disturbances of rickets will yield to general treatment, supplemented by bromides and codliver oil.

(To be continued.)

Contemporary Notes.

Jack Straws.—The editor of the *Buffalo Medical Journal* says, in the issue for March, 1916, that he need not describe this good old fashioned game. He simply wants to emphasize that it ought to be part of the armamentarium of every child as a training of muscular coordination and the muscular sense. It should also be used in cases in which, from paralysis or other cause, it is necessary to re-train these faculties. Incidentally, it might prove an alternative for diversion of convalescents, and might possibly distract the attention in such a way as to ameliorate some of the manifestations of mental disease. The *NEW YORK MEDICAL JOURNAL* has several times advised juggling with tennis balls and practice in parlor magic in similar circumstances.

War Death Rate Drops.—Official statements recently made show a remarkable decrease in the death rate of wounded and sick soldiers in both the German and the French armies, observes the *Canada Lancet* for March, 1916. For the German army the statistics show that while in the first months of the war three per cent. of the wounded and sick soldiers died, twelve per cent. were discharged, and eighty-five per cent. returned to active service, the death rate since then has fallen steadily until now the monthly average is 1.7 per cent., the discharges average 8.8 per cent., and 89.5 per cent. are still fit for service. For the French army the official statistics give the mortality among the sick and wounded soldiers in the war hospitals during the month of September, 1914, as forty-five per 1,000, and during the past months as only eighteen per 1,000.

Fresh Air.—Morse (*Journal A. M. A.*, Jan. 8, 1916), in discussing fresh air, states: "Some writers apparently mean by this term pure air without regard to its temperature, others seem to mean cold air without regard to its purity, others air which is pure and cold, and still others do not attach any definite meaning to it." He defines fresh air as an air that is cool, dry, and in motion. In this present day when so much is being said and written about fresh air as an essential adjuvant in the treatment of most of the human ailments, it becomes necessary for the attendant to explain what is meant by obtaining as much fresh air as is possible.

Cold air exerts a baneful and irritating influence upon many of the acute and even chronic respiratory conditions. In acute nasopharyngitis, acute laryngitis, and acute bronchitis, cold air exerts an irritating influence on the mucous membrane lining these passages. On the other hand, remarks the *Journal of the Michigan State Medical Society* for March, 1916, it has been observed that cold air raises the blood pressure in the pneumonias when there is a vasomotor paralysis, but whether such an effect is beneficial is questionable.

Summed up, the conclusion must be reached that fresh air at a temperature of 50° to 60° F. exerts a most beneficial influence. At a lower temperature it is apt to prove to be detrimental, as clean air is not pure, that is, free from bacteria, dust, and smoke. It must be used with discretion. Cold air is of advantage in some conditions but harmful in others.

The paucity of data upon the subject makes Morse's warning and comments of timely value in that it brings to our attention that additional qualities other than cold are essential to secure beneficial results from fresh air treatment. A compilation of extensive observations and discussion of the subject consequently becomes desirable.

Professional Unrest.—Under this heading, the *Southern Clinic* for January, 1916, writes in part as follows: "In spite of all of our State laws for the suppression of dishonest and fraudulent practitioners, and all the activity of our so called State health and examining boards, there never have been as many irregular, unethical, and fraudulent practitioners tolerated and legalized in the State of Virginia as at this time. It is not surprising that our studious and honest young practitioners who have been subjected to rigid tests of proficiency by the State Board of Medical Examiners before being allowed even to open an office for practice should complain when they see the field overrun with men who disregard every semblance of medical propriety, and by almost any pretext or change of creed, sidestep the medical laws, and get the bulk of money that should go into the hands of more deserving practitioners. No wonder that they wake up and ask, 'Just how far can I go, or how much of this forbidden fruit can I pluck—and still appear clean?' Now we cannot answer all alike, for our views in one instance would not apply to another circumstanced differently. In the first place, it is not only unethical but dishonorable in every way for a physician holding fellowship with any organization to violate any of its rules, and such gentlemen can answer their own queries better than we can.

To the physician who is under no pledge to any society or organization, it then becomes a question of conscience and policy—and here comes a very broad field for consideration. A struggling physician—and a good man he was—came to us and stated that he could get enough to support his family if he could accept a contract practice for a large concern, but his local society would not permit him to take it. We asked him if the society was feeding and clothing his family? This is all the advice we gave him, but he resigned his membership that day, and without violating any obligations to anyone, accepted a good position. Every one in the profession respected him for his honorable course. But even where a physician is unhampered by society connections, he should not feel free to do everything that he has a right to do, regardless of the opinion of the profession, for there is a very wide difference between moral rectitude and legal license. No professional man, whether under the dominion of the society whip lash or a free lance, can afford to ignore the true principles of medical ethics. He may be an independent, a kicker, a fighter; but all the same he must be a gentleman—and so live that when he desires closer relations with his fellows his record will stand inspection. Therefore we say to all of our dissatisfied brethren: Do not run the risk of seeing how near you can go to the limit of irregularity, when certain destruction awaits you just beyond."

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 1, 1916.

THE VALUE OF SUMMER CAMPS.

Winter lingers in the lap of spring, but the thrill of reviving Nature is felt by all; soon will come the quick transition to summer interests and outdoor life. A general sentiment for preparedness is leading wisely to the establishment of military training camps, and probably no man, and let us add no woman, could employ the vacation periods to larger personal advantage or greater potential public usefulness than to become a member of such a camp. Life in the open leads to increased power, self control, resourcefulness, and cooperation.

This trend to the military camp is but one phase of a general camp movement, begun in the eighties with the establishment on Squam Lake in New Hampshire of camps for boys, which, fostered in the face of difficulties, has broadened into a national camping habit of large importance to health and national wellbeing. There are now over 200 private camps for boys and nearly as many for girls in the New England States alone; in addition, almost every Y. M. C. A. and Y. W. C. A. has its summer camp. Settlements and churches send their groups of boys into camp. The scouts and pioneers and the camp-fire girls all go into the open to live for a time. Even industrial establishments and department

stores have found that it is to their financial interest to establish camps for their employees. Several corporations for years have maintained summer camps for executives, heads of departments, managers, and salesmen.

We wish to lay stress especially on the value of the camp to the growing girl and boy. The camp life is not only a means of establishing during the outdoor months a reserve fund of health against the confinement of winter, but it is a training in citizenship which our boys, and especially our girls, need almost as much as health and strength. The properly conducted camp is a purely democratic community to which each member contributes his share of willing service. There is a kindly give and take which rubs off corners, and does away with crochets and whimsies. It leads each to become considerate of others and less absorbed in his or her own important self. To girls particularly, who are deprived of almost every kind of training in co-operation until marriage arrives as a stern teacher, camp life with its submergence of the individual in the common weal comes as an untold blessing. It rests with physicians very largely whether parents are properly advised as to the selection of camps for their children, and whether camp managers shall be held to rigid responsibility for proper methods.

The NEW YORK MEDICAL JOURNAL has gladly undertaken to be of assistance to its readers by supplying them with information regarding camp particulars, and has collected data which are available to such as may care to make use of them. We have catalogued camps, as far as possible, and are able to give expert information with regard to the best camp practice and standards of camp management, feeling that effort along this line is and should be considered a valuable phase of hygiene.

PROTECT THE CROTON WATERSHED.

The vigorous protests of the citizens of New York against the contamination of the Croton water supply through the erection of two State institutions on the Croton watershed, have led to the introduction into the Legislature of what purports to be a compromise measure. This measure provides for a commission of three members to be appointed by the Governor, the temporary President of the Senate, and the Speaker of the Assembly, to investigate the sites which have been chosen for these institutions. The bill is not at all acceptable. It is a shrewd plan devised with a view to mislead the inhabitants of this city. The findings of such a commission would undoubtedly be in accordance with the wishes of the politicians who have proposed its creation.

As set forth in an editorial article on the subject last week, nothing short of the removal of the Mohansic State Hospital and the Yorktown Heights Training School for Boys will give the needed security to the water supply of the city. Those who advocate the retention of the present sites apparently exaggerate the cost that would be entailed on the State by a change of site. But even if the cost is as great as stated, \$1,300,000, it should not be permitted to influence a decision which involves the health of the greatest city in the world.

We again ask our readers, particularly those residing in the State outside of the city, to urge strongly their representatives in the Legislature to give their support to the Wagner-Bloch bills known as S. 58, 60, and 193, and A. 978, 979, and 980.

THE RELIGION OF A PHYSICIAN.

Religion has its roots in the feelings aroused by "the great biological crises of marriage and birth, of sickness and death. The religious emotion consecrates such elemental concerns—its objective, in a word, is *life*." There are reasons, therefore, why the physician should be religious above all other men; he, more than any one else, contemplates objectively the most striking phenomena which in all ages have set men questioning as to human existence, its why, its whence, its whither. It is his province to lessen the danger attendant upon man's entrance into life, to prevent unnecessary suffering, and to put off the time of his final dissolution. It devolves upon the priest to explain these mysteries in terms as comprehensible as possible to the mind of his people, and to soothe and strengthen the soul in its experience of these great upheavals. The priest attempts to reconcile man to Nature's laws, the physician to adjust him thereto. Both war against sin, which consists in ignorance, or willful breaking of those laws.

What does the physician believe? What is his attitude toward current doctrines? His formulas of the universe are probably as diverse as those of other men. He sees life, however, from a somewhat different point of view. His minute study of the human microcosm tends more and more to make him humble before the power which works so mightily in all things, for the farther we delve into the mysteries of life, the more intricate do the paths become and the wider is the view of what is beyond and yet to be learned. Again, the physician's wholesale contemplation of birth and death impresses upon him the problem of immortality, and should cause him more than others, to reach out in spirit toward a continued existence for the individual.

The suffering and sorrow and "unfulfilled completions" attendant upon sickness and death would be intolerable even for the physician if these were not set off against a bright background of love, of sympathy, and of sacrifice. These impress him that what we experience here is but the expression to dull human comprehension of the great reality, whose most comprehensive name must be *Illimitable Truth*. There is no need of special interferences with the laws of the universe—in other words, of miracles—to move the physician to religion. For him all things are miracle.

It is perhaps characteristic of the physician that he would not wish to dogmatize on religious faith. His study and experience rather preclude tendencies to such permanent crystallization of thought, even if he did not prefer to leave such a function to his coworker, the doctor of divinity. His doctrines may be few and vague, but his hope and his faith are not less intense than those of other men. His work tends to broaden faith and obliterate creed, for, as he sits in his comfortably cushioned pew, his mind may wander to a poorly furnished tenement from whence he lately issued, where, surrounded by tawdry pictures of saints, illumined by candles bought at great sacrifice, a mother kneels beside a cradle and fervently counts her beads. The church walls vanish and for him there are no doctrines save that love is, and that love persists; and no creeds save belief in the holiness of man. For him "every meal becomes a Eucharist; every marriage a sacred union; every home has its holy family; every mother is a madonna; and every babe is a son of God."

Coming to the practical side of religion, the physician can feel more free to express himself in positive terms. In helping in the cure of disease, but more especially in its prevention, he may feel that he adds much to the general fullness and happiness of life. His great Exemplar went about healing the sick and doing good. Sydenham wrote, "I have always thought that to have published for the benefit of afflicted mortals any certain method of subduing even the slightest disease was a matter of greater felicity than the riches of a Tantalus or a Cræsus."

As for his personal life, though it may not be always above reproach, yet from the time of the Greeks and, doubtless for ages longer, the physician of impure motives and low aims has been debarred from association with his class.

That physicians lend their minds to the subject of religion is evidenced by the reverence pervading the writings of Austin Flint, Hufeland, Cheyne, Sydenham, Boerhaave, and others, while the *Religio medici* of Sir Thomas Browne is refreshing

literature after two and a half centuries. We do not believe that doctors are less religious now than formerly, though they may be less outspoken on the subject. We believe, rather, that they shrink from trying to put in words what words always fail to express. Perhaps, when approached on the subject, they would imitate the great lexicographer who, when questioned by a woman of missionary spirit as to his beliefs, replied that his religion was the religion of all sensible men. On further interrogation as to what the religion of all sensible men might be, he quieted his interviewer with the answer: "That, madam, is what every sensible man keeps to himself."

GOVERNMENT'S WORK FOR CHILDREN'S WELFARE.

Just as preventive medicine is becoming one of the foremost departments of medicine, so is one of its most important fields concerned with the rearing of children. Amid all the numerous and excellent societies and agencies recently arisen to promote child welfare, it is particularly interesting to note the work of the Government. The report of the Children's Bureau of the Department of Labor for the fiscal year 1915 records the activities of the third year of its existence. The appropriation for this bureau was increased from \$25,640 in 1914, to \$164,640 in 1915. This permitted a valuable extension of its functions. The bureau consists of five divisions—library, statistics, hygiene, industry, and social service. To enumerate them is to realize their importance. The division of industry has compiled a satisfactory working digest of all child labor legislation in the United States.

The first field study of the children's bureau was an inquiry into infant mortality, which is still a major activity of the division of social service. This subject has been taken up from the industrial, economic, and hygienic points of view. Published reports of this investigation in certain cities have been the means of arousing strong and effective local interest, and confirm "the theory on which the bureau was created—that if the Government can investigate and report, the conscience and power of local communities can be depended on for local action." It is believed that the limit of possibility of reduction of infant mortality has not been approached, and that "no infant death rate which the world has yet secured can be viewed with complacency."

A special investigation was made of the known feeble-minded children of the District of Columbia, of whom 798 individuals were reported, with fifty-four per cent. at large in the community under vary-

ing degrees of neglect, and an additional thirty per cent. either boarded out or in institutions not properly equipped. Only twelve per cent. were found well cared for. The report noted feeble-minded mothers of from one to six illegitimate children, all cared for at public expense. An inquiry has been undertaken into the meaning of illegitimacy for the individual child and the relation between illegitimacy and dependency.

Congress created the children's bureau with power "to investigate and report upon all matters pertaining to children," and this is being done under a policy of the fullest cooperation with other bureaus and departments to avoid duplication. Argument seems unnecessary to show the great improvement possible by uniting all such governmental activities under a National department of health built up on the present Public Health Service. Among the detailed subjects of investigation before the bureau are infant mortality, birth rate, orphanage, and desertion.

In connection with the investigation of child labor conditions, it is important to determine the average existing physical standards for various industries. In 1910, there were two million children between ten and fifteen years of age at work on farms, in factories, at mechanical trades, and otherwise. They are legally disqualified from contracting with employers and are at an age which most needs the protection and direction of schools. Their physical as well as their mental development is that of children. There are surprisingly few data on the actual physical and mental effect of industries on these immature children. Such studies are being instituted by the children's bureau.

Another great field needing investigation is the physical and mental development of rural children. According to the census of 1910, 17,897,520, or 60.7 per cent. of all the children of the United States under fifteen years of age live in rural districts or in towns of less than 2,500 population. These conditions ought to insure the best developmental surroundings; yet the percentage of illiteracy in rural children is twice that in city children and is still higher where there is much rural child labor. Data are not at hand to determine whether rural children have a better physique than city children or to determine what factors contribute to delinquency in rural children.

The physician is finding more and more difficulty in keeping abreast of his profession. The field of preventive and social medicine is rapidly widening, and the physician by virtue of his very profession must have a guiding interest in all the different activities making for mental, physical, and social betterment.

AN ULCER IN AN UNUSUAL SITUATION.

Dr. Herbert A. Smith, of London, communicates to the *Lancet* for February 26, 1916, the following history:

In 1899 he was consulted by a lady, aged fifty-six years, married, who had been the subject of chronic dyspepsia for some years, characterized by pain after food, weight, eructation, and gnawing discomfort; the locality varied, but always pointed to the umbilicus. The usual remedies of bismuth and alkalies generally relieved her attacks. There was no history of anemia, of thrombosis, or of hemorrhage, and her attacks were set down to stercoral or toxic states. Added to her symptoms in August, 1899, she had severe colic and constipation, for the relief of which an oily emulsion of castor oil, fss ; olive oil, fjss , and clove oil, m_j , was prescribed. Immediate relief followed on the ensuing morning, but later on in the same day she was taken with all the signs of perforation, with chymous, and later stercoral vomit, acute pain, a fixed diaphragm, critical sweating, and every indication of approaching death. A surgeon was summoned, but arrived four hours too late. A post mortem examination revealed a clean stercoral ulcer, circular, one quarter inch in diameter, through the longitudinal band of the transverse colon. All the coats of the gut but the peritoneal had long been eroded, and she had probably been saved a much earlier death by the unique site of the ulcer, unaffected by muscular action of a direct character. A serpentine outflow of pulaceous matter had taken place into the peritoneum. The specimen is now in the pathological museum of St. Mary's Hospital.

HAVE WE FOUND A REMEDY FOR
PSORIASIS?

An editorial writer in the *Medical Press and Circular* for March 1, 1916, observes that a contributor to *Therapeutic Notes* for November, 1915, had an accidental experience with emetine hydrochloride which led him to believe that this remarkable remedy exerts a favorable influence upon psoriasis. The first case received a half grain of emetine hydrochloride by hypodermic injection for a severe aleoitis. Soon after the injection the skin manifestations, which were, of course, of longer duration, began to disappear. Three cases of psoriasis have been treated with emetine with highly satisfactory results. Even the most experienced dermatologist has often had to confess himself defeated by psoriasis. Here is a new idea which is worth putting to practical tests.

News Items.

The Ventilation of Moving Picture Theatres.—A test of the ventilation of 518 moving picture houses in three boroughs of New York city, made by inspectors of the health department on March 18th, showed that in only seventy-seven was the ventilation perfect. In 334 houses the ventilation was imperfect or very bad, and the owners of these places are to be summoned before the commissioner of licenses and action will be taken against them unless a satisfactory excuse can be given for existing conditions.

The Fifteenth Rush Society Lecture will be given on Thursday evening, April 6th, at the University of Pennsylvania, by Professor John M. T. Finney, of Johns Hopkins University, his subject being *What Constitutes a Surgeon*. This lecture is also the annual address before the Undergraduate Medical Society of the University of Pennsylvania.

Adulterator Charged with Bribery.—The charge of attempt to bribe an official has been brought against a retail druggist in Manhattan by the Police Department, who assert that an inspector of the board of health, who had taken samples of tinctures containing wood alcohol, was given \$50 by the druggist to return the samples. The druggist has been held for trial.

New Haven Medical Association.—At the recent annual meeting of this organization, the following officers were elected: Dr. Frederick Bellosa, president; Dr. John F. Luby, first vice-president; Dr. Eugene Blake, second vice-president; Dr. Charles E. Sanford, secretary; Dr. Thomas V. Hynes, treasurer; Dr. A. G. Nadler and Dr. E. H. Arnold, executive committee.

A New Hydropathic Establishment is to be opened soon in the Ansonia Hotel, New York, where all the popular forms of medicinal baths will be provided, including the Turkish, Russian, Nauheim, oxygen, sulphur, electric light, etc., and the Bergoniev treatment for obesity. Mr. M. Hudson Ackery is manager.

The Influence of the Medical Profession in World Reconstruction is the subject of an address which will be given by Dr. Frederic E. Sondern, president of the Medical Society of the County of New York, on Sunday, April 2d, at 10 a. m., at the Mount Morris Baptist Church, Fifth Avenue between 126th and 127th Streets, New York. Dr. Abraham Jacobi will introduce the speaker and other prominent members of the profession are expected to be present. All are invited.

Abating the Smoke Nuisance.—Since mere warnings to the proprietors of steam vessels in the territorial waters of New York city did not prove efficacious in the prevention of the smoke nuisance, ten of the most flagrant violators were summoned to court and fines were imposed in six cases, sentence being suspended in the other four. Sanitary inspectors have demonstrated on several steam vessels burning soft coal that when properly stoked this coal can be burned without the discharge of objectionable smoke.

A Class for Cardiac Patients at the Post-Graduate Hospital.—This class is now being formed under the direction of Dr. Robert H. Halsey, and announcement is made that there is room for many more patients. Application should be made on Friday, at three o'clock or between seven and eight p. m. A special social worker will be in attendance. The work is being conducted along the lines that have proved so successful in the class at Bellevue Hospital. The Burke Foundation will cooperate, whenever possible, in giving convalescent care, etc.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, April 3d, Wills Hospital Ophthalmological Society, Philadelphia Clinical Association, Academy of Surgery, Blockley Medical Society; Tuesday, April 4th, Aid Association of the County Medical Society, Laryngological Society, Medical Examiners' Association; Wednesday, April 5th, Physicians' Motor Club, College of Physicians; Thursday, April 6th, Obstetrical Society, Southeast Branch, County Medical Society; Friday, April 7th, Kensington Branch, County Medical Society.

Gifts and Bequests to Hospitals.—A bequest of more than \$300,000 to the Sisters of St. Vincent de Paul for the establishment of a branch of St. Vincent's Hospital at Stamford, N. Y., is contained in the will of Mrs. Mary A. Halloran, who died on March 12th last. The branch hospital will be known as the Halloran Cancer Hospital. The Sisters of Charity also received \$250,000 for the maintenance of the hospital.

Included in the will of Mrs. Halloran were bequests of \$10,000 to St. Joseph's Hospital in Yonkers, and \$5,000 each to St. Lawrence Hospital, the German Hospital, the Catholic Institute for the Blind, and the Knapp Memorial Eye Hospital.

By the will of Henry Gassaway Davis, the Davis Memorial Hospital, at Elkins, W. Va., will receive \$30,000.

Personal.—Dr. and Mrs. Donald B. Armstrong, of Stapleton, N. Y., have been awarded the prize of \$1,000 offered through the American Social Hygiene Association by a New York insurance company for the best pamphlet on social hygiene for girls and boys. Doctor Armstrong is a frequent contributor to the JOURNAL.

Dr. Charles W. Farr, for over four years physician to Sing Sing Prison, has resigned to devote his time to private practice.

Resolutions on the Death of Doctor Rodman.—At the March 8th meeting of the Philadelphia County Medical Society, the following resolutions were adopted:

WHEREAS, The Philadelphia County Medical Society has learned of the sad and untimely death of Dr. William L. Rodman, for many years one of its most distinguished and cherished members, and

WHEREAS, His great worth and high achievements as an author, a teacher and a surgeon were recognized at home and abroad as shown by his election to the presidency of the American Medical Association, therefore be it

Resolved, That the Philadelphia County Medical Society has learned with profound sorrow and regret of the death of Dr. William L. Rodman, one of its most beloved and distinguished members;

Resolved, That this society desires to place on record its high appreciation of his great professional attainments and his manly character, and

Resolved, That a copy of these resolutions be sent to his family and to the medical press for publication.

JOHN D. McLEAN, M.D.; JAMES M. ANDERS, M.D., and WILLIAM S. WRAY, M.D., committee.

Recent Appropriations of the Rockefeller Foundation.

—Appropriations amounting to \$1,200,000 have been made recently by the Rockefeller Foundation. To the Rockefeller Institute for Medical Research receives \$1,000,000 for additional endowment to be used by the department of animal pathology recently established near Princeton, N. J.; \$25,000 is given to the institute for medical research and for medical supplies and services needed for relief work in Europe, most of which will be used to support the hospital work being carried on in France by Dr. Alexis Carrel. The China Medical Board will receive \$125,000 for the purchase of additional property adjoining the Union Medical College, in Peking, for the promotion of medical teaching in China. The international committee of the Young Men's Christian Association receives \$50,000 in support of the work in the military prison camps in Europe.

State Health Departments Fighting Cancer.—Among the many agencies now active in the campaign against cancer, are the State boards of health of Massachusetts, New Hampshire, Ohio, Indiana, Michigan, Virginia, North Carolina, Kentucky, West Virginia, and Idaho, which have been especially active in disseminating trustworthy information and advice about the prevention and cure of cancer. The New York State Health Department, under the leadership of Commissioner Hermann M. Biggs, is the latest to enlist its forces in the war against cancer. As already stated in this JOURNAL, the entire March number of *Health News*, the department's monthly bulletin, is devoted to a consideration of the nature, prevalence, and treatment of malignant disease, with the object of creating among the people a healthy vigilance which leads to the taking of expert advice on the first appearance of danger signals.

Health Conditions in New York.—New Yorkers evidently thrive during cold weather. Figures concerning last week's deaths as given out by the department of health show that the chilly week just passed represented a saving of 165 lives over the conditions prevailing during the corresponding week last year. The health department reports that 1,624 persons died last week in the city of New York, a rate of 15.16 per 1,000 of population compared with 1,759 deaths and a rate of 16.70 for the corresponding week of last year. This difference in the weekly rate is equivalent to a saving of 165 lives. This saving has been effected through the reduction of the number of deaths from heart disease, influenza, bronchitis, lobar pneumonia, bronchopneumonia, pulmonary tuberculosis, and other tuberculous diseases. The acute contagious diseases, on the other hand, showed a slight increase over the corresponding week of last year and over the previous week of this year, as did also the number of deaths from nephritis, diseases of the nervous system, and violence.

Despite the good health conditions prevailing during the past few weeks, the death rate for the first thirteen weeks of 1916 was 15.66 compared with 15.12 for the first thirteen weeks of 1915, the higher figures this year being due to the epidemic of gripe in January.

The Physical Examination of Girls in Trade Schools.

—Through special arrangement with a representative of the Department of Education in New York, the Occupational Clinic, at 49 Lafayette Street, is now conducting physical examinations of girls who are serving an apprenticeship in the Department of Education's Extension Trade Rooms for Industrial Workers. The girls in this school remain but a short period, and each week new applicants are admitted. As soon as possible after they are admitted the girls are sent to the Occupational Clinic of the Division of Industrial Hygiene, and a physical examination is made to discover whether they show physical defect of a character which would disqualify them from such vocation as they may tentatively have selected.

Activities of the Public Health Committee of the New York Academy of Medicine.

—A summary of the activities of the committee during the months of January and February shows that among the matters which have received attention are the following: Health insurance; the free diagnosis of suspected cancer tissue; the fifth medical study year; the question of street accidents; overcrowding in infants' wards in institutions; standardization of commercial diagnostic laboratories; legislation with reference to patent medicines and medical advertisements; and the concentration of health activities within the Department of Education. No final action has as yet been taken with reference to these matters, which are still under consideration. Dr. James Alexander Miller is secretary of the committee.

The Samuel D. Gross Prize.—The conditions annexed by the testator are that this prize "shall be awarded every five years to the writer of the best original essay, not exceeding 150 printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize, shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page, it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 South Twenty-second Street, Philadelphia, on or before January 1, 1920. The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

WILLIAM J. TAYLOR, M.D.; JOHN H. JOPSON, M.D.; EDWARD B. HODGE, M.D., Trustees

Conference on Preparation for Medical Foreign Missionary Service.

—A conference will be held in New York on April 5th and 6th, under the auspices of the Board of Missionary Preparation, for the purpose of giving careful consideration to questions involved in the proper preparation of those who are looking forward to medical missionary service in the foreign field. This conference is not planned to be large in numbers, but it will be of very great importance, as the board feels that the time has come for a fresh study of the problems involved in medical preparation for missionary work. The conference will be limited to the following classes of delegates: Representatives of general foreign mission boards, of the leading medical faculties of the country, and of organizations to promote the interests of medical development. President W. Douglas Mackenzie, of Hartford Theological Seminary, the chairman of the board, will preside. The following topics are proposed for the consideration of the conference: The Fundamental Objectives of Medical Missionary Work from the Viewpoint of a Missionary Administrator; Personal Qualifications Essential for Different Forms of Medical Missionary Work; The Present Medical Preparation; The General and Specialized Preparation of the Medical Missionary—the Preparation of Women for Medical Service; The General Cultural Preparation Desirable for a Medical Missionary in Addition to His Technical Studies; The Conditions which Differentiate the Tasks of the Medical Missionary. Correspondence regarding the conference should be addressed to the Rev. Frank K. Sanders, 25 Madison Avenue, New York.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Thirteenth Communication.

MERCURY.

Even as the individual mind is prone to continue indefinitely in the channels of habit, so the community mind holds easily to the *idée fixe*; and it matters little what may be the communal bond so long as uniformity of purpose is present to serve directive ends. So the traditions of one medical community favor whiskey as a remedy for rattlesnake bite, and those of another community advocate scarlet salve for any and all eczemas. In a similar fashion, the physicians of the Southland, much more so formerly than now, however, deem calomel almost a panacea. Hardly any case arises but would be somewhat benefited by a purge—and what so reliable and convenient as calomel? With such a tradition for a guide one would be remiss, indeed, who would administer an innocuous placebo in place of the definitely demonstrative hydrargyri chloridum mite.

It is fortunate for the patient, however, as well as for the reputation of scientific medicine, that the real indications for mercury administration are now being more carefully sought. It certainly is not wise to irritate the kidneys and secretory glands, and further depress the nervous system, when the distressing contents of the alimentary canal may be less disturbingly swept out by the simple use of the plebeian castor oil. It ought to be a cardinal principle in all therapeutic teaching that the drug chosen shall be that one always which, while adequately efficient, is also the least disturbing to the general system. Such a criterion would elide calomel from the list of purgatives, except in some few selected cases of putrefactive diarrhea. Dissenters from this point of view are respectfully urged to challenge unscrupulously the data on which they base their present contention, and, bringing to bear on the issue all available pharmacological information, candidly state if their belief can withstand the searching test to which they may proceed to submit it.

In the second stage of syphilis, mercury, in the form of the protiodide, is very often specific—at least in causing a complete disappearance of all outward manifestations; but of late years, there has been a growing doubt as to the actuality of a permanent cure from mercury medication, and as a consequence the mercury treatment is giving place steadily to the newer, though not always successful arsenic synthetics. Mercury is a protoplasmic poison, which is assumed to affect the spirilla more promptly than the body cells. But in many cases of intensive mercury treatment of syphilis, as well as in heroic mercurial purging, there ensues a severe

poisoning of the cells of the secretory glandular structures of the body. This possibility must ever be kept in mind, and discriminative pharmaceutical selection made accordingly.

In pediculosis pubis the oleate of mercury (ten per cent.) is a very satisfactory substitute for the more commonly used blue ointment.

It may not be amiss to iterate the later teaching that mercury is *not* an hepatic stimulant, the older idea as to an assumed cholagogue action being an unfortunate and erroneous deduction from certain coproscopic findings.

Amebic Dysentery.—George C. Low (*Practitioner*, March) says that patients with acute cases of amebic dysentery must be put in bed as soon as possible and kept there strictly, the use of the bedpan and urinal being enforced. If pain is severe and tenesmus troublesome, a hypodermic injection of a sixth of a grain of morphine, or a small starch and opium enema—tincture of opium forty minims, mucilage of starch an ounce—may be given at once. Hot applications to the abdomen are soothing. The patient should be kept warm with hot water bottles. The bowel should be cleaned out thoroughly by castor oil, either alone, or better, combined with opium, twenty minims of the tincture to half an ounce of oil. Emetine injections may then be started, at once if the case is a bad one, otherwise after the oil has acted. One grain doses of emetine hydrochloride are injected deeply under the skin or into the muscles. In some cases two injections are given daily, morning and evening, for two or three days, and then one a day; in others only one a day from the first. The less food is taken the more rest is given to the bowel, but the strength of the patient must not be allowed to get too low. For the first few days the best things to give are chicken soup, barley water, rice water, or egg albumin; later, milk diluted with barley water or lime water may be substituted, and after this pure milk, peptonized or not, malted milk, or Benger's food. As the symptoms subside and the stools tend to become normal, milk puddings of arrowroot and cornflower may be substituted, these being followed by lightly boiled eggs, and then later by pounded white fish and chicken. Alcohol is to be avoided. Examine the stools daily. For at least six months the patient should be kept on a simple diet, white meat only being allowed, with plenty of milk. Beef should be restored with great care, and no coarse vegetables or fruits, spices, curries, or alcohol are to be allowed. Chills and wettings must be guarded against. Chronic cases are treated in much the same manner. Secondary diarrhea and looseness of the bowels are common. The longer the ulcers in the bowel have lasted the more likely they are to become infected secondarily and some resist treatment obstinately. When the ulcers are low down

and will not heal after the amœbæ have been destroyed rectal injections may be useful. One of these may be tried.

R Quininae bihydrochlor.,gr. x;
Acid borici,3ii;
Aque, adOij.

M. Sig.: To be given high up and at a temperature of 108° F.

R Acidi tannici,gram x;
Quininae hydrochlor.,gram j.

Dissolve in a litre of warm water. (Tannin, one in 100); if painful, use half strength.

R Argenti nitratis,grs. xxx;
Aque, ad3lx.

Half a grain to the ounce. This may be too strong and it is better to begin with one quarter grain to the ounce and work up.

R Cupri sulphatis,grs. xxx;
Aque, ad3lx.

Half a grain to the ounce. Increase to one grain to the ounce if the patient can stand it.

It is not uncommon after a dysenteric patient is cured, for obstinate constipation to set in, and this requires treatment. Castor oil in ounce doses or more will be found of value, or some of the preparations of liquid paraffin may be tried. In other cases enemata of salt and water are preferable. Salines by the mouth have been recommended. Failing all these methods surgical treatment may be necessary to permit irrigation of the colon.

Pyelitis in Infancy and Early Childhood.—L. R. DeBuys (*Southern Medical Journal*, March) divides the treatment of pyelitis in children into four groups: Drugs; irrigation of the pelvis by direct method; irrigation of the pelvis by indirect method; vaccines. Hexamethylenamine and potassium citrate are the drugs used most commonly, and of these the former is better. It is given early and in large doses, two to three grains every three or four hours to a child from one to two years of age. Potassium citrate is given to alkalinize the urine and hinder the growth of *Bacterium coli commune*, and must be given in doses of from twenty-four to forty-eight grains daily to a child one or two years old to produce the desired effect. The direct method of irrigating the pelvis of the kidney is efficient in adults, but is not applicable to little children because of the relative size of the instruments and the parts of the patient. By far the most reliable measure of treating pyelitis in the small patient is by indirect irrigation of the pelvis with large quantities of liquids. It is well to dilute the food so that the patients may be always hungry and must take large quantities of fluid to satisfy their hunger and receive a sufficient quantity of nutriment. Fluids may be given regularly day and night at intervals of two hours or less. In this way the pelvis of the kidneys are kept clean and the pus is constantly diluted and washed out, preventing the formation of large masses of pus and thereby diminishing the frequency of the plugging of the ureters with the incident high rises of temperature. In this way many patients are kept relatively free from fever and comfortable throughout the disease. Vaccines are sometimes of benefit and should be autogenous, but the effect is not uniform and reliable. They should be given in doses beginning with 50,000,000, increasing rapidly to 200,000,000, or even 250,000,000,

the interval varying from three to five days, depending on the reaction of the patient and the recovery from the reaction. Autogenous vaccine is indicated particularly in chronic and resistant cases. Should it not produce an immunity shown by the bactericidal property of the blood after from three to five vaccinations, its use should be discontinued. —In the discussion Frank P. Gegenbach stated that he has had rather better success with sodium citrate than with potassium citrate, and that he irrigates the bowels once or twice a day with normal salt solution in addition to giving large quantities of fluids.—L. W. Elias emphasized the need of large doses of hexamethylenamine.—Philip F. Barbour has had unpleasant experiences with that drug and is opposed to its use. He prefers potassium citrate.

Treatment of Flatulence and Meteorism.—Max Einhorn (*Medical Record*, March 18, 1916) advises the suppression by the patient of belching in cases of flatulence resulting from aerophagia without any dietetic restrictions whatever, while nerve sedatives may be of great service. Where eructations are combined with some complicating disease, especially amylose dyspepsia, it is better to give alkalis and other remedies to counteract the acidity than to take away starchy food. In some cases of intestinal flatulence, as in the gastric form, the mere habit of suppression by the patient overcomes the annoyance of continuous passing of gas. In other intestinal cases there is true indigestion, especially of starchy food, and this must be restricted. Where the proteins are poorly digested, they must be cut down, and a remedy such as salicylic acid or benzonaphthol may be administered. In meteorism the accumulated gas cannot be expelled, and it may be necessary to use the stomach or rectal tube to liberate it. Atropine, grain 1.60 once or twice a day, is of great service, even in the meteorism due to a mechanical obstacle. In intestinal obstruction, invagination, or intussusception, operation is obviously indicated.

Action of Medicinal Doses of Lead Acetate.—Frank Charteris (*Glasgow Medical Journal*, December, 1915) states that, in the limited field of controlling diarrhea and hemorrhage in typhoid fever, lead, especially if combined with opium, is often very potent, frequently acting when opium alone entirely fails. He has only once noted evidences of lead absorption—in the case of a woman suffering from diabetes and diarrhea who, after taking four opium and lead pills, developed a blue line on the gums. Recently he has collected twenty cases in which lead was used to control either albuminuria or hematuria. In such instances, where the drug is given for a longer time than for diarrhea, there is greater risk of absorption, and the earlier evidences of lead poisoning were frequent. A man with chronic nephritis, given in all 168 grains of lead acetate, administered in two grain pills twice daily, developed three days after the drug had been stopped, severe colicky pains, constipation, foul breath, and a blue line. The constipation persisting off and on for eleven days, then disappeared. Other patients developed a blue line after taking twenty-seven, thirty-six, forty-two, sixty, and 128 grains, respectively, of lead acetate. Basophilic stippling of the red cells was, however, found to be the earliest symptom of lead action, and

seemed indistinguishable from that seen in pernicious anemia and leucemia. Apart from the effects on the blood and gums, lead in one or two grain doses thrice daily was not apt to produce constipation, many patients, indeed, showing considerable looseness while taking it. A distinct slowing effect on the heart was noticed in several cases. Blood pressure was increased. In five out of eleven cases of albuminuria and hematuria the blood disappeared entirely from the urine during lead administration; in three cases it was increased, and in three unaffected. The effect on albuminuria seemed less satisfactory. In view of the risk of plumbism, it is inexpedient to administer the drug longer than two weeks, and the dose should not exceed two grains three times daily.

Intramuscular Injections of Mercury Salicylate in Syphilis.—William H. Best (*Medical Record*, March 11, 1916) says that his aim in this treatment is to bring the patient up to the point of saturation indicated by occasional slight salivation, metallic taste, and slight tenderness of the gums. Patients are instructed to take a teaspoonful of sodium phosphate in hot water each morning and a tablet of atropine sulphate grain 1/150, every eight hours if salivation becomes annoying. The dose at each injection varies from one half to three grains, and patients may start with one grain and increase one half grain at each injection up to the point of tolerance. The interval varies, but one week seems to be the optimum. In tertiary cases potassium iodide is also given in ascending doses. The injections cannot be made entirely painless, but the use of a long needle, even up to two and one half inches, precludes infiltration of the drug into the adipose tissue of the buttocks and thus pain is reduced to a minimum.

Analgesia and Anesthesia in Obstetric Practice.—According to Arthur J. Skeel (*Journal A. M. A.*, March 11, 1916) but three drugs, alone or in combination, are required for efficient and satisfactory analgesia or anesthesia in childbirth, namely morphine, nitrous oxide, and ether. The following considerations underlie the use of these three: Morphine relieves pain; relaxes a rigid cervix; often interferes with labor pains if given too early; delays labor in cases of uterine inertia; hastens it when delayed by a hypersensitive os in the first stage; depresses the child's respiratory centre; diminishes maternal exhaustion; and is excreted slowly. Nitrous oxide with oxygen seems to retard the first stage, but not the second, which it actually hastens by removing voluntary inhibition due to pain; does not cause cyanosis when correctly given, and does not affect the child's respiration; is eliminated rapidly; does not cause muscular relaxation, is free from harmful action on the liver and kidneys; and may be given over four to six hours with safety. Ether does relax all muscles and has some depressant effect on the child's respiration; is not desirable as an analgesic over a long period; is slowly eliminated and may produce nausea and vomiting if used in any quantity; irritates the mother's respiratory tract and kidneys and is less promptly analgesic than nitrous oxide. Taking cognizance of these several advantages and disadvan-

tages of each of the three drugs, they can be used to produce perfectly effective analgesia in normal labor, while protecting the infant against danger, or may be employed to maintain analgesia in abnormal cases until operation is imminent, when either the ether or the gas can be pushed to the production of full and effective anesthesia. Methods of combination for several different indications are outlined in the paper.

Treatment of Dermatoconioses.—Describing some new forms of dermatoses due to dusts encountered in the manufacture of explosives, R. Prosser White (*Lancet*, Feb. 19, 1916) says that the proper treatment of the dermatocnoses is not given in the textbooks. The best method of treatment, in his experience, consists in the primary application of a paint of the following composition:

R Camphoræ,	3ii.
Phenolis,	3iiss.
Hydragryi chlor. corros.,	grs. xv.
Acidi picrici,	3ss.
Alcohol,	3vi, 3vi.

M. et fiat pigmentum.

S.: Apply externally with swab or brush.

This is useful in many forms of skin disease, including impetigo and the intertriginous group, and in erythematous and papulovesicular eczemas. It should be applied only by the physician himself, never given to the patient for his own use. It causes some smarting, which passes off in a few moments. Following this application and for home treatment a mixture of two ounces of this paint with four ounces of calamine lotion and a half a dram of powdered acacia may be ordered. At night the following ointment may be applied, or it may be used under a bandage in the daytime:

	Parts.
Zinc oxide,	1
Oleic acid,	9
Let stand two hours, and add	
Lead plaster,	10
Paronol solid,	25
Paronol liquid,	13
Ammoniated mercury,	2

Mix and make an ointment.

Subsequent treatment may be carried out along the usual dermatological lines.

Treatment of Psoriasis with Autogenous Serum.—William B. Trimble and John J. Rothwell (*Jour. Cutan. Dis.*, September, 1916) review the original work of Spiethoff, also the work of several American authors, as Gotthelf, Howard Fox, and Hilario. They studied fifty patients with psoriasis, thirty of whom received serum and twenty were used as controls. Their conclusions are that autogenous serum alone, as far as a curative effect on psoriasis goes, is absolutely a failure; that the serum in combination with weak chrysarolin ointment seems also worthless; and that the ointment will cause an inflammation of the skin, and therefore is no more tolerated by patients having the serum treatment than by those to whom no serum has been given. In uncomplicated cases of psoriasis the patches are not influenced until the external treatment is begun. The treatment is harmless, if performed with proper precautions. The apparent improvement reported by earlier observers was probably not due to the use of serum, but to the en-

thusiasm of the patients in carrying on a new method of treatment, which they had hoped would be a permanent cure for their hitherto chronic and incurable skin affection.

Pollen Therapeutics in Pollinosis.—Seymour Oppenheimer and Mark Gottlieb (*Medical Record*, March 18, 1916) warn against the use of hay fever vaccines containing a mixture of a large number of pollen extracts. Especially must care be taken against using fall pollens in cases of spring pollinosis and vice versa. Pollen extracts in large doses are dangerous, especially when used by inexperienced workers. Immunization may be active from the use of the pollens themselves, taking care to use those pollens to which the patient is shown to be susceptible; excessive doses must be avoided. Passive immunization may be obtained by the injection of a large dose of serum from an immunized rabbit; anaphylaxis is thus avoided.

Catarrhal Jaundice.—In the course of a discussion of the epidemic jaundice of campaigns, William Henry Willcox (*British Medical Journal*, Feb. 26, 1916) advocates the use of the following mixture in ounce doses three times a day:

R	Sodii bicarbonatis,	5iii.
	Potassii citratis,	
	Sodii sulphatis,	āā 5iv.
	Srupi aurantii,	5i.
	Aque, q. s. ad	5viii
M.	ft. mist.	

In addition, ten grain doses of hexamethylenamine, three times a day, seemed to be effective as an intestinal antiseptic. The diet should be light and should contain fresh fruits or yeast to provide vitamins. Calomel seemed inadvisable, since these patients were very susceptible.

Pollen Extracts and Vaccines in Hay Fever.—Solomon Strouse and Ira Frank (*Journal A. M. A.*, March 4, 1916) conclude that nasal infection plays an important role in causing the disease in addition to the specific factor of pollens. Treatment with bacterial vaccines alone gave more or less relief in sixty-four per cent. of the cases and with pollen extracts alone in seventy per cent. In individual cases vaccine treatment seemed to give results equal to or better than those from the use of pollen extracts. Since there is no satisfactory method of standardizing the pollen extracts, their use must be adapted to the individual. Bacterial vaccines should always be autogenous, made from cultures obtained from the nasal passages.

Arrest of Cataract at an Early Stage.—E. L. Jones (*Annals of Ophthalmology*, January) maintains that cataract in the aged should not be considered a normal senile change, but a manifestation of some pathological process in the uveal tract, the ciliary body, or choroid, whether it is shown by other symptoms or not. The first sign of cataract is a fine dust, and after distinct opacities have formed it is still by this fine dust that the opacities extend. When the lens becomes sufficiently sclerosed, this dust formation ceases and there is no further clouding of its substance. By stimulating the lymphatic circulation of the globe by the systematic use of dionin drops, or a sufficiently strong subconjunctival injection of cyanide of mercury,

an artificial sclerosis of the lens is accomplished which causes the disappearance of the fine dust and the arrest of cataract. He believes that this cures some low grade perversion of the function of the ciliary body, which has to do with the nutrition of the lens. Where there is no perversion of the nutrition of the lens neither dionin drops nor subconjunctival injections show any tendency to induce sclerosis. No value is asserted for the treatment in spontaneous cataract in which the stage of ability to read coarse print has passed, and dense opacities are not supposed to disappear at any time. The solution mentioned as most generally used is eight grains of dionin to half an ounce of cyanide of mercury solution one in 1,000, three drops in the eye at bedtime. As many eyes get very red, and some chemosed from these drops, bedtime is preferred for use, so that these effects may pass off during sleep. Jones ascribes the improvement to the dionin.

Calcium Salts in Hay Fever.—Harold Wilson tried this treatment in a series of twenty-six patients (*Journal A. M. A.*, March 4, 1916). Calcium chloride was ordered according to either of the following prescriptions:

I.	
R	Calcii chloridi (cryst.), .....100.
	Aque dest., q. s. ad.....500.
M. et Sig.: One teaspoonful in sufficient water during or after each meal.	

II.	
R	Calcii chloridi (anhydrous) 50; Aque destillatæ, 500.
M. et Sig.: One teaspoonful in sufficient water during or after each meal.	

Under this treatment six of the patients were made absolutely free from symptoms, four showed definite improvement, and the remainder were slightly benefited (13), or not helped at all. One was made worse. No ill effects were noted from the use of the drug and it was taken kindly by most of the patients. It was not found necessary either to start the treatment very long before the expected attack or to continue it long after the season.

Electrocollargol Treatment.—Albert Wolff (*Zeitschrift für ärztliche Fortbildung*, Feb. 15th) recommends injections of electrocollargol in cases of pyemic disease of the kidneys, in which small foci of pus are suspected, but in which surgical treatment is not applicable and urinary antiseptics fail.

Cause and Prevention of Hay Fever.—The cause of this affection, which involves about one per cent. of the population, is now generally accepted to be intoxication by certain pollen proteins. According to William Scheppegrell (*Journal A. M. A.*, March 4, 1916), the pollen of ragweed is the commonest of the causative agents, less frequent being those of golden rod and certain of the grasses, such as red top, and the cultivated grains, such as wheat, oats, etc. Only those pollens which are wind borne need be considered, since the others do not reach the nasal passages in sufficient amounts. There is evidence that bacterial infection also plays a role, but treatment based on this conception has not been very successful. The use of serums and pollen extracts gives some relief, but the rational procedure is the preventive plan of treatment. This

can be accomplished readily by cutting down all weeds known to give rise to the disease before their periods of pollination. This plan has been followed in certain communities with excellent results, but for it to become generally satisfactory a campaign of education is needed and has been inaugurated. The form due to pollens of grains must be treated directly in the affected persons, since the crops could not be destroyed.

Treatment of Fractures of the Limbs.—A. Wettstein (*Correspondenz-Blatt für Schweizer Aerzte*, Jan. 15th) urges that while continuous extension is applied to the fractured limb, the latter should be in a condition of semiflexion, so that its muscles are relaxed.

Action of Antiseptics on the Polynuclear Leucocytes in Pus.—Noël Fiessinger, Talbouriech, and Moiroud, at a meeting of the surgeons of the Sixth French Army (*Presse médicale*, January 31, 1916), called attention to the noxious role of the leucocytes of pus (pus cells) in infected wounds, and state their belief that the ideal antiseptic is one which, while exerting an antimicrobial effect, will cause dissolution of the pus cells. Corrosive sublimate, iodine, ether, formalin, and phenol solution shrivel and kill the pus cell, but do not cause its dissolution. Hydrogen dioxide is destructive, inconstant, incomplete, and irregular in its action. Hypochlorites, however, as in Dakin's solution, cause rapid lysis of the pus cells and are therefore to be preferred to the others.

Nonsurgical Treatment of Tuberculous Glands.—Arthur F. Holding (*Medical Record*, March 11, 1916) urges that nonsurgical methods should first be tried in all cases, including the x rays, which have been successful in 1,500 cases. Deep hyperemia and tuberculin should be included in the treatment. In using x rays the technic is that known as Röntgen deep therapy, the essentials of which are the use of the Coolidge tube, high voltage, measured maximum doses, cross firing, and filtration of the rays, given in three to ten series of treatments. General anti-tuberculosis treatment is indicated, while hyperemia may be induced by Bier's method or by thermopneumatization and high frequency vacuum electrodes.

New Substance for Pyelography.—A. A. McConnell (*Lancet*, Feb. 19, 1916) reports favorable experiences with a new bismuth compound recently prepared at his request for pyelography as a substitute for collargol. The substance gave satisfactory shadows and could be readily washed out of the ureters before precipitation occurred. No ill effects were seen. The provisional name of skiol was given to the preparation.

Treatment of Syphilis of the Central Nervous System.—Richard Dexter (*Cleveland Med. Jour.*, January, 1916) believes that there are certainly some cases of this form of syphilis in which the disease process can be arrested by the use of mercury alone. There is also a definite number of cases in which mercury is actually detrimental, and in these the action of salvarsan is often extremely favorable. Many cases occur in which the intravenous injection of salvarsan will bring about an arrest, such usually

being the types with meningovascular involvement. These cases are such even as have already manifested symptoms, but which have very slight physical signs or none. The intraspinal use of autosalvarsanized serum may be beneficial in cases which have failed to respond favorably to intramuscular injections of mercury or intravenous administration of salvarsan. When we adhere closely to the Swift-Ellis method and administer the serum with care, the treatment is safe and a suitable procedure for combating syphilis of the central nervous system.

Double Induced Pneumothorax.—Edward Von Adelung (*Journal A. M. A.*, March 4, 1916) records four cases of bilateral tuberculosis in which much benefit was received only after double pneumothorax had been induced. The pneumothorax was either induced simultaneously on both sides, or the second side was compressed some time after the first, but while gas still remained. The process is simple and, since life can be maintained with one sixth of the normal lung area, moderate bilateral pneumothorax should not be regarded as a dangerous procedure.

Nitrous Oxide Administration.—Considerable danger is associated with the unskilled use of nitrous oxide and oxygen, since to produce effective deep anesthesia oxygenation must simultaneously be reduced. Prolonged administration of this gas is limited if it is confined to cases in which it may properly be used. The safe way, aside from the use of narcotic alkaloids as adjuvants, to increase the depth of anesthesia under nitrous oxide, is, according to Raymond C. Coburn (*Journal A. M. A.*, March 11, 1916), to administer small amounts of ether which can be varied according to the indications. Even if prolonged deep anesthesia is required by this combined method, the total amount of ether required is far less than would be needed if used alone. Rebreathing also increases the safety of nitrous oxide, but for this purpose the bag should be close to the mask. The preliminary use of morphine is of value to allay fear, render induction smoother, prevent postoperative pain, and reduce the dangers of shock.

Treatment of Diphtheria Carriers.—It is well known that the removal of diphtheria bacilli from the throats and nasal passages of some carriers is extremely difficult, and almost every form of local application has been advised. K. A. Roy (*Journal A. M. A.*, March 11, 1916) obtained satisfactory results from the direct application to either nasal or pharyngeal and tonsillar mucous membranes of iodized phenol. This contains sixty per cent. of phenol, and twenty per cent. each of iodine crystals and glycerin. Its application is slightly painful for a few moments, produces a superficial eschar which disappears in a day, leaving a reddened clean surface which soon becomes normal. No ill effects from the direct application of this strong mixture were noted. Of the group of carriers on which it was used, thirty-five per cent. were cured by one application, twenty-nine per cent. by two, twelve per cent. after three, etc., and only one case required more than six applications, this yielding negative cultures only after nine applications.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

October 4, 1915.

The Influence of Muscular Work on Blood Sugar, by W. von Morawski.—Irrespective of the diet some increase in blood sugar followed muscular exertion in normal man. The same response, but in much greater measure, was observed in a person with a tendency to diabetes; there was a marked rise in the sugar, even when the patient was on a fat diet. Diabetics mobilized their sugar much more readily than normal persons, and diabetics or those with diabetic tendency showed a more marked increase in blood sugar after exercise when on a carbohydrate diet than normal persons. By means of observations made during rest and after exercise the rise in the blood sugar provides a measure of the tendency toward hyperglycemia. This exercise hyperglycemia is not associated with an alimentary hyperglycemia, but is a measure of the readiness with which stored sugar can be mobilized.

RIFORMA MEDICA.

February 21, 1916.

Abderhalden's Test in Tuberculosis, by L. Datta.—From experiments in thirty-three cases Datta decides that by Abderhalden's method there can be demonstrated in the blood of patients suffering from pulmonary tuberculosis ferments for the albumin of the tubercle bacillus of the human being, either healthy or tuberculous, in a markedly greater percentage of cases than in persons free from tuberculosis. These ferments disappear in the gravest cases, are present in the incipient form and absent in the cured ones. The presence of these ferments in cases clinically nontuberculous, however, the undemonstrated specificity of the organ, the difficulty of the technic, with many sources of error, diminish the value of the reaction.

An Epidemic of So Called "Fourth Disease," by Alfonso Montefusco.—Fifty-seven cases of Duke's disease occurred in an encampment of the Italian army in August and September, 1915. Following upon a short epidemic of measles in July, the diagnosis of these cases of the fourth disease was at first difficult, although the two epidemics were quite distinct and sharply defined. Montefusco takes up in detail the differential diagnosis of this exanthem.

BRITISH MEDICAL JOURNAL.

February 26, 1916.

Dysentery Vaccination, by Aldo Castellani.—Prepared according to the usual technic of using broth cultures, vaccines containing Shiga-Kruse bacilli give extremely severe local and general reactions, and may even incapacitate persons for work for over two weeks. In order to avoid such reactions the vaccine should be prepared with salt solution containing half of one per cent. of phenol from cultures grown on agar. The vaccine should contain several different strains of organisms besides that of Shiga-Kruse. For the vaccine that strain of Shiga-Kruse bacillus should be selected which is least virulent but rich in antigenic powers.

LANCET.

February 26, 1916.

Clinical Thermometry, by G. Sims Woodhead and P. C. Varrier-Jones.—In the normal human being the temperature rises during the morning and afternoon and falls during the night, but the maximum and minimum points may be reached at somewhat different hours in different individuals. The range of variation between the lowest and the highest may exceed 2° F. If, however, the subject is kept in bed the range will be much less. By means of continuous temperature records throughout the twenty-four hours it was determined that strenuous muscular exercise caused a noticeable rise in the temperature, amounting to as much as 2° C., and the converse was observed when the subject rested completely with the minimum of muscular exertion. These statements refer to the rectal temperature and in the case of the oral reading the opposite condition may follow exercise, namely, a drop of over a degree due to breathing. The ingestion of cold food or drink is followed by a fall of internal temperature at first and later by a rise. A continuous and steady rise follows the ingestion of warm foods or drink. Even a drink of hot water may cause a rise amounting to 0.7° C. The rise from food usually attains its height about an hour and a half after a meal and seldom exceeds 0.5° C. The rise in the internal temperature is associated with a concomitant fall in the skin temperature due to a decreased blood flow through the superficial vessels and an increased flow through the splanchnics. Over three fourths of the heat loss occurs through the skin, and the influence of external temperature on heat production is therefore very great.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

March 11, 1916.

The Philology of Hysteria, by Trigant Burrow.—The author analyzes the structure of language and customs of civilization to show that throughout both there is a strong tendency to resort to the use of resemblances in expression and to expressions having organic implications. In addition, he shows that with the growth of social custom there is a marked tendency toward the suppression of the more fundamental instincts of sex, at least in direct language, remote, but related symbols being substituted for simple blunt expressions. In other words, there is a tendency to suppression of sex in expression. This tendency gives the clue to the underlying pathology of the neuroses, which are but repetitions of the same philological mechanisms, applied to an individual instead of to the aggregate. Hysteria may be regarded as a dilemma rather than a disease, and arises as the result of a conflict within the individual. There is a condition of repression involving an intolerable contradiction. The symptoms are the result of this internal conflict whereby the effort is made to mitigate trends that are too vital and inalienable to be entirely denied. It is this mechanism which provides the rationale of psychoanalysis, whereby the repressed and distorted ideas are brought to light, the patient's will is reeducated, and his distorted expressions are converted into their original elements.

The Latent Role in the Diagnosis of Incipient Tuberculosis, by H. A. Bray.—This role, which is elicited only with the aid of cough, was studied in a series of 226 patients, of whom 139 were in the incipient and eighty-seven in the moderately advanced stage. Tubercle bacilli were present in the sputum in twenty-one per cent. of the first group and forty-seven per cent. of the second. Among 131 incipient cases with demonstrable physical signs of the disease eighty-eight per cent. showed rales. In only twenty-seven of the patients were rales found without the aid of cough, giving over seventy-six per cent. of cases in which the rales were latent. In the group of moderately advanced cases twenty-seven and one half per cent. showed no rales without the aid of cough. In the majority of cases of both classes the lesions were apical. It may be said that the latent role is the role of incipient tuberculosis. There are two positions in the respiratory phases at either of which cough should be made to bring out the latent rales, either near the end of expiration, or at the beginning of inspiration. The mechanism of the role is suggested as being due to an increase in intrapulmonary pressure with the separation of the collapsed walls of the bronchioles and alveoli. Attempts should not be made to elicit this role in recent cases of hemorrhage, nor in those in which pain is aggravated by the cough and interferes with the test.

Prognostic Value of the Urochromogen Reaction in Pulmonary Tuberculosis, by M. E. Cowen.—This reaction was tried on 1,805 specimens from 832 patients with only ninety-one positive results. The conclusions reached were that a positive reaction was found in cases of pulmonary tuberculosis only when a destructive process was going on. In ambulant cases its presence should be taken to indicate the need for rest in bed. If it is present in a moderately advanced case, cavity formation may be expected. It was found to be of grave import in cases already far advanced, ninety-three per cent. of such cases having ended fatally within four months, and of these the majority within three months. A continued negative reaction in a previously positive case seemed to indicate a temporary checking of activity.

Etiology of Chronic Nephritis, by Philip King Brown and W. Taylor Cummins.—Out of 7,000 admissions to hospital only 594 patients showed albumin and casts, and of these only thirty-eight were admitted as having cases of nephritis. This entire group of 594 cases was analyzed. Two groups were made, the one with high blood pressure, the other with low or normal pressure. It was immediately evident that the diagnosis of nephritis is nearly always a laboratory one, the great majority of patients being admitted to hospital for some other condition. Alcohol, hard work, and infections bore the same etiological relations to the disease in both groups. The chief difference between the two groups lay in the fact that the average age of the one with high pressure was well over forty years, while it was well below that for the low pressure group. Such infections as the venereal diseases and those of the scarlet fever group were from twenty to 200 per cent. commoner in the early history of the

nephritic cases than in a similar number of controls. The relation of alcohol was much less evident, though its use had been considerably more frequent in the nephritic than the control group. Venereal infections were also much more common in the nephritic group. From a study of urinary sediments evidence was found to suggest that the onset of many serious renal cases was insidious and that streptococci were often to be found in the urine without much evidence of renal disturbance. As to occupation, the figures showed that the persons with sedentary occupations suffered more than all others from both renal disease and other conditions requiring medical attention.

Function of the Thyroid-Parathyroid Apparatus, by Edward C. Kendall.—Following up the isolation of a crystalline active substance from the thyroid gland, the study of its chemical nature and properties led the author to suggest that this substance acts as a catalytic agent in the deamination of the aminoacids derived from protein metabolism. He further suggests that the balance between the free aminoacids and the active substance may be the mechanism which governs the supply and demand of the catalytic agent.

MEDICAL RECORD.

March 18, 1916.

Diagnosis of Genitourinary Tuberculosis, by John W. Churchman.—Infection upward from the bladder to the kidney is extremely rare, as shown by the experimental work of Walker and by clinical observation. Renal tuberculosis may occur in a person otherwise perfectly healthy, and this point cannot be too strongly emphasized. Furthermore, in renal tuberculosis kidney symptoms are the exception, and the impalpability of the kidney is no proof either of the absence of renal tuberculosis or of enlargement of the organ. The diagnosis hinges usually on the presence of tubercle bacilli in the urine, although occasionally they are absent. In ureteral catheterization occasionally the difficulty of inserting the catheter owing to an unusual direction of entrance of the ureter into the bladder may be overcome by passing the right catheter into the left ureter and vice versa. The x ray in Churchman's experience is of value only in the presence of calcified nodules in the kidney. Doubtful cases can be cleared up by inoculations of the urine into guinea-pigs. The treatment is surgical and the outlook is extremely good.

LANCET-CLINIC.

February 18.

Relation of Percussion Dullness to Cardiac Outlines, by George Shattuck.—A study was made for the purpose of checking the results obtained with ordinary light percussion, by means of teloröntgenography. The outer limits of very slight dullness were found not to correspond closely with the actual heart borders, as determined with the x ray. Neither could moderate dullness nor flatness alone serve accurately to outline the heart. The border of marked dullness, or that of flammescence, comes much nearer on the left side to giving a correct silhouette outline of the heart than the border

of slight dullness. Inferences should not be drawn from percussion outlines alone as to the presence or absence of slight cardiac enlargement, but preferably, the percussion findings should be recorded in terms of their relations to anatomical lines, such as the parasternal on the right, the midclavicular or axillary on the left, and the interspaces. The weight of the patient and the shape of his chest are thus taken into account in estimating the cardiac condition. The borders of slight and moderate dullness and of flatness, as well as the varying degrees of resistance, should be ascertained before concluding as to the size and shape of the heart, and additional information through palpation, auscultation, blood pressure, and the history should be sought to check the results of percussion. The latter is especially unreliable for ascertaining slight enlargement of the aortic arch, for determining the level of the apex, and for discovering hypertrophy of the left ventricle where there is little or no dilatation. For solving the last two problems palpation in the left lateral position is often helpful, and an accentuation of the aortic second sound or increase of blood pressure should not be passed over as insignificant.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

January, 1910.

Radiography of Normal Parts, by Archibald McKendrick.—Radiographs of any object which is lying with its long axis in a plane parallel to that of the plate will be apparently little altered in shape if a different focus point is chosen. The nearer the object is to the plate, the sharper the outline, the more accurate the shadow, and the less the influence the position of the focus point. The further the focus point from the object, the more nearly does the shadow correspond in size. The object should be placed as nearly parallel to the plate and as close to it as possible. The term "normal focus point" should be reserved for that point twenty-four inches directly over the centre of the joint with the centre of the joint in the middle of the plate. This distance is suitable for stereoscopic work and for the various forms of compression apparatus. In the shoulder joint, the normal position is with the arm by the sides. The long axis of the humerus should be kept parallel to the plate, so that the only other movement we have to consider is that of abduction. In taking the elbow joint, it may be done laterally or anteroposteriorly. In taking it anteroposteriorly, the arms should be straight with the bones parallel to the plane of the plate. In taking it laterally, the elbow should be semiflexed. The normal focus point of the wrist and carpus is between the styloids. Pictures of the wrist and carpus may be taken with the hand in radial or ulnar deviation or in a straight line with the forearm. In taking lateral views of the wrist and carpus, pronation and supination should be avoided and care must be taken that the articulation between the cuneiform and the pisiform is not diagnosed as a fracture of the scaphoid. The best plan is to take both wrists on one plate with the palms together and the ulnar side of the hand in contact with the plate. The normal position for the hip joint is to have the buttocks on the plate, the legs together, and toes pointing directly upward.

Movements of the Colon, by Hugh Walsham.—Normally a shadow appears in the ileocolic region within four hours after the administration of a bismuth meal, and at the end of eight hours this has passed the ileum and is in the colon. The transverse colon is reached six hours later, the splenic flexure in nine hours, and the brim of the pelvis or ileopelvic junction in eleven hours. In eighteen hours practically the whole of the bismuth is collected within the distal part of the pelvic colon and the superior pelvic chamber of the rectum. These figures are average figures (orthocinesis). An increase of speed through the colon is known as tachycinesis and a decrease as bradycinesis. The movement of the colon may be, *a*, small continuous segmental movements; *b*, a wave of contraction preceded by a wave of dilatation. This has been termed diastalsis; *c*, movements en masse or sporadic large movements. These usually occur after large meals; *d*, antiperistaltic movements. Whether these are physiological is still a matter of doubt. A fifth variety is the swinging movement. Tachycinesis may be due to an increase in the number and mobility of the megadiastaltic waves and is probably associated with a reduction of anastalsis. In bradycinesis megadiastalsis is slight and subordinate.

AMERICAN JOURNAL OF ORTHOPEDIC SURGERY

February 10, 1910.

Bone Grafting for Spinal Conditions, by J. Torrance Hugh.—Hugh asserts, as advantages of the operation, a lessened time of treatment, acceleration of healing of the diseased tissues, a quicker disappearance of a possible abscess, a low mortality rate, a healthy field for the operation, and the ability of a patient to earn a living at the end of a year. He sees no disadvantages directly attributable to the operation.

Fractures of the Spine without Paraplegia, by John B. Hartwell.—In these cases the diagnosis is often missed. A slight cyphosis, constant pain, localized tenderness over the spinous processes, and a disalignment of the same are signs and symptoms pointing toward a fracture of the spine.

Deposit in the Supraspinatus Muscle Simulating Subacromial Bursitis, by John Dunlop.—Although it has been stated that these cases should be operated in, this one (the patient having refused operation) was treated by the application of a plaster of Paris cast, with the arm held in abduction, and ended in recovery.

ANNALS OF OTOTOLOGY, RHINOLOGY, AND LARYNGOLOGY.

September, 1910.

Focal Infection in the Etiology of Labyrinth Disease, by G. E. Shambaugh.—The author has found that deafness, tinnitus, and vertigo, or Menière's symptom complex, may be due to a systemic infection. The focus is frequently found in the faucial tonsils or in abscesses around the teeth. When the infected area is about the teeth, it not infrequently requires the aid of a radiogram to locate the abscess. The clinical picture depends upon whether the trouble is insidious or whether it is punctuated by distinct apoplectic attacks, and whether the whole or part of the inner ear is involved.

Proceedings of Societies.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

*Stated Meeting, Held at the New York Academy of
Medicine, December 20, 1915.*

The President, Dr. THOMAS S. SOUTHWORTH, in the Chair.

Cases of Typhoid Fever Treated Intravenously with Vaccines.—Dr. AUSTIN W. HOLLIS read this paper.

Dr. EDWARD E. CORNWALL could discuss Doctor Hollis's paper only academically, because he had not used vaccines in typhoid except for prophylaxis. Vaccine treatment surely belonged to rational therapeutics, but its value had not been established for all cases of bacterial infection. In one class of cases, indeed, it seemed contraindicated, viz., in those where the patient was already well soaked with specific toxemia. The general indication for vaccines was to stimulate the entire organism to bring aid to a localized infection. Yet other considerations might conceivably enter into the subject. A sharp dose of the toxin suddenly introduced into the circulation might possibly act to stimulate in a superior manner the antitoxic function which was undergoing regular continuous stimulation from the specific toxemia. He preferred to let others experiment with that kind of vaccine treatment. He had been brought up to consider the reduction of fever as of the first importance, but lately he had been led to suspect the soundness of this therapeutic doctrine. He raised the question, whether fever in typhoid was regularly a harmful symptom of disease or whether it might not be a procedure on the part of nature to combat disease; a compensatory or constructive process for a good purpose, as high blood pressure was in cardiovascular renal disease. They should not reduce high blood pressure in the latter otherwise than by removing the cause, except in special emergencies; so it seemed reasonable to let the fever alone, unless there was dangerous hyperpyrexia. Acting on this idea for more than two years past he had stopped cold sponging and otherwise trying to reduce the temperature in typhoid, continuing other treatment as before, the essential feature of which was a special diet. The results of this omission of antipyretic treatment was that in the first sixty consecutive cases which he had so treated in two hospitals, there occurred only two deaths, and those in patients who were moribund on admission; and in the next forty cases there were only five deaths, making a mortality of seven per cent. for this series of 100 consecutive hospital cases treated without antipyretics, which was the lowest mortality which he had observed in any equally long series of hospital cases.

Dr. WARREN COLEMAN's interest in the vaccine therapy of typhoid fever dated back some eight or ten years. About that time he had a series of forty or fifty cases in Bellevue Hospital, which he had never published. The treatment was discontinued because he became interested in another phase of the typhoid problem. He had used both autogen

ous and stock vaccines. The autogenous vaccines were first used, but on account of the delays and difficulties in getting them, they resorted to stock vaccines made from virulent bacilli. The vaccines were administered subcutaneously, sometimes in the arm and sometimes in the anterior part of the chest. He had not been able to detect any differences between the action of the autogenous and the stock vaccine. The doses varied from 25 million to 1,000 million. Beginning with the lower amount, the dose was repeated daily until a reaction was obtained. In nearly every case the dose had to be increased to 500 or 750 million. Larger doses than 500 million were used less frequently. Toward the end of the series, he reached the conclusion that in robust individuals, where the disease was not too far advanced, a dose of one billion could be given when the patient entered the hospital.

As to results, there were some forty or fifty cases, but he felt unwilling to draw too confident conclusions. He had followed closely the course of the typhoid patients in Bellevue for the last fifteen or eighteen years, and believed that it was unwise to make deductions from a limited number of cases. Epidemics varied in their intensity from year to year, so that to compare the results of one year with another gave no information of value. He did not get the reactions seen on the charts presented by Doctor Hollis. There was some reaction, but not very much; sometimes the temperature dropped twenty-four hours after the vaccine was given; but the main impression was that the toxic symptoms were diminished and the course of the disease made milder, but its duration was definitely lengthened. With respect to complications he could say nothing, for he had not analyzed the cases on that point. He got the impression that relapses were more likely to occur but that, like the disease, they were milder. He had had no experience with the intravenous method, either in typhoid or in other diseases. It might be that it was the better way to administer the vaccine in typhoid fever. The accepted pathogenesis of the disease was that the bacilli were destroyed in the blood current, and that the immune bodies were developed in consequence of this destruction. The intravenous administration of the vaccine therefore probably followed nature's method more closely than the subcutaneous; but immune bodies developed after subcutaneous administration, and he would wish to be assured that there was a definite advantage in the intravenous over the subcutaneous method of administration, because of the manifest dangers of the intravenous method; there is a real danger in using the method under ordinary conditions of practice; they could not always be sure of their sterilization and, moreover, there was a possibility of thrombosis at the site of the injections, and this was multiplied by the frequency of the treatment—every other day or even every day. They needed, therefore, to have conspicuous evidence of its superiority over the intramuscular or subcutaneous methods before feeling justified in trying it.

Dr. MATTHIAS NICOLL, JR., for the last four or five years had had the typhoid vaccines under his charge at the research laboratory of the department of health. He had seen the temperature charts and read the reports of a number of cases,

and until he had attended this meeting had pretty nearly reached the conclusion that there was not much in the vaccine treatment of typhoid fever. Vaccines were peculiar things; they acted differently in different hands. One person would feel that they were a great benefit; and others using the same vaccines would see no good in them. They must all use controls—not three out of sixteen, but in every other case. This was necessary in order to eliminate the personal equation.

The speaker was immensely impressed with Dr. Hollis's work; it was a ray of light thrown on a dark subject. Sometimes they became disgusted with vaccine therapy and never wanted to hear of it again; it seemed that those who were trying to be honest were putting in the hands of others the opportunity to break loose and shoot anything into anybody that they got a chance to, with the idea of curing them. Doctor Hollis's work, however, was convincing. How the results had been accomplished he did not know, but it was certainly worth carrying on. He had shortened the disease and had knocked out the usual temperature course.

Dr. WALTER A. BASTEDO was not a serologist, but had heard from many serologists that it seemed absurd to put a vaccine into a patient who was already poisoned from the kind of bacteria represented in the vaccine, particularly so when there was already an acute febrile reaction. He had had the opportunity of watching Doctor Hollis's cases closely, and at first was very skeptical as to how the treatment would turn out, but after seeing three or four cases, he began to think that something wonderful was taking place. The vaccine administered today was followed on the morrow by a striking and desirable result, the temperature falling away down even to normal, and this fall being accompanied by corresponding comfort for the patient, who felt better and looked better—at least some of them did; then the second day the vaccine was given again, and down went the temperature again; and presently the temperature remained down, the number of cases with a short course being noteworthy.

He thought the results Doctor Hollis had obtained from the ordinary vaccine used at St. Luke's Hospital of bacteria killed by heat compared well with those from the sensitized vaccine, which had been reported by Doctor Wightman as being used at the City Hospital in forty cases; and with those from the elaborate and splendid sensitized vaccine sediment of Gay, in California. Gay reported seventeen cases with eight abortive cases as the result of this vaccine sediment. It had the merit of being largely devoid of toxicity.

Kraus, the first to use typhoid vaccine intravenously, found that in typhoid fever he could produce a chill with a vaccine made from the colon bacillus, getting the same reaction and the same type of defervescence. He also found that with typhoid vaccine he could get defervescence in other febrile diseases, notably septicemia. He therefore considered it not specific. Gay also believed that the reaction was not specific and that the chill was a necessity. The questions then arose, Was the effect of any of it due to the great rise in temperature? Was it in any sense due to the chill? If these should

prove answerable in the affirmative, all they would require for treatment in fever was some substance to produce a chill and raise the temperature to a high point. It would be just as good in typhoid fever as the typhoid vaccine itself. That had not been proved, however, other than in the instances referred to.

Theobald Smith had remarked that the clinical success of vaccines in acute febrile cases, such as typhoid, must be accounted for by principles of which experimental medicine had as yet no definite knowledge.

The cases of Gay which did best were those that gave the Widal reaction in high dilutions, or cases in which the blood was surcharged with agglutinins. Hence Gay thought that something in the vaccine or produced by the vaccine was added to the antibodies that were already there, something that perhaps might not be included in the class of antibodies (lysins, agglutinins, etc.), and that the combination was sufficient to destroy or to render innocuous the typhoid germs in the blood. He noted a hyperleucocytosis about eighteen hours after each injection and considered this important.

Doctor VAN GIESON, shortly before his graduation, had witnessed some post mortem examinations in cases of typhoid demonstrating the lesions of the disease in its later stages in Peyer's patches and the solitary follicles of the lower intestine which had so profoundly impressed him, that from that time up to the present day, he had considered them as the essential lesions of the symptoms, course, and duration of the disease. When he saw a case of typhoid, these lesions stood out as vividly before him as when he first saw them, and for himself at least he had formed the opinion that when ulceration, deep, or superficial, was finished, and the last Peyer's patch, and the last solitary follicle was healed, the patient was practically out of danger. The remaining bacilli might continue to conduct a guerrilla warfare and produce lesions in other and more remote organs, prolonging the case by relapses, but when the invading bacilli were out of their entrenched position in the intestine, sooner or later, as the case might be, they might confidently expect recovery, as the later lesions seldom proved formidable. Dr. Austin Flint, in the fifth edition of his *Practice of Medicine*, 1881, described minutely these intestinal lesions and divided typhoid fever into four stages corresponding to the progressive changes that took place in the Peyer's patches and the solitary follicles. For years the treatment was based on the presence of these lesions. It was, and continued to be, a very active interference Nature's efforts to effect a cure, consisting chiefly of cathartics, emetics, and even bleeding, to expel the unknown cause of the fever. The mortality was great, and in the cases that ended favorably, the average duration of the disease remained the same. The able paper read to them brought up a newer form of active treatment and certainly demonstrated that the temperature chart might be made irregular and its ordinary course much changed by the method so carefully tried out; but the duration remained about the same; and the speaker feared that what Bartlett said in his *Fever of the United States*, 1856, would continue to be accepted as true, viz., that they

had no remedy that shortened the course or duration of the disease. He was not inclined to believe that recent laboratory research with its outcome of intravenous treatment had thus far proved the contrary.

Doctor HOLLIS had listened to the discussion with much interest and had little to add. In giving the typhoid vaccine subcutaneously, the matter of dose had always been unsatisfactory. They must recognize that typhoid vaccine was a toxin and excessive doses were poisonous. This had been abundantly shown in typhoid prophylactic vaccination, followed by serious reactions and a few fatalities.

It often took a large dose to produce a reaction, and in the absence of reactions, there was no guide to dose, except long experience. In administering the vaccine intravenously, comparatively small doses produced reactions without depression and it therefore seemed that this method would be more exact and less dangerous. It had been shown in his series of cases that true abortions had occurred and the duration of the disease had been shortened. This might be a coincidence, as abortive cases were not rare. Relapses had been more frequent and in some, the duration of the fever had been longer than the average, but in comparison with the course frequently seen when the fever lasted from fifty to one hundred days, these cases were not exceptional. After all, their object was to reduce mortality and if the intravenous treatment did this, even if in some cases the course was lengthened, this fact should have but little weight, as these cases might be more than offset by the short aborted cases. The suggestion that control cases be employed might be misleading in a short series of cases. The law of chance would be too great to be of any value. If alternate cases were treated in a long series, it would be a profitable experiment. The speaker would like to emphasize the importance of beginning the treatment early and with small doses, beginning with say 5,000,000 and increasing 10,000,000 every day, until a reaction occurred, then making the period of administration every other day. It was also important to be familiar with the vaccine employed, as certain strains gave a more marked reaction than others. As to the danger from local thrombosis, he believed that this might be disregarded. A great many irritating substances were now given intravenously, especially salvarsan. Phlebitis and phlebitis thrombosis were not uncommon, but if not infected, would do no harm.

Doctor Cornwall had made a pertinent point in regard to the possible benefit of high fever. There was undoubtedly, at present, considerable belief that the expression of fever showed that resistance thereby was increased and protective bodies produced, but inasmuch as they knew that in all infectious diseases a very high temperature was usually an indication of severity, as practitioners they were seldom pleased to see this excess, knowing that with a lower temperature and less toxemia their cases were more likely to do well.

The Removal of the Troublesome, Useless Uterus.—This paper, by Dr. A. E. GALLANT, was published in the JOURNAL, March 11, 1916.

Dr. EDWARD WALLACE LEE stated that little remained except to congratulate Doctor Gallant on

his paper and to emphasize what he had said. He had presented a class of cases in which hysterectomy was absolutely indicated. The primary and only use of the uterus was its property of child bearing. Of course, anatomically it acted as a cushion to the pelvic floor, but even after the uterus had been removed its function in that direction was not missed. He had removed a great many uteri and had yet to regret it. In every instance in which he had removed it or had advised its removal, the woman had been better mentally and physically. The indications given were far more than they had thought of. If they took into consideration the general physical condition of the people of today, the efficiency was not what it should be, and if there was any element or factor that could be resorted to, to increase physical efficiency, that factor should be attended to. In the United States there were probably not less than ten million persons below par physically. If by relieving certain physical conditions they could make certain women better by removing the uterus, it was their duty to do so.

The fact that so many women suffered from continued dysmenorrhea was a reflection on the practice and intelligence of the medical profession. Divide it into as many groups as they liked, functional, anatomical, etc., there still remained a painful menstruation. Many women had had their lives ruined by this lifelong suffering. Some had married in the hope that pregnancy might cure the condition; others had refrained from marriage and had gone from New York to San Francisco, from London to Berlin, seeking means of getting rid of it. The speaker had been in practice for over thirty-five years and had known of cases that continued all that time, and such women would today be very much better off had hysterectomy been performed. It was too simple an operation to let the fear of it stand in the way of relief. There was nothing simpler in the range of surgery than the technic of this operation as performed by Dr. T. H. Morgan. He wished to express the opinion that hysterectomy was indicated in all precancerous states of the uterus, and in fibroids, and he believed absolutely that myomectomy should never be resorted to. In many cases of post partum insanity, hysterectomy was indicated. The condition was due to the toxins that remained in the uterus, and the patient would never get well so long as the toxemia was there. Without argument, hysterectomy was indicated in uteri affected by gonorrhea or syphilis.

The day was not far off when pregnancy and gestation would be under the guidance or control of a modified form of insurance. Women would then be carefully examined prior to becoming pregnant, and after pregnancy was established, their pregnancy would be watched carefully; and if there was any condition present which tended to produce a miscarriage or anything of that kind, they would not be insured. The day would come when proper agencies would be established to see that such insurance went through.

Dr. V. ERNEST GALLANT emphasized the fact that he had omitted from the paper all cases in which there had been actual disease of the uterus dangerous to life, such as cancer; all cases of removal of the uterus for large fibroids, pus tubes, sepsis, syph-

ilis, etc., and had included only cases of external prolapse of the bladder, uterus, and rectum, causing intractable trouble; and cases of where the large, heavy, retroverted uterus was prevented from prolapsing outside the vagina, by the tender, thickened uterosacral ligaments which, by pulling on the sacrum, caused backache, headache, etc., and rendered the life of these women almost unbearable. In thin, shrivelled up, senile women, where the pelvis was devoid of fat, he had enucleated the uterus and the whole of the vaginal mucous membrane and closed the vagina permanently.

In younger women, well nourished and married, when it was desirable to provide for marital relations, after extirpating the uterus, the mucous membrane of the upper third of the vagina was removed and the denuded area columnized, thus elevating the bladder, and by perineorrhaphy obliterating the rectocele. When the patient could submit to conservative treatment, and the wearing of a pessary, this was carried out; but where the woman had to work for a living, or lived out of town, and could not undergo prophylactic treatment, especially if she was nearing or had passed the menopause, hysterectomy was deemed the best, safest, and surest means of insuring permanent relief, making her comfortable and capable of earning a living, rather than run the risk of recurrence which did at times follow any method of uterine suspension.

In many cases where the uterus was not too heavy, where pregnancy was desired and possible, the uterus was suspended, the perineum repaired. In some impregnation followed, but the reported cases of ectopic gestation were unfortunately too frequent, after long periods of sterility, to be overlooked when considering whether to remove *in toto* or conserve a truly troublesome uterus.

Dr. T. H. MORGAN believed that the medical profession owed Doctor Gallant a debt of gratitude for the paper just read, which contained much food for thought. The aim of gynecological surgery was to promote health, and if a woman's health was impaired it was the duty of the gynecologist to restore it, if possible. The restoration of health should be the first consideration, and later on the consideration of the function of certain organs that might have to be operated upon. He had been much impressed with the classification of the cases which Doctor Gallant had presented. With women who had already reached the menopause the gynecologist was justified in removing the uterus if he thought it advisable when any pathological condition existed, particularly if there was a prolapse of the rectum or bladder with the prolapse of the uterus. There was no greater problem than how to treat a prolapsed uterus, particularly in the case of women who had reached the menopause. Another problem was that of a cystocele. There was no objection to removing the uterus from women who had reached the menopause.

In the second class of women, those who were nearing the menopause, the question of operation should be left to judgment of the operator. If it was necessary to restore the patient to perfect health, he was justified in removing it if he had exhausted all the means he knew of how to retain the organ.

The most important cases to be considered were in those women who had not yet reached the menopause, the women under thirty-five years of age. The speaker had been great impressed with Doctor Gallant's treatment of such cases, prior to resorting to operation. It was a serious matter to unsex a woman unless all other means had been exhausted. He thought that every possible palliative treatment should be tried before resorting to so radical a procedure.

Letters to the Editors.

THE IMPORTANCE OF DIETETICS.

NEW YORK, March 17, 1916.

To the Editors:

I have read with considerable interest the editorial article in the NEW YORK MEDICAL JOURNAL for March 4th, on the Importance of Dietetics. Articles along these lines would, I think, prove most valuable to the practitioners. It is essential that they should have a knowledge of commercial and domestic preparation of food, and presenting these articles in such a way that the question of food is brought into intimate relation with glandular secretions, general metabolism, and pathological physiology, would be invaluable to the rank and file of the practising physicians.

LEO KESSEL, M. D.

A NOTE FROM DR. FREDERICK M. ALLEN.

NEW YORK, March 20, 1916.

To the Editors:

I would request a small amount of your space in order to correct any possible wrong impressions which might be obtained from the abstract of my Rush Lecture on Diabetes, published over my name, but which I had not seen before publication, in your issue for February 12, 1916, page 314. The danger of misconception concerns mainly the statements in regard to clinical results obtained in the treatment of diabetes at the Hospital of the Rockefeller Institute. It is very difficult to analyze clinical results briefly without overstatement, and I would ask, therefore, that all interested in the clinical aspects of my paper, which, however, dealt with the subject from an experimental and theoretical rather than a clinical viewpoint, consult the full paper soon to appear in the *Journal A. M. A.*, or better, the monograph soon to be issued from the Rockefeller Institute, which will deal with our studies on diabetes in all of its aspects.

FREDERICK M. ALLEN.

STREPTOCOCCIC INFECTIONS.

DOWNSVILLE, N. Y., March 17, 1916.

To the Editors:

The article by Gaylord C. Hall on streptococcic sore throat and the use of diphtheria antitoxin, which appeared some time ago in your *Journal* for January 1, 1916, page 42, is one which corresponds to my experience in a degree. The territory in which I practise has been infected with streptococci for some time. Four years ago I had my first cases, of which there were five. I could not tell what it was until an article in some medical journal—I believe it was the *Journal A. M. A.*—on sore throat in Chicago, which I read and reached the conclusion it was streptococcic. I then called the attention of the State department to the disease. They investigated and found the streptococcus.

Three of these cases were complicated with paralysis of the soft palate; the patients could not swallow, and it was necessary to feed them through the nose with a rubber tube. In two cases there was severe swelling, punctured several times, but with not much relief. I blistered the neck, but did not get much result. These cases all ended in recovery. Next in this community developed a cough resembling whooping cough, adults having it the same as

children. The patients showed no evidence of the whooping cough germ in the sputum, but had large quantities of streptococci. This lasted in each case from three to eight weeks. Treatment did not avail much. A large amount of calomel in small often repeated doses worked best.

Astonishing how much calomel these cases would bear without showing any result. Even with the addition of Rochelle salts or castor oil we would scarcely get a movement. The throat cases were medicated in similar manner with about the same result. If you could get good action of calomel, the patient's symptoms would begin to subside.

Last winter, the 1915 part of it, this sore throat appeared again, when I sent specimen cultures to the State department. The report was streptococcus or septic sore throat. These cases were in the surrounding communities among farm families. Suddenly in our village was found a severe case of laryngeal diphtheria which became epidemic, resulting in eighteen cases with two deaths. This closed the season for this time; it opened again in October, 1915. Streptococcal sore throat again appeared, also a liver trouble which I believe came also from the streptococcus. I had one severe case of sore throat in which I used diphtheritic antitoxin at the onset, and the symptoms lasted only twenty-four hours. One of the liver cases developed an abscess, which eventually broke and passed off through the bowels, with the most terrific odor I have experienced in twenty-five years' practice. I have found something similar in opening abscesses of the neck following relapses in streptococcal throats. In the other liver case I used diphtheria antitoxin. In thirty-six hours the symptoms began to abate. Judging from this, I concluded it was a streptococcal congestion of the liver, or, for a more simple term for the laity, I called the disease the "bull moose cough, sore throat, and gripe." This possibly may interest some of your readers.

ROBERT BRITAIN, M.D.

THE PREVENTION OF BERIBERI.

NEW YORK, March 24, 1916.

To the Editors:

I enclose copy of letter from the United States consul at Tamatave, Madagascar. Some time since at my instigation the Department of Agriculture at Washington, and through the courtesy of the French Colonial Government, secured some samples of the seed of *Phaseolus lunatus*, the golden butter bean from the west coast of Madagascar. This is one of the few beans (a cousin of the lima bean of this country) that will grow in all tropical countries, even in the dry season, and a small quantity of these beans eaten every day, with the usual rice ration of tropical peoples, will absolutely prevent beriberi. As there are at a rough calculation 100,000 deaths yearly from beriberi, the importance of a bean that can be grown in the garden of every coolie is apparent at once. The imported beans in tropical countries are so high in price that the average coolie is cut off from their use as a food.

Beriberi in the Japanese navy was absolutely stopped by a diet of beans. During the Russo-Japanese war the Japanese army reverted to rice only as a ration, and there were 40,000 cases of beriberi in the army. The Siamese Government has already taken hold of the matter, as beriberi is a great detriment to the army and navy as well as to the civilian population. The English Government in Burma is also pushing the matter. This, in my opinion, will be a great advance in preventive medicine in the tropics.

CHARLES S. BRADDOCK, JR.,
Late Chief Medical Inspector, Royal Siamese Government.
"Peace hath its victories no less renowned than war."

(Copy of enclosure.)

AMERICAN CONSULAR SERVICE
TAMATAVE, MADAGASCAR, February 10, 1915.

Dr. Charles S. Braddock, Jr., Late Chief Medical Inspector,
Royal Siamese Government, Room 504, 165 Broadway,
New York, N. Y., U. S. A.:

Since, in compliance with the desire expressed by your letter of November 1, 1914, to procure a few seeds of *Phaseolus lunatus*, the golden butter bean grown on the west coast of the island of Madagascar, for the purpose of introducing same into Siam, at the request of the Siamese Government, to be used as a food in connection with the rice, for a preventive to beriberi, I have to inform you that I am sending to you under separate cover a small

quantity of these beans. I return herewith the twelve cents in postage stamps which accompanied your letter, there being no expense connected with this service.

Very respectfully yours,

(Signed) JAS. G. CURTIN,
American Consul.

Accompaniment:

One package of Madagascar golden butter beans.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

An Index of Treatment. By Various Writers. Edited by ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital, and Physician (With Charge of Outpatients) to the Hospital for Sick Children, Great Ormond Street; and JAMES SHERREN, F.R.C.S., Surgeon to the London Hospital, and Senior Surgeon to the Poplar Hospital for Accidents. Revised to Conform with American Usage by WARREN COLEMAN, M.D., Professor of Clinical Medicine and Applied Pharmacology, Cornell University Medical College; Visiting Physician to Bellevue Hospital, New York. Seventh Edition, Revised and Enlarged. New York: William Wood & Co., 1916. Pp. xviii-1152. (Price, \$7.)

This mammoth work has reached its seventh edition through sheer merit; either to refresh his memory or to learn of some new therapeutic method or appliance, the practitioner would find with difficulty a volume more suited to his needs. Dr. Warren Coleman, of Cornell University, has carefully arranged the work for American physicians, who will find the immense number of prescriptions thoroughly suited to their use. Surgical problems are discussed as well as those of the medical sick bed; and the book is not too dignified to give adequate treatment for such humble ailments as bunions, corns, and warts. The alphabetical arrangement is not a scientific one, but is probably the best that could have been adopted. For our readers who may be on the lookout for a single work of the kind, we are glad to recommend this one.

Trachoma. Its Prevalence, Its Effects Upon Vision, and the Methods of Control and Eradication. By GORDON L. BERRY, Field Secretary. National Committee for the Prevention of Blindness. December, 1915. Pp. 40.

The monograph at hand is a popular presentation of the subject for the education of the layman as to the prevalence of trachoma, its effects upon vision, and the methods adopted for its control and eradication. The use of technical terms has been avoided as far as possible in order that all phases of this important public health problem may be readily understood by the general public. Photographs throughout the text show various existing conditions, the possibilities of infection, the resulting lesions, and what is necessary to be done in order to expect an eradication of the disease. Nearly one hundred lantern slides to illustrate the text have been prepared from photographs taken by the author or loaned by the United States Public Health Service, the United States Indian Service, etc. Copies of these slides may be purchased at cost from the committee, or will be loaned without charge other than transportation expenses; furthermore, a copy of the publication will be sent free to any physician upon application to the National committee. The prevalence of trachoma is truly a menace to America.

Notes on Military Orthopedics. By PAUL BERNARD ROTH, M.B., F.R.C.S., Captain, Royal Army Medical Corps, Special Reserve; Surgeon, Kensington General Hospital; Senior Clinical Assistant, Orthopedic Department, London Hospital. Illustrated. London: Henry Kimpton, 1916. Pp. 26.

Captain Paul Bernard Roth, from his extensive experience during fourteen months in the Royal Army Medical Corps, records the results of his observations in dealing with military orthopedic problems. The pocket manual is intended for the officers in the army and navy medical services who

encounter similar conditions, but lack the orthopedic training possessed by Captain Roth. The improvement of the ambulatory apparatus and the removal of obstacles to its function are dwelt upon. The keynote is that the soldier must be capable of marching, and inability to do so is an orthopedic problem. When a man is permanently unable to perform all the duties of a soldier, it becomes necessary to determine his fitness for occupation in some other military work where his faulty ambulatory apparatus will not be a hindrance to his usefulness.

Upon the subject of artificial limbs an absurd statement is made on page 47 that needs no comment: "There is no point in getting the limb at enormous expense from some American firm because it happens to be lighter than those made in this country: extreme lightness is actually a disadvantage. The human leg has considerable weight: and a very light artificial leg is difficult to control."

Ticks. A Monograph of the Ixodoidea. By GEORGE H. F. NUTTALL, M.A., M.D., Ph.D., Sc. D., F.R.S., Fellow of Magdalene College, Quick Professor of Biology, University of Cambridge; CECIL WARBURTON, M.A., F.Z.A., Christ's College, Zoologist to the Royal Agricultural Society; W. F. COOPER, B.A., F.Z.S., F.L.S., of the Cooper Laboratory for Economic Research, Watford; and L. E. ROBINSON, A.R.C.Sc. (Lond.), of the Cooper Laboratory for Economic Research, Watford. Bibliography of the Ixodoidea II. Part III. Cambridge: University Press, 1915. Pp. 349-550.

The first pamphlet contains titles of 462 papers dealing with ticks and their relation to disease. Brief comments by the compilers of the bibliography are also included. The second pamphlet deals with the genus, *Hæmaphysalis*, of which fifty species and varieties are recognized. The descriptions are all original and include three new species and three new varieties, aberrant forms, and numerous hitherto undescribed stages of known species. The illustrations are numerous and well executed.

Roadside Glimpses of the Great War. By ARTHUR SWEETSER. Illustrated. New York: The Macmillan Company, 1916. Pp. ix-272. (Price, \$1.25.)

This book opens with a bang, so to speak, and promises to be as lively as a fictional best seller. The first chapter takes the author from the United States, through Canada, Ireland, England, and France to Paris; there is plenty of adventure and spirited dialogue with up to date slang. Chapter II gets the writer into the midst of the German army at Valenciennes. Soon he is in the wake of von Kluck and becomes a prisoner of the Germans; then he is a prisoner of the French, and as such rejoices at the outcome of the battle of the Marne. The soldiers and civilians of the four nations immediately involved on the western front of the war are characterized in excellent style, and the breezy romantic effect of the book is admirably kept up throughout. We commend it to our friends who want a bird's eye view of the war and a most enjoyable two hours spent in reading. The two final chapters treating of France's calmness and Belgium's hopeless agony and heroism are particularly fine. In one place we noticed that the writer's emotion played hob with his grammar; in an apostrophe to one Belgian town, he shifts abruptly from singular to plural: "Ah, Antwerp, thou fair city, as your graceful spires, etc.!"

Interclinical Notes.

The writer of the London Letter to the *Journal A. M. A.* for March 25th tells how Major Leonard Darwin has come to the conclusion that war is "highly dysgenic." We should have expected the major to have qualified war as "cacogenic," which is obviously what he meant. There is some fatality about word coming when it is done for the benefit of medical science.

* * * *

Will Bradley furnishes the cover design of the March Century. Inez Haynes Gillmore's original cleverness is well shown in Ladies; Mr. Everett Shinn's illustrations are as clever in another way. Governor Whitman discusses Our Prison Problem from a distinctly modern viewpoint. "Any system," he says, "that sends hate filled, despairing men back into the world . . . is a menace to the society

that it is presumed to protect." There are still ten States that permit the leasing of convicts to private persons. An admirable paper is that of Harvey O'Higgins on Caste in Criticism. Art should be refined, indeed, but not with the refinement of a nobility or a four hundred.

* * *

Graham Taylor winds up a notable tribute to the late Dr. Henry Baird Favill in the *Survey* for March 11th with the following striking words: "What magnificent proportions and fine strong fibre he had! He was so virile in intellect, scientific in self exaction, broad in his interests, analytical and synthetic in capacity, quick in apprehension yet mature in judgment, just in caution yet prompt in decision. In action he was gloriously public spirited, self abnegating, and fearless. Far flung in vision, he was so human withal, alike when under the severest stress and strain of work or in the abandon of his rollicking play. The like of him we have not among us."

* * *

Current Opinion for March is as fascinating a review of the world's history of a month as one could wish for. Our own delightful politics form a large proportion of the news, outstripped for once as to noise by the struggle in the rest of the world; the "rise" of Mr. Brandeis from aristocracy is discussed and the careers of Arthur Henderson and General Gallieni are looked into. Shaw's *Major Barbara* is the play analyzed, but opera and dancing receive their share of attention; the mysteries of explosion, Becquerel's theories of suspended life, plants and light are scientific questions weighed; there is much about religion and social ethics; some of the wonderful cartoons of the Dutch artist, Raemaekers, are reproduced; and there is a lot of very good poetry. There are other things, too, which we leave for the curious reader to find for himself.

Meetings of Local Medical Societies.

MONDAY, April 3d.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, April 4th.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine (Section in Surgery); Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Association of Troy and Vicinity; Broome County Medical Society; Medical Society of the County of Yates; Medical Society of the County of Ulster; Medical Society of the County of Orange; Medical Society of the County of Cattaraugus.

WEDNESDAY, April 5th.—New York Urological Society; Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Schenectady Academy of Medicine; County of Rockland Medical Society; Medical Society of the County of Genesee.

THURSDAY, April 6th.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, April 7th.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society; New York Microscopical Society; Gynecological Society, Brooklyn; Manhattan Dermatological Society; Practitioners' Society of New York; Corning Medical Association; Saratoga Springs Medical Society; Society for Serology and Hematology.

SATURDAY, April 8th.—New York Association of the Medical Reserve Corps of the United States Army.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned officers serving in the Medical Corps of the United States Public Health Service for the fourteen days ending March 22, 1916:

Carmelia, F. A., Assistant Surgeon. Ordered to proceed to Frederick, Md., for duty in connection with the sanitary survey of schools in Frederick County. **Creel, R. H.**, Surgeon. Detailed to present an address on Housing in Preventing Diseases at the meeting of the Southern Sociological Congress, at New Orleans, La., March 27 to 30, 1916. **Fautleroy, C. M.**, Passed Assistant Surgeon. Relieved from duty at Honolulu, Hawaii, and ordered to proceed to Hongkong, China, for duty. **Foster, A. D.**, Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C., and ordered to proceed to Stapleton, N. Y., for duty at the Marine Hospital. **Glanville, W. E.**, Assistant Surgeon. Relieved at Manila, P. I., and ordered to proceed to San Francisco and report arrival. **Glennan, Kenneth R.**, Field Investigator. Directed to proceed to Rome and other points in Floyd County, Ga., for duty in connection with studies of rural sanitation. **Holt, John M.**, Surgeon. Relieved at San Francisco, Cal., and ordered to proceed to Cleveland, Ohio, and take charge of the Service at that port. **Lumsden, L. L.**, Surgeon. Directed to proceed when necessary to Tuscaloosa County, Ala.; Floyd County, Ga.; Greenville County, S. C.; and other counties where the work is to be carried on, to supervise field investigations of rural sanitation. **Paine, Liston**, Assistant Surgeon. Directed to proceed to Victor, Mont., for duty in studies of Rocky Mountain Fever. **Perry, J. C.**, Senior Surgeon. Granted one month and eight days' leave of absence with pay, and an additional period of fifteen days without pay, beginning March 25, 1916. **Preble, Paul**, Passed Assistant Surgeon. Granted ten days' additional leave from March 21, 1916. **Sandidge, R. F.**, Field Investigator. Directed to proceed to Greenville, S. C., and other points in Greenville County, for duty in connection with studies of rural sanitation. **Schwartz, Louis**, Passed Assistant Surgeon. Granted one month's leave of absence from March 27, 1916. **Sydenstricker, E. L.**, Public Health Statistician. Directed to report to Surgeon Joseph Goldberger for duty in connection with an investigation of the relation between the prevalence of pellagra and the economic status of the population. **Von Ezdorf, R. H.**, Surgeon. Detailed to present an address on malaria at the meeting of the Southern Sociological Congress, at New Orleans, La., March 27 to 30, 1916. **Waller, C. E.**, Assistant Surgeon. Directed to proceed to points along the coast of Maryland and Virginia to make inspections and collect samples in connection with studies of the pollution of coastal waters. **Watkins, J. A.**, Passed Assistant Surgeon. Relieved from duty with the Bureau of Mines, and ordered to report at the Marine Hospital, Pittsburgh, Pa. **Wheeler, G. A.**, Assistant Surgeon. Relieved from duty at the Hygienic Laboratory, Washington, D. C., and ordered to proceed to Spartanburg, S. C., for duty in investigations of pellagra. **White, J. H.**, Senior Surgeon. Detailed to represent the Service at a meeting of the Tennessee State Medical Association, at Knoxville, Tenn., April 3 to 6, 1916.

Boards Convened.

A Board of commissioned medical officers convened to meet at the marine hospital, San Francisco, Cal., March 20, 1916, for the purpose of conducting an examination of Surgeon L. L. Williams to determine his fitness for promotion to the grade of senior surgeon. Detail for the board: Senior Surgeon S. D. Brooks, chairman; Surgeon W. C. Billings, member; Surgeon W. A. Korn, recorder.

A board of medical officers convened at Blaine, Wash., for the reexamination of certain detained aliens. Detail for the board: Surgeon B. J. Lloyd, chairman; Acting Assistant Surgeon C. E. McKinnis, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending March 25, 1916:

Bailey, Edward, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort D. A. Russell, Wyoming, and report to the commanding officer of that post for duty and by letter to the commanding officer, Central Department. **Bartlett, John D.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort D. A. Russell, Wyoming, and report to the commanding officer of that post for duty and by letter to the commanding officer, Central Department. **Greene, John V.**, First Lieutenant, Medical Reserve Corps. Reports assignment as surgeon in charge of Base Group, Punitive Expedition, March 14, 1916. **Seaver, Edwin P., Jr.**, First Lieutenant, Medical Reserve Corps. Assignment by the commanding officer of Fort Rodman, Massachusetts, to active duty at that fort on account of an existing emergency, from March 2, 1916, is confirmed and approved. **Snow, Corydon G.**, Captain, Medical Corps. Granted two months' leave of absence to take effect on or about April 10, 1916.

Births, Marriages, and Deaths.

Married.

Bernhardy—Christie.—In Knoxville, Pa., on Wednesday, March 15th, Dr. Henry W. Bernhardy, of Rochester, N. Y., and Miss Hazel Christie. **Kane—Stuart.**—In San Gabriel, Cal., on Tuesday, March 7th, Dr. Louis M. Kane and Miss Frances Stuart. **McDonald—Nelson.**—In Clearfield, Pa., on Friday, March 17th, Dr. Claire McDonald and Miss Nelson. **MacGowan—Huxell.**—In Cincinnati, Ohio, on Monday, March 13th, Dr. John MacGowan and Miss Irene Huxell.

Died.

Baird.—In Walsenburg, Colo., on Wednesday, March 15th, Dr. Thomas D. Baird, aged sixty-five years. **Bolles.**—In Santa Barbara, Cal., on Saturday, March 18th, Dr. William Palmer Bolles, of Roxbury, Mass., aged seventy-one years. **Brown.**—In McGregor, Texas, on Sunday, March 12th, Dr. James E. Brown, aged fifty-one years. **Campbell.**—In Paterson, N. J., on Monday, March 20th, Dr. Charles Campbell, aged fifty-nine years. **Campbell.**—In Los Angeles, Cal., on Wednesday, March 15th, Dr. William H. Campbell, of Cincinnati, Ohio, aged fifty-four years. **Conn.**—In Wayne, Pa., on Friday, March 24th, Dr. Granville Priest Conn, of Concord, N. H., aged eighty-four years. **Elder.**—In Columbus, Ohio, on Sunday, March 12th, Dr. Adam G. Elder, aged thirty-nine years. **Fry.**—In Corsicana, Texas, on Monday, March 6th, Dr. John H. Fry, aged sixty-six years. **Iglehart.**—In Iquique, Chile, on Saturday, March 18th, Dr. Asa S. Iglehart, of New York, aged forty-six years. **Keeler.**—In Harleysville, Pa., on Wednesday, March 15th, Dr. Reinhard H. Keeler, aged eighty-five years. **Langston.**—In Elwood, Ind., on Friday, March 10th, Dr. Edward Langston, aged eighty-four years. **Lutz.**—In St. Louis, Mo., on Friday, March 24th, Dr. Frank J. Lutz, aged sixty years. **Northrup.**—In St. Pauls, N. C., on Monday, March 13th, Dr. Theodore McL. Northrup, aged forty-two years. **Physick.**—In Cape May, N. J., on Tuesday, March 21st, Dr. Emilen Physick, aged fifty-eight years. **Snow.**—In Cleveland, Ohio, on Thursday, March 16th, Dr. Lexter B. Snow, aged seventy years. **Swanson.**—In Southampton, Mass., on Monday, March 20th, Dr. Axel F. Swanson, of Albany, N. Y., aged twenty-four years. **Tremblay.**—In Butte, Mont., on Monday, March 6th, Dr. Joseph A. Tremblay, aged seventy years. **Van Arsdale.**—In New Albany, Ind., on Saturday, March 11th, Dr. John K. Van Arsdale, of Louisville, Ky., aged sixty-eight years. **Van Horn.**—In Findlay, Ohio, on Tuesday, February 29th, Dr. Winfield S. Van Horn, aged sixty-two years. **Whipple.**—In Danby, Vt., on Saturday, March 11th, Dr. Edward O. Whipple, aged ninety-six years. **Wolff.**—In Atlanta, Ga., on Tuesday, March 14th, Dr. Bernard Wolff, aged forty-eight years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 15.

NEW YORK, APRIL 8, 1916.

WHOLE No. 1949.

Original Communications.

SEROLOGY AND THE DIAGNOSIS OF SYPHILIS.

BY M. L. HEIDINGSFELD, PH. D., M. D.,
Cincinnati,

Professor and Head of the Department of Dermatology, University of Cincinnati; Dermatologist, Cincinnati General Hospital.

Serological examination has come to be justly recognized as *sine qua non* in the successful diagnosis and therapeusis of syphilis. A painstaking, carefully made, and scientifically controlled serological examination imparts the most trustworthy information regarding the presence of syphilis, in either inherited or acquired form, and measures with the greatest degree of accuracy the progress toward satisfactory recovery which present day knowledge can offer. The treatment of a case of syphilis without such form of control is in a large measure impractical, unscientific, and unsatisfactory. The serological control is both the oracle and mentor of syphilis. It not only confirms or rules out the clinical diagnosis of syphilis, but it also imparts a wealth of information in regard to whether or not the case is showing satisfactory improvement; whether a given remedy is producing material or negative or indifferent results; whether a specified line of treatment shall be continued or materially changed; how frequently a given remedy shall be administered; how soon an early marriage can be countenanced without danger of transmitting the disease to wife and future offspring. It indicates better than all else whether a satisfactory clinical cure has been obtained, and, if indefinitely exercised from year to year in all well defined cases of syphilitic infection, it imparts an incomparable degree of peace of mind and personal satisfaction to both patient and attending physician. These and many other features impart to a careful serological control the utmost value and importance, and render it absolutely indispensable to the physician who essays to give a case of syphilitic infection its just and proper degree of attention.

In spite of all that can be said in favor of such serological control, it also has some serious limitations and shortcomings. It is generally well recognized that an individual may have latent, sometimes even active syphilis, in well defined clinical form and yet show a negative Wassermann. A Wassermann is often for the time being absolutely negative and later becomes strongly positive. These limitations can, as a rule, be intelligently interpreted upon clinical

or therapeutic grounds. A Wassermann, however, can never be positive, not even weakly or doubtfully positive, if syphilis can be definitely and absolutely excluded. The Hecht-Weinberg-Gradwohl is as trustworthy as the Wassermann and far more delicate. If used with a Wassermann, there will be relatively few cases which are serologically negative to both tests, and which will later show laboratory relapses or clinical evidence of syphilis. Furthermore, each will act as a check upon the other, and rule out a possible laboratory error, which may give rise to erroneous interpretation of a serious nature. Furthermore, the Wassermann measures more accurately the slighter degree of early therapeutic improvement, whereas, the Hecht-Weinberg as modified by Gradwohl, determines more definitely when the ultimate goal is attained. In other words, the Wassermann measures slight, coarse, early improvement, and the Hecht-Weinberg reveals the finest shades of any remaining trace of the disease.

As already intimated, and doubtless generally recognized, serological control has its limitations and serious shortcomings. The limitations lie within the test itself, and, as already explained, can be materially reduced by supplementary tests. Some of its shortcomings are of personal type and belong in the province of personal misinterpretation and technical fallacy. These errors have brought some undeserved discredit upon the test, and in justice to patient, physician, and serological control, these instances should bear the light of careful scrutiny and court their proper remedy.

During the past four or five years, ever since the Wassermann technic has been perfected and has received general recognition and credence, many cases have come to the writer's notice, where a tentative diagnosis of syphilis has been made upon somewhat doubtful clinical evidence, which have been treated with salvarsan and neosalvarsan largely on the ground that the serological report from the laboratory was, in a measure, confirmatory. The laboratory report in most of these cases was invariably "weakly positive" or "doubtfully positive." In not a few instances, salvarsan and neosalvarsan had been administered intravenously in spite of a negative history, before a serological examination was made, without material clinical improvement. Under the encouragement from the laboratory, the salvarsan and neosalvarsan treatment was often pushed to extreme limits and supplemented with iodides and mercurial treatment with equally negative results. In the face of this discouragement, the patients eventually drift to the dermatologist for specialized attention. This has been by no means an uncommon per-

sonal experience and the writer will not essay to report all the instances of this character which have come to his personal notice within the past four or five years. Within the brief period of eight days, two well defined cases of this character were referred to him by one general practitioner. These cases form the basis of this report and pave the way for suggestions to spare the general practitioner future embarrassing error in this direction.

CASE I. Mrs. J. O. R., referred by Dr. J. C. C., of Cincinnati, February 9, 1916, with the statement that the patient, who was twenty-five years of age, married eight years, with two normal children, no miscarriages, and history otherwise negative, had been treated by a fellow colleague for a supposed syphilitic infection. Her husband, who also gave a negative history, showed no evidences of any existing or preexisting infection and was otherwise in perfect health.

Eighteen months ago, patient developed indolent ulcerations of the skin on the lower extremities, together with deep seated indurated painful nodes, accompanied by dull boring pains. The ulcerations, which were very refractory to local and general treatment, ultimately underwent indolent involution and disappeared with irregular cicatrization and yellowish brown pigmentation. In spite of the absolutely negative history, the physician insisted that the patient was infected with syphilis, and vigorous antisyphilitic treatment was administered. When the patient failed to manifest improvement under salvarsan and general antisyphilitic treatment, she was sent to a laboratory for clinical and serological examination. The serological report was "doubtfully positive," and was accompanied by the clinical statement that syphilis was undoubtedly present in active form and that further treatment should be vigorously prosecuted. After a few months of additional treatment with equally discouraging results, the patient withdrew herself from the care of her physician, and consulted Dr. J. C. C., a painstaking general practitioner of wide experience and a close clinical observer. Dr. J. C. C. could not concur in the diagnosis of syphilis, when the case came to his notice, largely on the grounds of the absolutely negative history, the normal appearance of the children, and the otherwise good health of both patient and her husband. The lesions on the leg looked highly suggestive, but in face of the negative results from salvarsan and antiseptic treatment, he could not lend himself to such a diagnosis, on the mere clinical appearance of one group of symptoms. When the patient was referred by Dr. J. C. C. to the writer (Fig.), the lower extremities were studded with irregular cicatrices, copper brown discolorations of the skin, a number of indolent ulcerations and some deep seated, painful nodes. The patient also complained of severe periosteal pain, persistent and boring in character, much worse and almost unbearable at night. The case immediately impressed the writer as a typical example of folliculitis, or tuberculide of the skin, an affection that bears a deceptive clinical resemblance to the untrained eye, to a small nodular type of late secondary syphilis. Wassermann and Hecht-Weinberg serological examinations of the blood were both absolutely negative. Subcutaneous injection of one sixth mgm. of tuberculin promptly called forth local reaction in the lesions and a general reaction in the form of chill, moderate elevation of temperature, general aching and pain, which persisted for forty-eight hours.

CASE II. Mrs. C. T. S., aged twenty-eight years, referred by Dr. J. C. C. February 17, 1916, married eight years, with two normal living children and one child that died of scarlet fever at the age of four years. She had one accidental miscarriage at two months, due to physical strain. Her history otherwise was absolutely negative. The personal history was almost a counterpart of the preceding case in all its essential details, and the duration of the process was four years.

The patient, February 17th, showed the same clinical characteristic as Case I. Wassermann and Hecht-Weinberg serological tests were likewise absolutely negative, and the tuberculin injection called forth the same character of reaction.

These cases serve to illustrate that the general practitioner and the serological laboratory can both

fall into serious and almost uncalled for error in the management of many obscure dermatological cases. This error can become all the more complicated if syphilis is incidentally associated. It serves to show that laboratory evidence, valuable as it may be, is not fundamental in character. The laboratory still remains, as it always has and always should, an aid to clinical diagnosis and treatment. Clinical evidence must always take precedence, and the two should go hand in hand and not entirely lose sight of each other. The writer does not wish to discredit the value and importance of the serological examination. He also does not wish to bring any discredit on the perfect reliability of a carefully made serological examination. He has been one of its earliest converts and strongest believers at all times and sincerely thinks that no case of syphilis can be intelligently and successfully treated without the aid of a serological control. He wishes to voice a protest against certain serological fallacies which may lead the patient and practitioner into serious error. First and fundamental is the report which often comes from a serological laboratory of "doubtfully positive." A serological report cannot be "doubtfully positive." The report is either positive or negative. It may be weakly positive, but it cannot be doubtfully positive. It can never be weakly positive if syphilis has never been present or if the therapeutic results have been entirely successful. The laboratory which renders a report doubtfully positive leaves latitude only for its own shortcomings. It can be doubtfully positive only if the work is doubtfully carried out. The Wassermann serological examination can leave no room for doubt. It is never positive in the slightest degree if syphilis is entirely absent. It is often negative if syphilis has not been entirely eliminated, but the test, in and of itself, in the latter case, is always absolutely negative. A Wassermann is frequently weakly positive, and the small degree of inhibition means positive Wassermann and positive syphilis, if the test is correctly made and properly controlled.

Many cases of supposed syphilitic infection of doubtful clinical character and uncertain history come to the attention of the specialist, clouded with uncertainty from both a clinical and laboratory standpoint. From a clinical standpoint it may be a faulty interpretation or conception of early symptoms. If salvarsan is administered in these cases without an early serological confirmation, unless the case is of unquestionably clean cut character, any resulting doubt is difficult to dispel and often militates unfavorably against the future satisfactory and successful management of the case. A subsequent serological report or a number of subsequent reports may be all uniformly negative for the time being. If that patient withdraws himself prematurely from further observation and treatment, effects of a deleterious nature may result in years to come. On the other hand, if syphilitic infection was not incurred, that patient unnecessarily risks the unpleasantness of believing himself infected when not infected and furthermore suffers all the worry and expense attendant upon syphilis.

The serological report which wrongly lends color to a mistake in either direction, permits a breach of

no less moment than an error in clinical judgment. A serological report is generally looked upon by the profession at large as infallible in nature. Laboratory workers themselves regard these tests in this light with the utmost jealousy. The slightest reflection upon their reliability calls forth the strongest resentment. The public at large and the laboratory workers themselves have been carried too far in this direction by their overconfidence. I concur with some of my confrères, who believe that they must allow themselves a certain degree of latitude in accepting reports of this character and make due allowances for inconclusive results. I will even go a step farther, and again maintain what I always believed to be essential, i. e., that the clinical and laboratory work should go hand in hand, and that the association of the two should be the closest possible. The evident, clean cut case of syphilis requires no Wassermann or serological examination for diagnostic purposes. The doubtful case usually requires not only serological evidence, but confirmation of a clinical character. In fact, of the two, the latter is by far more desirable and important. Clinical evidence always takes precedence over laboratory findings.

With the advent of the serological laboratory, the diagnosis of syphilis has undergone some changes which have not augured wholesome results for patient and attending physician. Clinical prerogatives have been abrogated by the laboratory, and have yielded their former position of fundamental importance to occupy the somewhat subsidiary role formerly played by the laboratory. The old order of things should not be changed. The laboratory today, with all its advanced achievements and methods of greater precision, still occupies a place secondary to the clinic. The laboratory findings today, as heretofore, are mere aids to clinical diagnosis and treatment. The fundamentally stronger clinical evidence must take its just precedence. In former years the clinician, today the laboratory is importuned to dispel diagnostic doubt and to outline therapeutic endeavor. Conditions, but not the order, have undergone material change. The laboratory has advanced, but not to the point to entirely supersede the clinician. The laboratory has really become indispensable to the clinician, but the clinician has also remained indispensable to the laboratory. They bear a relation that is entirely too reciprocal to allow either an independent sphere of action. The successful clinician must be in intimate relation, exercise personal control, and keep in close touch with the laboratory, and the laboratory must reciprocate in the same measure in order to insure the most satisfactory results in full justice to the patient and consulting physician.

The writer could cite many serious errors and fallacies which have come to his personal notice, in which the clinician has erred in relying too strongly on clinical evidence without asking the laboratory for confirmation or negation. A much larger number of errors are referable to too much dependence on the laboratory. Reports from different laboratories are not always in consonance. This is inexcusable, as serological results should invariably harmonize, if they are carefully and properly made. Any discord in this respect is due to poor and

faulty technic. Furthermore, a negative Wassermann is not always indicative of the absence of syphilis. These shortcomings are unfortunate and occasionally lead to unhappy results. They could in a measure be condoned if the limitations of the serological examination were properly considered; if clinical associated evidences were not entirely ignored; if too much of a sense of false security was not imparted to patient and consultant. But when a patient who has never incurred an infection presents a clinical condition that is misunderstood and misinterpreted, and is assured that the laboratory findings are positive and confirmatory, and that anti-syphilitic treatment should be vigorously prosecuted, it is opportune, nay, urgent, to instruct the profes-

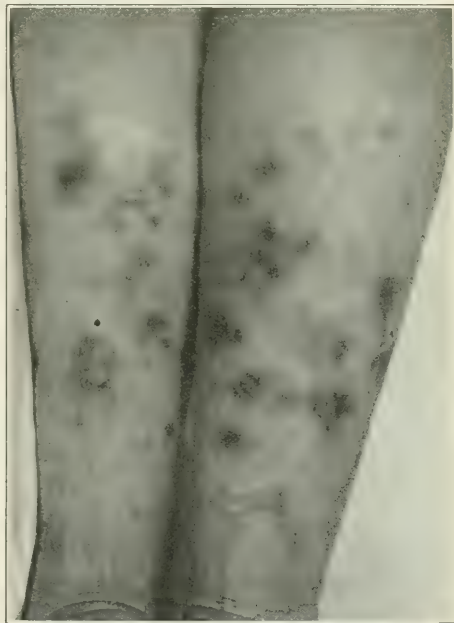


FIG. 6.—Case of folliculitis or tubercule of the skin, clinically and serologically mistaken for syphilis.

sion that the proper source of consultation for syphilis belongs today not in the laboratory, but as heretofore, within the province of the clinician, preferably one who has the laboratory at his personal command.

CONCLUSIONS.

1. The serological examination in syphilis is trustworthy if carefully and scientifically performed.
2. The serological examination can never err on the unsafe side, namely be positive in the absence of syphilis, unless through technical error.
3. A serological examination may be negative and syphilis present in clinically active or latent form.
4. Both Wassermann and Hecht-Weinberg-Gradwohl tests are trustworthy. When combined they are a check to each other. The Wassermann reveals the degree of early improvement. The Hecht-

Weinberg-Gradwohl is usually positive long after the Wassermann is negative, and measures with much greater delicacy and precision the last traces of serological inhibition.

5. Serology is a mere aid to clinical diagnosis and therapeutics, and as such belongs strictly in the province of the clinician of syphilis. It is indispensable to the clinician of syphilis who successfully essays the diagnosis and treatment of this affection.

6. A serological report must either be negative or positive; inhibition is either present or absent, and there is no place for a report "doubtfully positive" in character.

7. The diagnosis of dermatoses of doubtful nature or symptoms of uncertain character cannot be entrusted solely to serological evidence. Nonsyphilitic dermatoses, resembling syphilis, may possess an associated syphilitic infection, which a positive serological report will invariably cloud with greater obscurity.

8. A negative serological report in positive clinical syphilis is mystifying and may be attended with gravely deleterious results.

9. Many laboratory serologists require a personal examination of the patient or clinical description of the case. In either event, they pose as clinicians as well as serologists, and unless clinically well qualified, biased laboratory findings may plunge them into serious error.

10. Serologists who stamp a distinctly nonsyphilitic affection syphilitic, in individuals in whom the disease is entirely absent, commit a grave and inexcusable error.

11. Serology, in its limited scope, has for the time being usurped the broader province of the clinician. Frequent and repeated laboratory errors, coupled with erroneous clinical interpretations, demand the reinstatement of the old order of things.

12. Clinical evidence, today, as ever, takes precedence over laboratory findings. The serologist must again yield to the syphilographer, whose prerogatives, for the time being, have been unduly usurped. Questions involving doubt in clinical diagnosis and treatment in syphilis should find their proper solution, not in the hands of the serologist, but the dermatologist, syphilologist, neurologist, internist, oculist, etc., as the case may be, who in turn can call the serologist to his aid if occasion requires.

19 WEST SEVENTH STREET.

Experiments with the Simpson Arc Lamp.—

The rays of this lamp have been stated to have great penetrating power, to be, in fact, a "new x ray." To test this claim, J. H. Sequira (*Lancet*, Feb. 19, 1916) made a series of experiments from which he concluded that the rays given off were only actinic rays which did not differ essentially from actinic rays from other sources of light, though they were present in abundance; that these rays had no penetrative power, failing to pass through such materials as fresh human skin, frog's skin, paper, cotton, or gutta percha tissue; that whatever deep effects had been observed from the use of these rays, were due to counterirritation and were the same as those produced by the application of an ordinary mineral plaster.

THYMIC DISTURBANCE IN THE ADULT.*

BY GEORGE H. HOXIE, A. M., M. D.,
Kansas City, Mo.

On December 7, 1909, a young man was brought on a stretcher to the Bell Memorial Hospital and assigned to my service. He complained chiefly of weakness and of difficulty in getting his breath. We found him greatly emaciated, but with no gross pathological changes. For this reason the various physicians who had seen him had called it a case of neurasthenia; but the progressive emaciation and weakness belied their diagnosis. Six months previously, he had had his appendix removed. The symptoms for which this had been done were not made clear, hence we could not conclude whether there was any relation between that illness and the present one. But his story indicated that the present condition was a development of the bloating and eructation that set in soon after operation.

The temperature was subnormal (97.8° F.); the pulse varied from 54 to 120; the respiration varied from 16 to 26. The blood showed hemoglobin 100, white cells 7,600, red cells 6,860,000, blood pressure 120. The urine was acid, of specific gravity, 1.027, and contained a few short hyaline casts and squamous epithelium. The feces after castor oil were liquid, with some meat fibres and epithelium. The gastric contents after a Boas meal had a total acidity of 70, and free acid 36.

The physical examination was negative, except for a friction rub under the sternum and to the right and an area of dullness under the sternum and to the left, continuous with cardiac dullness but extending upward to the clavicle. (Fig. 1.)

The patient had a morbid fear lest he be hurt. His reflexes varied from normal to exaggerated. The most striking symptom was holding his fingers between his teeth to "help him breathe." He spoke in a whisper; he could speak loud, only that it tired him. In general one had the picture of a severe myasthenia as well as of a neurasthenia.

He was put on a tonic treatment of nux vomica and iodide by mouth with succinimide of mercury intramuscularly. This showed no result, and was discontinued. Working on the assumption that the trouble was essentially glandular, arsenic was begun in the form of atoxyl. This in turn failed to bring about a change (in spite of hot air baths given with it). Then the administration of thyroid in five grain doses three times a day was begun and in ten days the temperature ranged above normal and the small lymphocytes had increased. After two weeks thyroid was stopped and he was given orchitic fluid tablets. This brought on nervous depression and discoloration of the sclerae, etc., and was stopped after a week. The thyroid was taken up again and accompanied by arsacetin intramuscularly. The patient immediately began to improve. After two weeks the thyroid was stopped and the Roberts-Hawley lymph and orchitic emulsion was injected. He continued to gain, especially in weight, and in six weeks was able to leave the hospital in apparently robust health. (Fig. 2.)

The impression left on us was that the two ef-

*Read at the nineteenth annual meeting of the American Thoracic Society, San Francisco, Cal., June 27, 1915.

fective agencies were the glandular extracts and the arsenic; and of the glandular extracts we attributed the greater force to the thyroid. As a result of the treatment, the patient's entire demeanor had changed

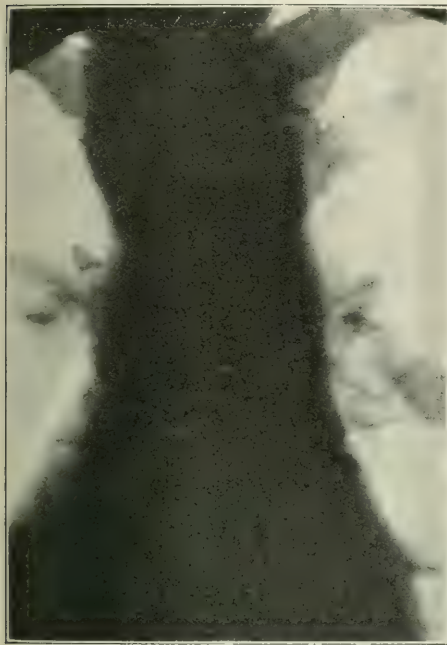


FIG. 1.—Chest of patient with thymic dysfunction. May 6, 1915.

and he seemed normal in every respect. The physical examination showed less dullness under the sternum. The friction rub had disappeared. The x ray showed a smaller shadow in the thymic area. It hardly seems possible to question the diagnosis, for both the physical findings and the therapeutic effects point to a hyperplasia and dysfunction of the thymus.

On October 20, 1914, the patient appeared again, stating that he feared a recurrence because he had begun to bloat and be short of breath on walking. In all the time since leaving the hospital in 1910, he had been perfectly healthy. I went over him very carefully and found the same conditions as in 1909, except that the thymus had not increased in size as much as before. On doses of thyroid and arsenic he began to improve and was sent home November 2, 1914. The x ray shows only a slight difference between these two dates. He weighed 174 pounds on October 20th and 175 on November 2nd. He could not walk two blocks on the 20th and could walk uphill and twelve blocks on the 2nd, without becoming short of breath. The patient returned, May 8, 1915, saying that for six weeks his breathing had been bad when he walked; appetite good, bowel action good as long as he took the arsenic; sleep fair; no dizziness. He had stopped work thirteen days before, on account of weakness. He weighed

174 pounds, pulse was from 60 to 84, temperature 97.2° to 98.3° F., respiration 14 to 24, reflexes active. The substernal dullness at the level of ribs two and three was increased to the left. He was kept in St. Luke's Hospital, without improvement until July. Then, as he began to improve, he requested that we try to remove the obstruction to his breathing, in order that he might not have a return of his trouble. Accordingly, on July 30th, Doctor Hertzler, under a local anesthetic, resected part of the manubrium and the first and second costal cartilages. (Fig. 3.) A week later he opened the wound again and removed a glandular mass lying under the junction of the second rib with the sternum. This was about three quarters of an inch long and three eighths inch in diameter. The patient recovered without a return of his dyspnea and left the hospital, August 22. By October 30, 1915, he weighed 188 pounds and felt well.

The tissue removed was of the glandular type, with cortex and medulla. (Fig. 4.) Its position was correct for the left branch of the thymus. It was connected above by a sort of pedicle or isthmus. Hence we felt that there was little doubt of its being thymic tissue.

I saw another patient in October, 1913, in whom I made out a similar condition. Unfortunately I could not get her into a hospital for prolonged study and had to rely upon my office examinations. Her chief complaint was discomfort in the thorax and shortness of breath. She gaped nearly all the time she sat in my office and complained of the difficulty in getting her breath. The physical examination showed nothing except the thymic hyperplasia that could account for this weakness. Inasmuch as she refused to go into a hospital for treatment, she could not be helped materially, and a year later reported by letter—she lived out of town—that her condition was practically unchanged.

Another instance of thymic disturbance was in a young man who suffered at the same time a psychosis of fear. He had failed to make good in business. Physically the only definite findings, aside from the thymic hyperplasia, were the tonsils bound down and filled with cheesy masses. Here, too, I failed to obtain his admission to a hospital for prolonged study and had to rely on my office studies. The x ray here confirmed the percussion dullness under the manubrium. The pulse was 116; the tem-



FIG. 2.—Patient with thymic dysfunction. August, 1915.

perature, 98.6° F.; blood pressure 86 to 106; hemoglobin, 90; red cells, 6,248,000; polynuclears, 70. The urine was negative, the prostate swollen and tender.

Still another patient displayed a combination of prostatic disease with parathyroidism. In him there



FIG. 3.—Operation wound for resection of thymus, August 13, 1913.

was again the substernal dullness, the weakness, and the difficulty in obtaining his breath. He had tetanic seizures with chills and fever. He cleared up quickly under prostatic massage and the administration of arsenic and thyroid. The thymic hyperplasia was confirmed here also by the x ray plate.

In another case where a competent neurologist stated that there was a definite psychosis, I found again the syndrome of fear, weakness, difficulty in breathing, and thymic hyperplasia. There was here considerable vasomotor disturbance, evidenced by varying blood pressure. For example, the blood pressure varied in the two arms ten to fifteen mm., but cleared up under treatment. The neurologist, by the way, thought that the thymic hyperplasia might be the result of the psychosis—a result of functional bombardment—rather than that the thymic dysfunction might cause the psychosis. This patient had been treated by several men—including Christian scientists—with no results. He did improve under rest and the administration of arsenic and thyroid.

The problem presented by these cases is the familiar one of pluriglandular disturbance. To dodge the issue by calling the condition neurasthenia or myasthenia does not assist in the solution of the problem, for that is merely giving a name to a condition. What we desire is an understanding of its pathogenesis. We shall have advanced one step in that direction if we can assure ourselves that the condition is due to a glandular imbalance.

This group of cases have in common the enlargement of the thymus. The first question is, therefore, whether the thymus is a gland with internal secretion, or simply a mass of adenoid tissue.

Warthin, in the second edition of the Osler-McCrae *Modern Medicine*, expresses the opinion that the weight of evidence is increasing on the side of the adenoid nature of the thymus (iv, p. 600).

Yet the material brought forward by Mann, Elosei, Hilt, and others is practically all on the side

of the glandular nature of the thymic body. This evidence might be summarized thus:

1. A disturbance in the growth of young animals when the thymus is removed. This disturbance seems to centre in the muscular and osseous systems and interferes with the normal increase in size.

2. A disturbance in the development of other glands—and an upset in the usual pluriglandular equilibrium when the thymus body is either removed entirely or becomes hyperplastic in the growing animal. Thus the hyperplasia of the spleen and adrenals was particularly well marked in thymectomized dogs.

The conclusions reached by the laboratory workers seem well summarized by Hart at the end of his studies of the thymus in *Virchow's Archiv* (214, p. 82):

There is a true persistence of the thymus, and a true hyperplasia of the thymus, with which there appears often, perhaps always, not merely a hyperfunction, but rather a dysfunction of the gland. They are the expression and some part of the phenomena of an abnormal constitution, of a disturbance of the equilibrium of the pluriglandular endocrine system, on which as a basis various disease forms may develop. From the hyperplastic thymus a toxic influence seems to be exerted on the heart. The existence of a true status lymphaticus has not yet been proved with certainty. Rather, it appears as if the swelling of the lymphatic apparatus represents a tissue reaction that is dependent upon the thymus and which can show itself in the lymphoid components of the thymus itself. Two sharply marked histological types stand out: The so called



FIG. 4.—Tissue removed at the operation, August 6, 1913.

medullary hyperplasia, which represents a primary increase of the specific organ tissue, and a hyperplasia of both zones in nearly normal relations, which argues for a secondary increase of the nonspecific lymphoid elements of the gland in a (usually primary) hyperplastic thymus.

Barker, in the January *American Journal of the Medical Sciences*, discusses the endocrine functions

of the gonads in the male. Both of the case histories that he gives were of thymic hyperplasia. They are of interest here in that they show the participation of the thymus in the endocrine disturbance, and to that extent show that the thymus is not merely lymphoid tissue. An interesting comment on this question is made by Culbertson in the *Monthly Collective Review* for July, 1914:

On the relation of the thymus gland to the general metabolism but little has been worked out. Whether it inhibits the development of the ovary or whether such a development follows on the withdrawal of the thymus secretion is indefinite. Experimentally, it is increased after oophorectomy, as is the pituitary gland, before puberty. With the hypophysis it controls the growths of the body structures in general and with the pineal gland it probably prevents sexual precocity.

Lerch, in the *Medical Record* for April 11, 1914, has this to say:

For many years I have often found a dullness over the upper portion of the sternum and to its sides (in adults—G. H. H.), which it was difficult to explain, and like others, I have taken it for aneurysm of the aorta, enlarged bronchial glands, or tumor. Five years ago, I was able for the first time to percuss the exact borders of this dullness in a neurasthenic, a brother of a patient suffering from exophthalmic goitre, and diagnosed it as intracostal thyroid, on account of its resemblance to a substernal struma. However, finding this dullness constantly in hysterics and neurasthenics, the only patients which at that time I examined for this purpose, and soon being able to determine with accuracy the large vessels, I had to come to the conclusion that it corresponded to and represented the old thymic tissue, excessively filled with blood. I was forced to this conclusion by the form of the dullness, which exactly corresponds to the form of the thymus, and further, because it clears up considerably in the horizontal position of the patient whether or not he lies on his stomach or on his back, and increases in the upright position. In many patients it is visible, full, protruding, and frequently red. Occasionally distended veins may be seen in it, which empty when the patient resumes the horizontal posture, the ribs are flattened and the intracostal spaces sink. Almost in every case it is marked like an organ on the chest wall and can often be mapped out with the dermatograph before percussion is made. I found enlarged thymus dullness so frequently associated with hysteria and neurasthenia and enteroptosis that I described this symptoms complex as a distinct disease (see Lerch, *Medical Record*, March, 1909).

These excerpts indicate that there is reasonable ground for believing in the glandular nature of the thymus, even if some of the effects are due to the pressure of the body on the surrounding tissues.

The next question is one of etiology. Are thymic disturbances in the adult—at an age when the gland is normally quiet—due to infections or inflammations in the anterior mediastinum, or are they responses to constitutional or glandular disturbances at a distance from the thymus?

In my own cases the causes seemed to lie at a distance from the thymus. For example, in a patient whose history has not been outlined above, where the peculiar myasthenia plus dyspnea was present, the causative factor was a beginning pregnancy.

In some cases of males also a sexual disturbance seems present, for instance, an epididymitis. But I should hesitate to say that sexual upsets are always at the base of thymic disturbances. I believe, therefore, that the types of thymic disturbance that I have seen are due to upsets in the endocrine system rather than to local conditions in the thorax. For such a view I find some support in the literature.

For instance, Professor Halstead's discussion

(*Bulletin Johns Hopkins Hospital*, Aug., 1914) of the influence of the thymus in cases of exophthalmic goitre argues for the position that an upset in the sympathetic or vagal system brings about a loss of equilibrium, and that in response to this loss of equilibrium the thymus is drawn into renewed activity. Similarly, Doctor Hertzler's report that Graves's disease was frequently due to pelvic disturbance would argue by analogy for the same conclusion. Lerch (*loc. cit.*) thinks that enteroptosis is always associated with the syndrome and may give rise to it. In my cases, however, enteroptosis has not been a constant feature. And even if it were I should still be inclined to look for the cause of the atony leading to the symptoms generally classed under enteroptosis. For we know that enteroptosis gives symptoms in only a small proportion of the cases where it is present. The "something" that brings about the disturbance should be looked for as the cause. This something is probably the exhaustion which inevitably follows disease or overwork or excesses.

The diagnosis of the condition rests with the finding of an enlarged thymus in patients complaining of shortness of breath and extreme weakness. The variability of pulse and blood pressure, the subnormal temperature, the atony of the gastrointestinal tract, in patients showing no evidence of organic disease are all additional symptoms pointing to the endocrine dysfunction.

We usually notice the dullness when percussing the manubrium sterni. If the dull area extends out a half inch or more on either side of the manubrium, and if the manubrium is duller than the corpus, we need to proceed with differential tests. Gentle percussion rather than the strong type is of course necessary in order to make out a body so closely adherent to the posterior surface of the bone. Under such ordinary percussion the dull area is that of a triangle with its base just below the interclavicular notch and its apex between the junctions with the sternum of the second and third ribs. The aortic dullness does not reach as high as the centre of this area and does not lie as symmetrically under the sternum. An intrathoracic thyroid might give a similar dull area, but this could usually be found to extend above the interclavicular notch and move with the act of swallowing. Aneurysms of a size sufficient to cause substernal dullness should give also a thrill or a pulsation.

The fluoroscope should be used to verify all cases where the percussion would indicate thymic enlargement. This is rather delicate work, depending as it does on our having our visual accommodation attuned to the dark room and further on our familiarity with making out semiopaque masses. The questions that should be kept in mind when we see a mass under the sternum are: 1. Does it have a movement of its own? 2. Does it have a definite form through which the bones are seen more indistinctly?

On the matter of motion we should try and make out the pulsation of the aorta and note whether this mass has a similar movement. If it does not, we have the patient pant with his diaphragm (*heckeln wie ein Hund*, Schütze) to bring out any motility different from that of the surrounding

bones. He should also be made to swallow to bring out the motion of the thyroid.

Many cases show up the sternospinal region so obscurely that unless we look at the dimming of the bone shadows we are unable to outline any semi-opaque mass.

The plates are of less value than the fluoroscope because they cannot show these semishadows unless they happen to be made with just the right exposure and the right development. For this same reason it is difficult to secure convincing prints of these cases. We must therefore depend chiefly on the fluoroscope for our x ray study of patients where thymic hyperplasia is suspected.

The treatment of the condition demands first of all rest and forced feeding. This of course involves attention to the emunctories and the environment. The medicinal treatment calls for the use of arsenic in heavy doses, such as we can get by the intramuscular injection of arsacetin or even sodium cacodylate. The oral administration of arsenic is usually a failure. I find that I can give one to two c. c. of a ten per cent. solution of arsacetin every other day with noticeable effect.

It would seem as if the thyroid gland furnished the best material to permit the thymus to sink back into quiet. Because of the contradictory reports from the various experimenters and theorists, I have had to work this out by trying out the various glandular extracts at our disposal. We should suppose that the adrenal extracts were of particular value, but thus far this hypothesis has not been verified clinically.

1334 RIALTO BUILDING.

THE COLLOIDAL SOLUTIONS OF SILICIC ACID.*

Their Physiological Action,

BY S. P. KRAMER, M. D.,
Cincinnati.

Next to oxygen the most prevalent element on earth is silicon. Silicic acid or silica (SiO_2) is found in quartz, flint, feldspar, clay, sand, and a number of minerals. It has been found by analysis in the ash of most of the tissues of plants and animals in very small amounts, so small indeed that it was not thought to be of any physiological importance. Since the time of Graham we have been able to prepare colloidal solutions of silicic acid or silica, by dialysis, and indeed his work has furnished the starting point for most of our knowledge of colloids.

The colloidal solution is gelatinized readily by a number of electrolytes. The gel is formed on the addition of minute quantities of alkaloids, peptones, and extracts from a number of glands. Solutions of iodide, bromide, and chloride of sodium bring on gelation in the order named. When solutions of colloidal silicic acid are injected into the jugular vein of rabbits or dogs, under certain conditions death of the animal occurs by intravascular clotting of the blood. This will occur more readily, the

more concentrated the solutions are and the nearer the dilute solutions are to gelation.

In a typical experiment, a dog weighing ten pounds was killed by the jugular injection of seventy mgm. of colloidal silica in a solution containing 1.4 per cent., the solution being near gelation, that is opalescent. A large brown rabbit weighing three pounds was killed by the injection of twenty-eight mgm. in the same solution. If more dilute solutions, which are perfectly limpid, are used, much larger quantities are necessary to cause death.

Animals killed by these injections show the right heart and pulmonary vessels filled with clot. The lungs are infarcted and the acini show the microscopic picture of red hepatization.

There are other striking reactions *in vitro*. If colloidal silicic acid is added to washed sheep red corpuscles in proportion of one to 500,000, or even one to 1,000,000, a prompt precipitation of all the red corpuscles takes place. This reaction is more prompt when done at 37°C. If one per cent. peptone is added to the corpuscles (in physiological salt solution of course), the precipitation is prevented. Such peptone corpuscles can, however, be precipitated by adding more silicic acid. It should be stated, also, that peptone in very small amounts gelatinizes colloidal solutions of silicic acid.

Red corpuscles are comparatively rich in silica. A quantity of red corpuscles (sheep) were ashed. Of this ash 15.5 per cent. was found to be silica (estimated by loss when treated with hydrofluoric acid and evaporation).

If to fluid cultures of colon bacilli colloidal silicic acid is added in the ratio of one to 10,000, agglutination and precipitation of the bacilli take place.

If urine, to which has been added silicic acid in amounts equal to one to 5,000 is allowed to undergo "acid fermentation," the urates and the silica are precipitated as a gelatinous "stone." This precipitate is insoluble on heating.

An analysis of a uric acid calculus showed: Weight of stone 3.0730 G.; weight of ash 0.0128; loss when treated with HFl and evaporation, 7.8 per cent.

I have found that if a solution of Victoria blue B is added to a solution of colloidal silicic acid, a blue precipitate is formed, insoluble in water and dilute mineral acids. Thus a very definite precipitate is formed in solutions containing one to 300,000 of silica. This reaction may be used for the demonstration of exceedingly minute quantities of silicic acid.

It should be remembered that other salts or crystalloids will produce a precipitate with Victoria blue B, but these precipitates are readily soluble in water and dilute mineral acids. Gelatinized silicic acid will absorb the dye from the water, leaving the water colorless. A drop of the solution of the dye added to ten c. c. of 0.7 per cent. solution of silicic acid, quickly caused gelation.

Victoria blue B is a basic dye, the chloride of tetramethylphenyltrimidodiphenyl naphthyl carbinol. It is readily soluble in water, such solution being colloidal. The dye is electropositive. If two c. c. of a one per cent. solution of Victoria blue B is injected into the jugular vein of a

*Presented to the Research Society of Cincinnati, March 5, 1920.

large rabbit or a dog weighing ten pounds, death is immediate by heart clot. When a drop of this solution of dye is added to sheep corpuscles, they are immediately precipitated. The corpuscles are stained blue. When the same experiment is done with fluid cultures of any of the colon group of bacilli, the bacteria are precipitated and stained blue. This staining is fast in dilute mineral acids. When blood smears are stained with Victoria blue B, the red corpuscles are readily stained, the nuclei of the leucocytes are also stained, the cytoplasm of the latter being unstained. The blood platelets are deeply stained. The nuclei of the nucleated red blood cells of the lower animals are stained, the cytoplasm unstained. It should be added that the foregoing is the picture of normal blood. This reaction varies under certain pathological conditions which will be reported later.

Mucus is rich in silica and is deeply stained with Victoria blue B. This staining is acidfast. The same is true of cartilage and elastic tissue (arteries and lungs) and this may be beautifully shown in animals killed by *intra vitam* staining by the jugular injection of the dye. No silica could be found by this reaction in normal blood serum or in hydrocele fluid.

By adding very small amounts of the dye to cerebrospinal fluid, I have been able to demonstrate the presence of silica therein. If a drop of a one per cent. solution of the dye is added to ten c. c. of cerebrospinal fluid, and this is allowed to stand a few hours, there is formed a blue precipitate. Some of this may be soluble in water, but after repeated washing in acidulated water and centrifugation, the insoluble residuum may be separated.

A quantity of such precipitate was collected and ashed, the ash washed with dilute muriatic acid and the residuum treated with hydrofluoric acid and evaporated. It was found that eighty-five per cent. of the ash was silica. Silica could also be demonstrated in extracts of the choroid plexus.

It was found that the amount of silica in the cerebrospinal fluid varied in different diseases. These variations are to be reported later.

The intravenous injection of dilute solutions of silicic acid in amounts insufficient to produce death of the animal, causes an increase in the flow of cerebrospinal fluid.

4 WEST SEVENTH STREET.

UNRESOLVED PNEUMONIA.

Successful Treatment by Röntgen Ray.

By A. JUDSON QUIMBY, M. D.,
New York,

AND WILL A. QUIMBY, M. D.,
New York.

No pathological process in the body responds quicker to an x ray exposure than the nonresolution following pneumonia. The action seems to be a specific one. These unfortunate terminations in the lung leave the patient in a debilitated state, and the older forms of treatment often fail to bring about the desired result.

While there are various clinical types of pneu-

monia, the varieties referred to here in particular are the bronchial and lobar. Whether the unit of pneumonitis is the interstitial tissue or air sac, the microscopic pathology, with slight differences, is hardly distinguishable. The congested stage transforms the lung into a friable mass consisting of red blood cells, epithelium, bacteria, fibrin, and serum with numerous leucocytes. After a variable period the enzymes break up the fibrin and dislodge it; the exudate and serum separate. The leucocytes predominate to such a degree that the macroscopical appearance changes from red to gray hepatization. When these emigrated white cells overpower the infection and neutralize the toxins, the crisis is at hand. Normally, disintegration of the exudate continues until it is softened and changed to a liquid state; the lymphatics carry this liquid away and the lungs clear up. Instead of proceeding to resolution the exudate may organize, giving rise to unresolved pneumonia. To this may be added infection with pyogenic bacteria producing abscesses or gangrene.

To disregard, then, the clinical symptoms which are always prominent in a patient suffering from this pneumonic stasis, we have to deal with more or less lung tissue permeated with leucocytes to the exclusion of air, or abscesses or gangrene.

Physiology teaches that heat, light, vibration, and ionization influence cell life. While heat is generated in a Röntgen tube, it is not conducted to the patient being treated. Rays emanate from the tube that we know penetrate the lung tissue and produce a chemical change in a photographic plate, yet they are inert in the sense in which we apply therapeutically the rays of the sun or incandescent lamp.

The so called Röntgen rays are of short length, very rapid, and are thought to be ethereal waves vibratory in character. This vibratory action with the well known ionizing effect of the rays is sufficient to explain the beneficial result in raying the chest. One of the most characteristic properties of the x ray is the power of ionization, that is of breaking up the molecular structure of the substance upon which it falls and liberating ions or electrons. In fine, the effect of the x ray is, therefore, seen to be a profound shaking of the molecular structure of matter, causing it so to vibrate as to emit fluorescent light, producing chemical decomposition and disintegration of the atoms, liberating electrons.

To reiterate, the rays have penetrated this mass of leucocytes, ionized or disintegrated them into their constituent parts, enabling them to be carried away by the lymphatics. The promptitude and rapidity of this change is remarkable; it is in evidence from two to five hours after a treatment, both as to the patient's physical condition and as to laboratory experiment. In Heinecke's experiment on long bones he found that "destruction of white blood cells in bone marrow, which takes place after several hours' exposure of the entire body of a guinea pig, begins about two and a half hours after the commencement of the exposure. It reaches its maximum in ten to twelve hours and ceases after five to six days."

As to the technic, it is brief and simple. Use a medium hard tube, aluminum filter, distance from eight to ten inches, giving fifteen to twenty milliamperé minutes. Exposures may be made every

other day or a week apart. Two to three treatments have been the usual number given.

In all cases to which this has been applied, twelve in number, prompt benefit was derived. The treatment is indicated at the end of five days from the time resolution should have begun; it was

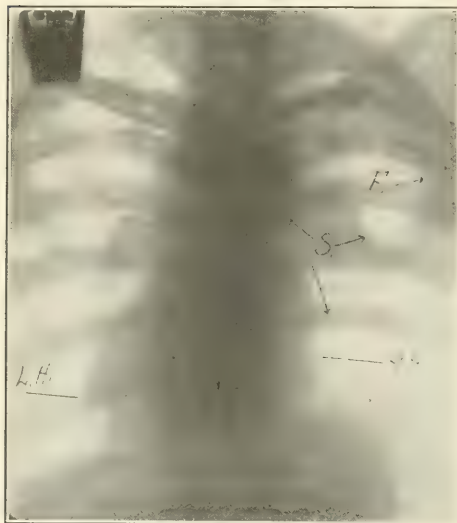


FIG. 1 (Case I).—Dark portion marked S and extending up toward the apex is consolidation. F, fluid; R.H., border of right heart; L.H., border of left heart.

shown to be effective three months from the date the crisis should have occurred. The prompt and decisive improvement in the patient is illustrated in the accompanying histories.

CASE I. Bert B., aged thirty-four years, electrician, referred by Doctor Drinkard. Was taken with lobar pneumonia in right side June 22, 1912; was removed to hospital. Temperature remained at 104° F. for nine days. When the crisis came it dropped to 100° to 101° for a period of five weeks, then for two weeks varied between 97° and 100° . The cough had been troublesome all along, with free expectoration. The results of medication were evidenced in a very slow improvement.

X ray therapeutics was resorted to September 12th, treatment being given at the bedside. He improved sufficiently to be dismissed from the hospital on September 15th. Two days later, he came to my office for treatment lasting fifteen minutes, and the accompanying radiograph (Fig. 1) was made. The picture shows a partial consolidation of the right lung and some fluid in the plural cavity. The patient recovered rapidly with no further treatment.

CASE II. Marian W., aged five years, became ill March 12, 1913, with bronchial pneumonia affecting the left lung, accompanied by considerable pleurisy. Temperature reached 104° F., but was 102° to 103° most of the ten days of acute illness. Then the temperature varied, being usually one degree less the following three weeks. There was a severe cough. Auscultation and percussion revealed that the lung had not cleared up. The tongue was badly coated; no appetite; the child became much emaciated, the flesh very sore to the touch. The medical treatment was cod-liver oil, syrup of hydriodic acid, etc., with no result. Finally, on April 13th, the rays were applied for twelve minutes to the pneumonic side, with a portable coil at the bedside. Upon my arrival to give the second treatment, April 15th, a decided improvement was reported. After this second application, the patient went on to a speedy and uneventful recovery.

CASE III. Harry C., aged nineteen years, reporter, referred by Doctor Caldwell. Became ill February 19, 1910, with lobar pneumonia of the left lung. A cough began early, the temperature staying around 104° F., until the crisis on the ninth day, when it dropped, but not to normal. He lost thirty-five pounds during the six weeks in bed. At the end of this period he was up and about, but could not gain strength, weight, or get rid of the persistent cough. After four weeks had elapsed he was referred to me for x ray treatment. April 22, 1910, he was rayed over the affected lung for twenty minutes. Such pronounced improvement began within twenty-four hours and continued with such rapidity that no further treatment was necessary.

CASE IV. Blaine D., aged twenty-two years, farmer, referred by Doctor Caldwell. Became ill May 1, 1911, with pneumonia of left lung. There was great prostration, with temperature reaching 106° F. Crisis was reached, May 9th. The fever then varied from 102° to 104° for about five weeks. Cough began early. Patient lost forty-five pounds during the seven weeks spent in bed. At the end of this period the attending physician found that an abscess had followed the pneumonia, and the patient was sent to the hospital for thoracotomy. Since the patient was so debilitated and seemed in a hopeless condition, the surgeon in charge deferred operation. Five tests for tubercle bacilli were negative.

At this time, June 25, 1911, the case was referred for x ray treatment. The patient was taken from his bed and brought to my office, being carried in on a chair. He was expectorating two pints of mucopurulent material in twenty-four hours and showed all signs of sepsis (the accompanying radiograph (Fig. 2) shows the extent and density of the empyema). He was given twenty minutes treatment over the affected lung. Because of living in a rural district, he did not return for treatment until July 6th, when he walked into the office with assistance. He reported much improvement, beginning within a few hours of the former treatment, and better in every respect. July 18th, he had a third treatment and continued much improved. July 28th, he had a second radiograph made, which showed a marked decrease in density of the abscess.

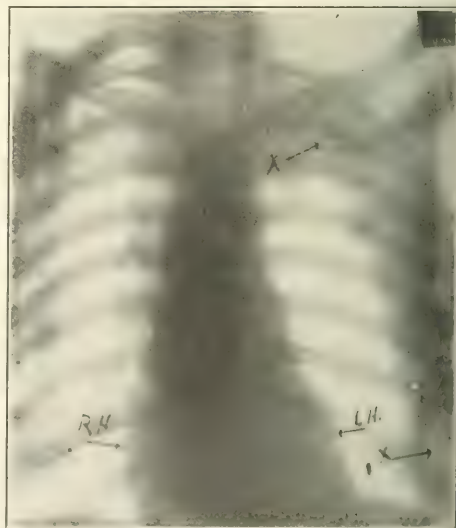


FIG. 2 (Case IV).—Area marked X and extending up toward the apex is consolidation. F, fluid; R.H., border of right heart; L.H., border of left heart.

He felt so well that no treatment was given, stating he had gained twenty-two pounds in the past thirty-three days, or since the first treatment was taken.

Among other cases deserving attention, but which will not receive detailed description, was an

eleven year old boy, who, after having inhaled a tooth into the lungs, acquired pneumonia. Although the foreign body was expelled, the lung failed to clear up. The chest was rayed twice at the bedside. Perfectly satisfactory results were obtained. Another case was that of a ten year old boy who was run down by an automobile, one wheel passing diagonally over the right chest. Week after week the boy continued losing ground, becoming emaciated, and the fetid breath, especially after coughing, was almost beyond toleration. To throw some light on the pathology, the father, a physician, brought the boy in for a röntgenogram; two plates were made, and several more the following day. The father asserts that the initial improvement began after the first exposure for pictures and previous to the second. The boy progressed steadily to a complete recovery. The next case was unresolved pneumonia in a woman fifty years of age, the pneumonia having followed upon femoral thrombosis. The patient had then been in bed three months. An x ray treatment was given at the bedside. The second day following, she was out of bed for three hours. Three treatments were given in seven days. She was out of doors just before the last treatment and left the hospital on that day.

40 EAST FORTY-FIRST STREET.

THE MANAGEMENT OF BREECH PRESENTATION.*

With Manikin Demonstrations.

By JOHN CHEW APPLGATE, M. D.,
Philadelphia,

Professor of Obstetrics, Medical Department, Temple University;
Obstetrician, Samaritan and Garretson Hospitals

In the conduct of delivery with breech presentation, there are two facts that should ever be borne in mind: First, the body of the child is a poor dilator compared with the head as in the cephalic presentations; and, second, that of the three or four per cent. of breech presentations, about one fourth are with primiparæ, when it is always hazardous for the child and essential that as full dilatation as possible be obtained before attempts at delivery are made. On the strength of these facts, and in the interest of both mother and child the following points are emphasized.

DIAGNOSIS.

1. The doctor should keep in close touch with his patient, especially during the latter months of the gestational period, that he may know whether or not any abnormality of the pelvis, uterus, or child exists, and the relative proportion or disproportion, if any, between the pelvis and the child, as determined by the routine use of the pelvimeter, also the position and presentation of the child. Disproportion, malposition, and malpresentation, if they exist, should be known in advance of labor.

Caution should be exercised not to rupture the membranes during vaginal examination to confirm the diagnosis. Abdominal palpation and auscultation make clear, as a rule, in the average person, the absence of the head in the pelvic area and its pres-

ence in the fundal portion of the uterus, also the fetal heart sound on a level with or a little above the umbilicus.

When the membranes have ruptured, the diagnosis is simplified, as there is little difficulty in differentiating, by vaginal examination, between the buttocks and the head, except possibly when the face presents. The differential points between the face and the breech are the contour of the face, including the forehead, orbits, nose, and superficially placed mouth, compared with the contour of the buttocks and the depressed, constricting anal sphincter. Fecal odor as a diagnostic sign should be eliminated, as there is little or no odor to meconium.

I recall an instance where the doctor based his diagnosis largely on this sign, and expressed himself accordingly. To his surprise and embarrassment, the child was born in a few minutes, head first. The odor came from an examination of the maternal sphincter instead of the child's. This is, of course, an inexcusable error.

2. If the patient is seen early and the membranes are intact, cephalic version, in rare instances, with the patient's hips elevated, is possible, but as a rule the breech presentation prevails.

3. The first stage of labor should be prolonged, until there is full and complete dilatation of the os, resorting to mild narcotic anesthesia, if necessary. A one grain opium suppository or one twelfth grain of heroine, hypodermically, serves the purpose very well, otherwise the patient should be let alone during this stage.

4. The second stage should be rendered as short as the condition will warrant, with the patient under mild anesthesia. If the forces are insufficient, compression should be made from above by a nurse or assistant, to keep the head in a state of flexion and the arms down. Traction is indicated after there has been sufficient descent to get a finger in the mouth. Prior to this time it should be only when there is full dilatation and no progress and then in conjunction with compression from above, otherwise extension of the head results and the chin is caught within the cervix. The labor is liable to be still further complicated by the arms rising above the head.

The child should rest astride the arm, covered with a warm towel as soon as any portion of it is born, to prevent contact with air and the establishment of respirations.

Compression of the cord is best prevented by keeping it to the right or left of the sacral promontory, in the right or left iliac fossa, and protected by a finger parallel to it during compression after descent by the dilating perineum.

As soon as the nose and mouth are exposed, the labor is retarded to permit dilatation of the vulva and to minimize traumatism of the perineum.

POSITION AND MECHANISM.

We recognize four positions—right and left sacro-anterior and right and left sacroposterior, with the thighs flexed on the abdomen or the legs extended, or the mixed presentation, i. e., one flexed and the other extended. The flexed thighs are an advantageous attitude of the limbs, since they are flexible and add to the bulk of the body in the further dilata-

*Presented, with manikin demonstrations, at the Philadelphia County Medical Society, February 9, 1916.

tion for the aftercoming head. The feet and buttocks are the guide to the position. If left sacro-anterior, that which prevails in by far the largest percentage of the cases and in this respect corresponds to the first position in the cephalic presentation, the hips engage in the left oblique diameter of the pelvis. The assistant or nurse makes compression and engages the head in the right oblique diameter of the pelvis. With descent the bitrochanteric diameter is in relation to the anteroposterior diameter of the outlet; the right arm is brought down into the hollow of the sacrum. With descent of both arms and birth of the body, rotation follows, bringing the face into the hollow of the sacrum and the occiput beneath the pubes, when traction, with the finger in the mouth, is made as previously stated. If the position is sacroposterior, the assistant rotates the head and body of the child into the anterior position. Twisting of the legs only assists in the rotation process. Under no circumstances should the labor be allowed to proceed with the occiput posterior.

During the delivery of the head, the body of the child should be held at right angles with the body of the mother, to correlate properly the diameters of the head with the diameters of the pelvis, and bring the long axis of the head into relation with the axis of the pelvic outlet.

FORCEPS.

If the head is retained, the application of the small forceps, with a moderate degree curve, is indicated, provided that they are applied and manipulated for the purpose for which forceps are intended, viz., slight compression, correlation of the diameters, and moderate traction. Forceps were never intended simply to pull babies through; they should be applied in relation to the long axis of the head, with the body of the child wrapped up and held well up over the pubes of the mother. Should extension of the head within the uterus occur, and the cervix contract around the neck, the patient should be anesthetized with ether or gas-oxygen and the head pressed well down in the pelvis until a finger can be placed in the child's mouth within the uterus and the head brought into flexion. In the event of asphyxiation of the child, beyond the possibility of resuscitation, as noted by long absence of pulsation of the cord, craniotomy may be resorted to, i. e., perforation at the base of the skull, the application of compressing forceps, and delivery.

Although I have never found it necessary, forceps may be applied to the breech, but if applied, traction should be made only in proportion to the degree of compression from above, otherwise the head will not remain in flexion. Careful, moderate traction with the finger or blunt hook in the groin may be made when necessary. Careful examination of the fetal members is essential after delivery, as there is always danger of dislocation or fracture in bringing down these parts, especially the arms from over the head.

On account of the high fetal mortality following breech delivery, I urge the addition of the child lungmotor to the obstetric outfit and advise its employment in cases which do not respond promptly to the ordinary methods of resuscitation.

THE MALINGERER.*

BY DANIEL HALE WILLIAMS, M. D., LL. D.,
F. A. C. S.,
Chicago.

The history of all social phenomena shows that they are regulated just as certainly by law as the objects of the material world. The recent growth and development of the science of statistics have disclosed that in matters of crime, births, deaths, marriages, and similar social data, so many of each occur in a certain ratio, varying with the environment, and they may be ascertained in accordance with certain social laws by a comprehensive study of the social conditions at any given time. So that, with the growth of social science, not only can we get a statistical record of the various classes of social data and the laws which they obey, but we may predict, with reasonable accuracy, the future occurrence of social acts, and just as we have yearly so many marriages, births, deaths, and crimes, so surely are we certain to have so many accidents.

In olden times accidents were infrequent and seldom fatal or very injurious. But with the birth of modern industry, with its factory systems, and its multimiform agencies in the production and distribution of wealth, accidents have not only tremendously increased in number, but their results have become more widespread and far reaching upon society. Among the costs of our highly developed and complex industrial system are the ever increasing thousands of the maimed and dead, with the added hardship of suffering of those who are dependent upon them. In the United States in the year just passed, 35,000 workers were killed and 2,000,000 others injured by accidents that could have been averted, to say nothing of 3,000,000 persons incapacitated temporarily by sickness due to occupational diseases. With the prevention of crime, the suppression of vice, and the varied problems of capital and labor, we are confronted with the new problem of the alleviation of the suffering which follows in the wake of increasing accidents.

THE MALINGERER AS A FACTOR IN THE PROBLEM.

While in the solution of this problem there are many factors of importance, still we have for our consideration for the time being the malingerer. The genesis of malingering is to be found in its original application to the army; it referred to a person who feigned some disability to escape military duty and service. From this original meaning it has been extended to include:

1. Cases which are usually entirely subjective, being those of passengers on a common carrier where others have sustained injuries, or where negligence is clearly apparent on the part of the carrier. It is easier and more economical to effect a settlement with the company than to institute an action for damages.

2. Those who have received the slightest evidence of trauma, a slight abrasion or contusion, or palpable evidence of contact, but who, with no subsequent developments or sequence in findings, and after years of observation and investigation by the most astute men in and out of the professions of law, medicine, and surgery, build up and sustain monu-

*Read before the annual meeting of the Chicago and Northwestern Railroad Surgeons, Rochester, Minn., December 13, 1915.

mental cases and obtain damages in large sums. Such a case was quite recently noted in the person of a malingerer who had obtained a judgment in the Superior Court, which was sustained by the Appellate Court, and finally reversed by the Illinois Supreme Court, namely, the "Fainting Bertha" case.

3. Persons who have sustained slight injuries, who are otherwise honest, but are so nervously constituted that they cannot and will not place a proper estimate on anything which has a personal element as a factor. They cannot see anything but death or chronic invalidism. In such a case a suit or a small settlement usually results in perfect recovery.

In each of these cases malingerer can be detected only through the knowledge, skill, and experience of the medical examiner. The case of the malingerer is very significant, if for no other reason than its material elements in which are included the person injured, the doctor, the lawyer, and the courts.

INFLUENCE OF THE MALINGERER UPON OTHERS.

One of the considerations which makes the malingerer so reprehensible is his bad example and influence upon others. In this material age, when such stress is placed upon money as an end, and the leaders of the day are so frequently found among the lords of finance, the malingerer is overwhelmed by financial and monetary incentives to practise the grossest frauds, and he holds out to his fellows as a temptation to follow his wicked path the potent charms of easily gotten money, considered by too many as the most powerful social force of our time. It is thus pretended falsely and fraudulently that he has been injured by some accident in order to secure financial compensation. The success of the malingerer encourages other persons to commit the same fraud. He not only diffuses the inordinate desire for wealth, one of the evils of present day society, but he prostitutes the truth and adds to his misdeeds the crime of perjury.

INFLUENCE ON THE MEDICAL PROFESSION.

Perhaps no better illustration of the far reaching and sinister influence of the malingerer can be found than his influence upon the medical profession. In increasing numbers the malingerer has not only inspired one person after another to feign accidents and injury and force compensation by fraud and perjury from some individual or corporation, but he has corrupted physicians and surgeons, and enlisted many of them under his ignoble standard.

The influence of the malingerer has preyed upon the physician just as it has upon the individual by holding before his professional eyes the charms of large and easy fees. This influence is to be feared and dreaded because of the number of weak men in the medical profession who are unable morally and professionally to withstand the fascinating allurements of false monetary rewards.

Today the medical profession is not only handicapped by the influence of these false rewards, but it has been weakened in its responsibility by permitting fraud and falsehood within its ranks. For when once fraud and misrepresentation secure firm root in the profession of medicine public confidence is impaired, and the layman is seldom able to tell the honorable from the false physician and surgeon; because of the difficulty of distinguishing between

the two classes, the standard of the whole profession is lowered in its ethical practice and status.

THE MALINGERER AND THE LEGAL PROFESSION.

The success of the malingerer has been greatly enhanced by bringing to his support the false testimony of the fraudulent physician and surgeon. But as serious and grave as are these difficulties they might still be overcome but for the added and wicked influence of the dishonest lawyer. Like the malingerer and the dishonest physician, he is a victim of false rewards, and the wrongful desire to secure large fees by fraud and falsehood. The malingerer lowers the ethics of the legal profession as he does that of the medical profession. Through the expert guidance of the fraudulent lawyer the malingerer is able to systematize the fictitious testimony of the dishonest physician and present such a front of plausibility and truth as to constitute a vital danger to the public welfare.

THE MALINGERER AND SOCIETY.

The danger of the malingerer to society is not to be found in the malingerer himself, for alone he could accomplish but little. His terrible danger and menace lie in his combination and the general influence which they together exercise upon society for evil. The cooperation of the malingerer, dishonest physician, and dishonest lawyer make easy the deception of the juries and the courts. The hundreds of false cases that have been concocted and carried successfully through the courts show how this combination has corrupted the springs of justice and the foundation of society.

CONSCIOUS EFFORTS TO ABOLISH THE MALINGERER.

The growth and development of this problem, although recent, have engaged for solution the most serious and thoughtful attention of the best publicists in this and other countries. In 1897, the British Parliament was the first great legislative body to present anything like an adequate remedy for the new situation. In 1908, the example was followed in France and Denmark, and in 1900 in Spain and Australia. Since that time the British example has been followed by Sweden, the Netherlands, Greece, Germany, Belgium, Russia, Hungary, and many of the States in the American union. New York, in 1910, was the first American State to grapple with the problem by legal enactments. Since then other States have followed; in particular, Minnesota and Wisconsin, and Illinois in 1913.

The consensus of legislative action discloses that the problem would be considerably simplified if some method was found by which malingerer could be abolished. A remedy proposed and adopted is designated as the Workmen's Compensation Act. The idea involved in this act is the appointment, by the executive power, of a board of three or more with jurisdiction, by agreement of both parties or upon the election of either, to determine the extent of injury to any person hurt by accident in certain named industries, with a right of appeal to the Circuit Court.

Compensation may be by installments varying with the earning capacity of the injured or deceased with a provision for what is called a lump sum settlement when such is desired. One of the valuable and distinguishing features of this act provides for the selection of a physician by the injured, one

by the employer, and a third by these two or by the board. The three physicians are to examine the injured person and their report is to constitute the basis for action by the board. The feature which is supposed to dispose of the malingerer is that which requires the injured person to be examined from time to time by a physician selected by the employer in the presence of the physician of the person injured.

Notwithstanding the various attempts of society through the functions of the State in compensation acts to abolish the malingering, his influence seems to increase with the complexity of society and the multiplication of the material developments which have followed in the wake of the application of science to industry. Only a few days ago, a Wisconsin justice held that typhoid fever contracted through drinking water furnished by the employer and resulting in the death of an employee is an accident and within the meaning of the Workmen's Compensation Act.

THE MALINGERER AND THE SOCIAL PROBLEM.

Malingering, then, is a part of the social problem, and the social problem is the problem of civilization. It is composed of a group of lesser problems—the economic, educational, religious, political, and moral. The solution of these lesser problems is the solution of the whole moral problem, for the malingering is the product of abnormal conditions in these phases of the social problem. In proportion as each one of these lesser problems approaches solution, the problem of the malingering is correspondingly solved.

There is urgent need that society should use the power of the State so to regulate economic conditions as to raise the standard of living for the masses and keep in operation industrial forces which will maintain a more equal distribution of wealth. Under present conditions those who toil get too little of the benefits of their labor. With the increase of wealth and earning capacity on the part of the masses, society will be able to attack successfully through education the problem of ignorance. With better economic conditions and a wider diffusion of intelligence, religion will secure a firmer grasp upon society for correct thinking and right conduct. The combined influence of the economic, educational, and political power of society will be registered in a higher ethical standard—the greatest good to the greatest number. Society can contribute materially to the lessening of the malingering's influence by purposely destroying the injurious and abnormal conditions out of which it grows and thrives, and accelerate the evolutionary movement which carries with it the abolition of malingering and the solution of the general and social problem.

BERIBERI.

By STANLEY B. DOYLE, M.D.,
New York.

Beriberi was first recognized by the Dutch in the early years of their intercourse with the east, but it was not until outbreaks of a similar disease in Brazil that any attention was given it by the medical profession. Scheube and Baelz were the first to show that beriberi was a specific peripheral neuritis sim-

ilar to that of metallic poisons, diphtheria, and alcohol. It was not until recent years, however, that the pathology and morbid anatomy were thoroughly studied.

The area of distribution of beriberi is mainly in the tropical and semitropical belts, but it may occur in any climate in proportion to overcrowding and to the quality of food supplied, as it is a neuritis due to inanition and a specific toxin.

Any one visiting a tropical hospital or a hospital such as was maintained by the Health Officer's Department, Port of New York, at Hoffman Island under the administration of the late Dr. J. J. O'Connell, would have his attention arrested by the large number of cases of general edema and partial para-

plegia. These cases are a few among the many cases of beriberi that are treated during the year.

The paralytic cases would be of interest to any nerve specialist. Beside the paralytic condition most of these cases show a marked anesthesia, especially of the lower limbs, but in a few cases that have come under our observation the anesthesia has been complete, except for a small area on the face. The anesthesia of the finger tips combined with ataxia is sometimes so marked that the patient is unable to pick up a match without great difficulty. Owing to the atrophy that takes place in the paralytic cases, especially in the gastrocnemii muscles, the patient's legs have an appearance of being bones immediately covered by skin, and when the case happens to be that of a

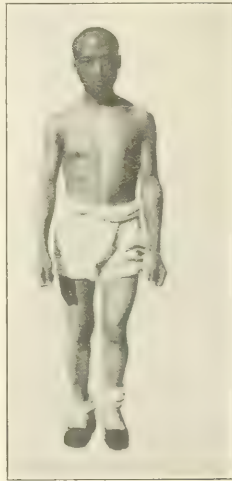


FIG. 1.—SATORU KAWANISHI, Japanese, aged twenty-seven years, came from a disease of 31 days. Notice the edema of face and lower extremities, which is gradually clearing. Being a case caused by malnutrition, it is strange that it should be contracted by a cook. This case rapidly cleared up when put upon infusion of digitalis in large doses.

Hindoo, as many of our cases are, the effect is more pronounced on account of his having naturally thin legs. Pain or pressure over all the peripheral nerves is common in the paralytic cases, but not marked in the edematous or drop-sical condition. The knee jerk in almost all of our cases has been absent, but sometimes we have found cases where it has been increased in either one or both legs. The hand grip is often so feeble that the patient has to be fed by the nurse, being unable to hold food in his own hands. When our patients are able to get out of bed, we find that the gait is markedly atonic and that they have lack of coordination and great muscular weakness. The feet are set down in a flapping manner owing to the ankle drop that often accompanies these cases, and the toes drag on the ground when the patient attempts to advance the foot. The musculature throughout the alimentary canal is apparently not

affected, as digestion, assimilation, and excretion go on as usual.

In the dropsical cases there is a serous effusion that involves practically the whole body, but is par-

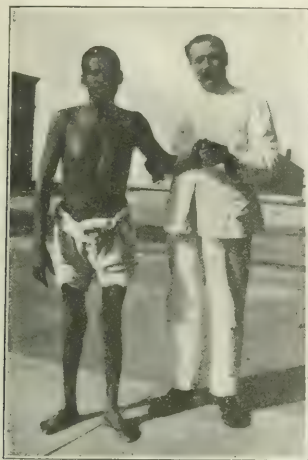


FIG. 2. Mushrifooda, Hindoo, aged thirty-one years, stoker; duration of disease, 130 days. Note atrophy of lower limbs. This patient was unable to get out of bed for four months, until he was given an intravenous injection of neosalvarsan; two weeks later, he recovered sufficiently to get about with assistance. He can now walk, but cannot stand still. His case is chronic and probably will not show further improvement.

ticularly noticeable in the lower extremities. Here the edema is usually well marked and is of a firmer character than that found in cases of acute nephritis. The pericardial and pleural sacs are often found to be filled with fluid. Edema of the lungs is not an uncommon condition owing to lesions in the nerves regulating excretion.

In the paraplegic or wet form the edema is, in most cases, due to the cardiac disturbance. The neuritis in this form is not as marked as in the dry form of the disease. The knee jerks may or may not be absent, and areas of anesthesia may not be present.

Beriberi may begin slowly or suddenly. When it begins slowly, which is usual, it is preceded by malaise, girdle pains, increasing constipation, and slowly advancing edema of the legs and face. In the rapid form the disease may become full blown over night, the patient retiring apparently in a healthy condition and finding in the morning that he has become dropsical or parietic. The progress of the disease is equally uncertain, as some of our cases have become malignant in character after the disease has existed for several weeks apparently in a mild form.

The same may be said about the duration of the disease. It may subside in a week or continue for months. In the mild cases the rapidity with which the heart resumes its normal condition is remarkable. A dilated heart in one of our cases cleared up completely in less than a week.

The temperature in every case of beriberi during the past year has been subnormal upon admission to

the hospital, usually reaching normal and remaining so after two days.

All cardiac attacks come on suddenly, especially in the paraplegic stage of the disease. On making rounds in the wards, we have examined the hearts of patients one after another and have had to hurry back to a patient examined ten minutes before, who was having a cardiac attack and was practically *in extremis*, although his heart was normal at the time of examination.

Relapses, although not of common occurrence, are more often found in those cases where the patient is used to drinking large quantities of alcohol. One of our Hindoo patients (Assinoola), who had evidently acquired a taste for Calcutta whiskey, was admitted to the hospital with the paraplegic form of dry beriberi, and had fully recovered the use of his limbs when he had a relapse, and the wet form of the disease developed with all the paraplegic symptoms.

Different classifications have been given the disease, but as one form may merge into another and as there is a great variety in the degree and combination of symptoms of the same disease, I have classed them all under one heading.

We have found in all our cases that the heart is irritable and demands constant attention. Murmurs, muscular, anemic, and pericardial, come and go. On examination, in the morning, there may be nothing to indicate cardiac disturbance, while the same patient, the same afternoon, may have a great variety of cardiac sounds with irregularity. In some of our cases the heart was so enlarged as to



FIG. 3.

FIG. 4.

FIGS. 3 and 4.—Assinoola, Hindoo, aged twenty years, stoker; duration of disease, 90 days with two relapses. Note the difference in size of right and left leg. Gives an alcoholic history, which is thought to be the cause of the relapse. Made a complete recovery.

extend four inches to the right of the sternum. Severe precordial pain is common and is best relieved by an icebag. There have been times when we had over twenty patients using ice bags in the

same evening to relieve the pain about the heart, as this is usually a sign of vasomotor spasm, which, if it came on when the heart was dilated and there was low arterial tension due to loss of nervous control of the vessels, would probably cause the death of the patient from acute cardiac dilatation.

The urine throughout the disease usually is free from albumin, unless diuretics are being pushed to help elimination of the serous fluid collected in the membranous sacs. The blood in our cases does not show anything characteristic of the disease, except a slight anemia due probably to intestinal parasites. Thirty per cent. of our cases had hookworm in the feces, and the remainder some other form of intestinal parasite, or free blood and mucus, showing that some parasite probably had been present.



FIG. 5.—Javanoola, Hindu, aged twenty-two years, stoker; duration of disease, 128 days. Note the atrophy of upper and lower extremities. There was a marked ankle drop in this case.

Cases of beriberi with cardiac involvement are in need of constant attention, especially the paraplegic form, as it is my belief that in these cases the mortality may range as high as fifty per cent., while in those of other forms the mortality is as low as two per cent.

The diagnosis is not difficult when rheumatic pains, pretibial edema and analgesia are present, and the case is known to come from the tropics where true rheumatism is rare. In all such cases the knee jerks should be tested and all signs of hyperesthesia of the calf muscles sought for, before making a diagnosis.

TREATMENT.

In our cases we tried every known method of treatment. Our object in the start was to force feeding, using only foods that were high in proteids. In treating the Hindoos we had trouble, as they refused to eat meat unless the animal was killed by a Mohammedan according to the writings of their prophet, Mohammed. Orypan, an extract of the pericarp of the rice, we tried, but without success, as the necessary cycle was not complete. This extract is of use only when given to the mother nursing a baby, when the child itself has beriberi. The cases under treatment with arsenic, in the form of Fowler's solution, and potassium iodide, showed some slight results. One case given neosalvarsan intravenously showed slight improvement.

Although strychnine and whiskey are contraindicated in a multiple neuritis, we found it necessary to use them in severe cases to lower the threshold and permit the impulse to pass along the nerve trunk. Whiskey was apparently the only drug to

use in the cases of vasomotor spasm and gave good results.

As the cases progressed all received tonic treatment.

HEALTH OFFICER'S DEPARTMENT, QUARANTINE, PORT OF NEW YORK.

IS PLASTIC SURGERY A LOST ART?

By J. W. KENNEDY, M. D., F. A. C. S.,
Philadelphia.

From the Clinic of the Joseph Price Hospital.

I believe it can be truthfully said at this date, that plastic surgery is a lost art; that overwhelming interest in abdominal surgery and the greater skill required in plastic work, has brought the calamity of an almost total loss of interest in repair work. This is first evidenced in the fact that nearly every operator who has written anything on the subject, comes out with a new operation which bears his name. At this date, without exaggeration, the number of operations for repair of the perineum rivals the number of varieties of a certain brand of condiments.

There is no other operation in surgery which has been done in such extravagant variety, regardless of surgical and anatomical principles, as that of closure of the lacerated perineum, unless it is the number of those numerous methods of shortening the round ligaments, whose heritage of abuse is limitless. It is the I, My, and Mine which are making the profession almost impossible for the student. The student should say, may Heaven bless Price when he said, "I want nothing named after me"; yet no man was more original than he. Probably no one was so great an artist as the late Doctor Price in plastic surgery; this is conceded by his enemies, yet he never even ventured criticism of the Emmet operation for repair of the perineum. Indeed, there is no operation which meets the indication so well in every particular from the standpoint of physiology and anatomy.

When Doctor Emmet wrote his last word describing the classical repair of the perineum, the last word had been said and nothing since has been written which in any way has been of superior surgical wisdom. Indeed, I am justified in saying for this great master, that the surgeon who has attempted any modification of the original Emmet operation, has questionable knowledge of the indications and a misunderstanding of the operation.

It has been of amusing interest to me that operators who are authors of a particular operation and who have questioned Emmet's anatomical conception in his operation, have given us procedures which are entirely void of anatomical principles. This can only be accounted for by the fact that they never did understand the Emmet principles. Doctor Emmet admits that he found it difficult to teach the principle of his repair of the perineum, and Price often said to me, after an exhibition of my own awkwardness, that he would rather help a beginner in a dozen abdominal operations than in one plastic. Any one who has attempted to teach plastic surgery to a beginner will appreciate and confirm this statement.

This subject is of extreme interest to me, not only on account of the great number of reoperations which I am doing, following those who have disregarded the principles of Emmet, but the operation is life saving, in that good repair work is seldom followed by malignant developments.

In the subject of plastic work, I like to give the great men who were pioneers in the subject the credit they are not getting elsewhere. I like to speak of Sims as the grandfather of repair work, Emmet as the son, and Price as the grandson; for to no three men is the world so much indebted in this specialty. I can easily see how a superficial knowledge of repair work, when stimulated by an effort of emulation, could lead to hundreds of modifications of the original procedure; but I also know that a trying apprenticeship under an Emmet or a Price would leave the modifier an advocate of these masters' teachings. It has always been true in surgical work that if the truths of any original procedure have been questioned, then we can expect a flood of modifications differing so little from the original that even the authors cannot point out any material difference. Recently an article appeared, criticizing the Emmet procedure as being unanatomical and as an outside superficial operation. This author, of course, has his own operation. This is only a confirmation of what I have already said, and that is, the Emmet operation is not thoroughly understood. At this date it is impossible to get the Emmet instruments which were a strong factor in the ease of his operation. The gracefully double curved Emmet scissors permit of strip denudation, while the hand is in the most natural position and allows long superficial strips of mucous membrane to be removed. The scissors on the market are too much curved and cause a haggled denudation by removing the mucous membrane in short bits, which prolongs the procedure.

The tenaculum, which is of a necessity to good plastic surgery, is rarely made. The Emmet needle, which has a straight shaft with slight curve at the point, is practically never used. It is my opinion that the adoption of the overcurved needle is responsible for many of the failures of plastic surgery. It matters not at what angle a curved needle is driven, its point is always approaching the surface; therefore, the inclusion of tissue within the bight of the suture is always more superficial than with the straight needle. The straight needle can be driven at right angles to the surface, which means one hundred per cent. of the tissue (one might say), until we have included the required amount of tissue or have transfixed the important structures; the turn is then made with the wrist, and the needle comes out at the point determined. We always know where the point of a straight needle is, but never that of a curved one.

The light in the modern operating room is not well adapted for plastic work. The light for vaginal surgery must come from below; the overhead light is of little service. The windows in an operating room should extend to the floor and the morning light is better than afternoon. I have never known just why nearly all operators have chosen the afternoon to do their surgical work. Certainly they have not considered the welfare of the patient. In the first

place, we are all cleaner in the morning than after we have done our office work, and men who are not surrounded by a body of young men to do hospital chores, are contaminated by removing stitches, doing dressings, etc., which are usually done in the morning and should follow rather than precede their operative work. The patient on the day of operation is kept on a nervous strain from daylight until the afternoon, and is expecting every footstep which approaches her door to be that of the anesthetist. This is entirely wrong, and many cases of surgical shock may be attributed to this poor management. Ask the patient if she wants her operation in the morning or afternoon; her answer is never afternoon. These things are all factors in mortality.

Mr. Tait, operating at two hospitals in Birmingham, England, one at seven a. m., the other two p. m., with the same assistants, found that his mortality was two per cent. lower in the morning than in the afternoon. Although I do not allege such a discrepancy in results at this era, yet the principle is not altered. The operation has the first claim on us for the day and it is the duty of the practitioner to arrange his work so as to be present at the operation. It should be recognized by the practitioner that his patient to be operated upon, should be looked upon as the principal patient for that day, and his place is by her side, irrespective of the dollars and cents from office hours. If the surgeon is doing his duty in thought and deed, he will not contaminate his body nor permit any contamination of his assistants or nurses, by surgical chores previous to the operation; therefore, the family physician should have a mental picture of three or four doctors and as many nurses whose consciences do not permit them to go on with their daily work, kept waiting until his patient has been operated on. If the family physician will not arrange his work so as not to delay an early operating hour, he is selfish from the standpoint of humanity and unfair from the standpoint of common fitness of things.

I have strayed from my subject at this point, because it is of vital importance that the doctor should attend operations both for the patient's well being and for his own instruction. The best diagnosticians I know always follow their patients to the operating room.

In resuming the discussion of repair work, I want first to say something about the time for repair of the perineum. I have come to the conclusion that the seemingly great numbers of failures of immediate repair after parturition are due to the fact that men do not make the repair as an inside operation and do not include sufficient tissue in the bight of the suture. There is positively no reason why tears should not be repaired immediately and with perfect results. I have never seen but one failure and this was in a patient with whom I had used poor judgment and had been influenced against the proper conduct of labor. In this particular case, I had not only extreme lacerations, but had thoroughly crushed the vaginal tissues which was followed by sloughing of the vaginal walls.

Men make the excuse that they do not have experienced assistants to do this work properly. I will admit, assistants are needed in repair work and can be had only in large centres. If those gentlemen

who are not surrounded by skilled help, however, will pass a gauze sponge into the vaginal canal to a point above the site of lacerations in order to prevent the uterine discharges from obliterating the field of repair, they will find it then easy to make successful repairs which will prevent the occurrence of the most difficult late procidentias and their complications.

The great necessity of a successful primary repair has made me give this matter more than ordinary attention and I know that the failures in early work are due to unnecessary surgical errors. Primary repair work can and should be taught to every doctor in general practice.

As operators have trained themselves to work more and more with the curved needle, our sutures have become more and more superficial, until in the swollen vaginal tissues of the parturient vaginal outlet, the bight of the suture is little more than the swollen mucous membrane, which, of course, is useless as far as a good result is concerned; this is coupled with the fact that many of the primary repairs are made from the outside and are merely skin procedures, while we know that the tear occurred from the inside and should be repaired as such. There is no greater outrage to the principles of surgery than to advocate a lapse of ten days before the primary tear is closed. We should not advocate such delay in any other region of the body; indeed, to delay for ten days before repair is poor judgment in choice of time. If we wait at all, we had better wait until the vaginal and uterine discharges have ceased and the tissues have returned to their normal consistency; but, understand, I do not advocate delay. It is not fair to the mother to learn that at practically every birth she must have a major operation with all its horrors. Lacerations permit and encourage subinvolvement of the uterus and infection. We must remember that puerperal infection is no more than wound fever, be its starting point the lacerations of the vaginal canal or the equally unprotected uterine cavity which has shed its barrier to infection, namely, the epithelium of the mucous membrane.

Even if one hundred per cent. of the operations were a success after an interval of ten days or two weeks, there yet is sufficient that is unsurgical in such delay. In fully ninety-five per cent. of primary repairs the sutures can be placed without an anesthetic, as the parts are so numbened from pressure from the passage of the fetal head that we can do an extensive inside repair without distress to the patient. Only the skin stitches are felt and these should be few in number. An immediate repair is a natural thing to do. There is no specialty where horse sense is so rewarded as that of surgery. All tears which occur in my work are repaired before the afterbirth is delivered. After the birth of the child, I determine whether or not the uterus is contracted and hemorrhage controlled. I then throw the cord over the patient's abdomen, pass a sponge above the tear to control the flow, and insert the silk worm gut ligatures, just as though I was making a secondary repair. This can be done at this stage while parts are numbened, with little discomfort to the patient and while we await delivery of the placenta. It is a great comfort to the patient to know that when the afterbirth is delivered that all is over.

I feel that this early repair of lacerations, even before the placenta is delivered, has some virtue from the standpoint of preventing infection. Any small clots which might become infected through the manipulation incident to repair work are washed out or mechanically removed by the delivery of the afterbirth and the accompanying flow. There is no fair argument which can be advanced against this early repair on account of any strain on the inserted sutures, as the parts have been so recently stretched that the volume of the placenta is not sufficient to bring damaging strain on the sutures.

In regard to suture material, I condemned all absorbable ligatures in an early part of my discussion, and I want to add here that all forms of absorbable sutures when applied to the vaginal and cervical tract are an abomination.

SECONDARY REPAIRS.

If it can be so arranged, it is better to have the patient in bed one week or longer on light diet and a daily douche of hot salt solution, boric acid, or bichloride, depending on the nature of any discharge. The field of operation will be cleaner, congestion of the mucous membrane is reduced, there will be less bleeding at the operation, and the parts will be more surgically fit in every way.

In secondary repair of the perineum I do two operations, the Emmet and Hager, the principles of which will meet all conditions of lacerations of the perineum. In childbearing women I always do the Emmet; in patients also who are not of the parturient age and who have classical bilateral tear. On patients who have central tears and are near or past the menopause I do the Hager operation. The reasons for such choice I shall try to bring out.

It is not necessary to describe the Emmet operation; the form of denudation is in all textbooks on gynecology. Briefly, it consists of a denudation of three triangles, one in each torn sulcus of the vagina; the third is simply the closure of the outside parts and has little to do with the real benefit of the operation. The denudation is done with the Emmet scissors already described, by incising long strips of mucous membrane which are picked up by a tenaculum and stripped off with ease and dispatch. On the manner in which the sulci are closed depends the virtue of the operation. I use either an Emmet needle which has a straight shaft with slight curve at the point, or a perfectly straight needle of sufficient length to include the required amount of tissue. The needle is held in the grasp of the shot compressor and driven at right angles to the surface of the tissue to be included, transfixing all torn structures and coming out obliquely at the bottom of the denuded sulci, the turn being made with the wrist. The needle is reinserted at the point of exit and comes out in the central tendon or raphe of the mucous membrane of the vagina. This suture includes all the tissue it is possible to get, and I am often of the impression that my needle passes into the bowel on account of the depth of the insertion, yet I have never had any trouble therefrom.

Of course I do not advise permitting the stitch to pass into the bowel, but I make this statement as an appeal for deep inclusion of tissue, as I know many operators have failed in repair work on account of

their fear of wounding the bowel with the needle and have thus made their work too superficial. The needle is held obliquely in the grasp of the shot compressor and is driven at the angle in which the needle is held, which would be first down and out, then up and back; in other words, all sutures in the sulci are V shaped. Before many of the operators abandoned the Emmet operation they had been practising closure of each sulcus with superficial continuous catgut sutures, which simply closed the mucous membrane surface and, of course, failed in every detail of the classical procedure, which depends upon the suture of the muscle and fascia in the torn sulci of the vaginal canal.

In demonstrating the operation my needle often strikes the pelvic bones, which is a deeper inclusion than is necessary, but illustrates what can be done with ease with the straight needle. The closure of the outside or skin surface is not important as long as sufficient tissue is included in the suture to prevent dead space. The crown or the old A, B, C suture, which brings together the three points, namely, the two lateral angles of the external denudation and the crown of the rectocele, is illustrated in all textbooks. We do not work with a needle holder, but use instead the shot compressor, which makes a powerful and perfect needle holder; with this we are not bothered with the lock of a needle holder, which is a most harassing instrument. Good strong fingers are the best kind of lock and never stick. As we use shot instead of the tie, the shot compressor serves the double purpose of needle holder and shot compressor. There is no tie so surgically ideal as that obtained by perforated shot. The clamping of the tissue with shot can be done with the greatest gentleness and precision. Tying with fingers in either cervical or vaginal work is done with an indeterminate amount of traction, on account of the cramped or awkward position of the fingers. On this account the ligature is often a crushing one and necrosis and sloughing follow. Sims failed in his vesicovaginal fistula repair, not only until he found a suture which was naturally clean or little subject to infection, but also until he had the more precise method of tying by perforated shot.

No department in surgery has been so much crippled by a supposed modern improvement of technic and materials used as repair of the birth canal. There is absolutely no indication for absorbable sutures in this field of work. The great trouble with much that is adopted in surgery is this, that most methods have a large proportion of some sort of benefit to the patient; therefore, the small proportion of absolute failures is looked upon as legitimate accidents which might happen in the best regulated clinics. This is not so in the repair of the posterior vaginal wall. Our success in this field should be 100 per cent. if the staple materials are used and the work is done along the lines of the Emmet and Price teachings.

In the early part of my discussion, I referred to the great number of operations which are being done for repair of the perineum. I understand there are over fifty, although I cannot confirm this number; however, the great variety of procedures makes their quality questionable. I have studied a large

number of these operations and have seen some of the best men in America do their own operation. They all assert a common virtue for their terraced method of closure of the perineum and that is, that the torn structures are anatomically sutured, muscle to muscle, fascia to fascia, and are done with buried absorbable ligatures.

In all of these procedures the muscle, fascia, and all structures are united in front of the bowel in median line. The irreconcilable part of these procedures is, that all the authors aver that their procedure is correct anatomically and physiologically, and leaves the vaginal outlet just as it was before laceration. Are they not entirely wrong about what they assert to be the chief feature of their procedure, namely, restoration of the birth canal to its normal relations? To my knowledge, there is no point in anatomy where one muscle meets its fellow muscle at the median line; therefore, there is no part of our anatomy where muscle tissue as such crosses the median line, but it meets its fellow muscle through a central tendon or raphe, and this is exactly what the Emmet operation accomplishes in the torn structures of a bilateral tear; hence it is an anatomical and physiological procedure in every particular. The operators who close the lacerated perineum by the terraced method of suturing allege anatomical union of muscle to muscle, etc.; they are certainly aware that muscle tissue does not unite by intervention of muscle tissue, but repairs by the interposition of fibrous tissue; so after all, their claims are baseless.

The fact is, when the tissues of the lacerated perineum are brought from side to side and united in front of the bowel, it is not a correct anatomical condition, as is most forcibly shown by the fact that all procedures done after this manner do not stand future childbirth as well as the old classical Emmet operation, which does bring structures from side to side and unites them to the central tendon or raphe which is not destroyed in the Emmet denudation. The Emmet operation gives the normal elasticity and resiliency of a normal perineum to a degree which is impossible by all other procedures. It is hard, of course, accurately to measure the relative elasticity and strength of the normal perineum compared to one repaired by known methods; however, in regard to bearing the future strains of labor, Doctor Price, in his characteristic enthusiasm and admiration for the Emmet repair, used to say that it was an improvement upon nature. The tissues after the terraced method of repair are pushed in a solid bunch before the oncoming head, because they have lost their contractility and elasticity from the manner of repair, and when the rupture does occur, it takes place like an explosion. It is for this reason that in all childbearing women we use the Emmet operation. In patients who have had vaginal hysterectomy for procidentia or tumor, we do the Hager operation. The Hager operation will close the vaginal outlet to a greater degree than the Emmet operation, but it has the same disadvantages that all the popular terraced methods have; it is not anatomical nor physiological and does not give the elastic perineal body.

The Hager operation is a simple and single high denudation of a triangular area of tissue in the

centre of the posterior vaginal outlet. These sutures are introduced in the same direction as in the closure of one of the sulci in an Emmet operation and unite the tissues from side to side in front of the bowel; therefore, it has the same principle as all the terraced operations have, the only difference being that the Hager is closed with through and through sutures of silkworm gut, and in this sense it is an improvement over all other terraced methods.

It has been of wonder to me as the great number of "my" operations have been brought forth, that the authors have not seen that they are not advocating a single new principle in the surgery of repair of the perineum, and that the only difference between the old Hager operation and any they have devised is, that one is a closure from side to side with through and through sutures, and all others are the same method by terraced sutures of catgut or tendon. There is not a single stitch in any of their procedures which cannot be better done with a good, deep, silkworm gut suture.

In the use of the phrase, through and through suture, as applied to perineal work, I mean a good deep inclusion of the vaginal structures by the method I have described.

As to many procedures for repair of the perineum which bear the name of the author, were the latter asked to point out some important difference from at least a dozen other operations, no patent officer nor jury of twelve sane men would grant him a patent right to his particular procedure. I believe the Hager operation has a stable place in surgery and its indications are in repair of the deep central tear and repairs following vaginal hysterectomy, or in women past the child bearing period. In repair of the lacerated perineum, it makes no difference whether union is from a good deep inclusion by silkworm gut or from the terraced method of suturing by catgut, etc.; remember, we have in either case a triangular body of perineal structures united by the interposition of fibrous tissue, and it is not more normal than this.

COMPLETE TEARS OF THE PERINEUM.

It is not worth while to discuss the efficacy of the perineum secured by the good deep suture of silkworm gut after the method of Emmet; argument may be met by applying its principles to complete tear of the perineum where results are self evident; we either do or do not get results. With one exception I have never failed to obtain a perfect result at first attempt, and in this case the fault was not with the operation. There is no plastic work I do in which I have more satisfaction than in repair of complete tear of the perineum.

The principle in the complete tear is that of the Hager operation. The area of denudation is that of a good high triangle, extending an inch above the upper margin of the complete tear and extending down to the skin perineum, with one half to three fourths of an inch of denudation above the mucous margin of the lacerated bowel. The sutures of silkworm gut are passed, beginning at the upper margin of the area of denudation in V shape, coming out at the centre of the area of denudation, then reinserted at the point of exit and

emerging opposite the point of insertion on the mucous membrane.

When we have approached the upper margin of the complete tear, the sutures are introduced practically at right angles to the preceding ones, or they are introduced in horse shoe shape parallel to the margins of the mucous membrane of the complete tear. Before the lower one or two sutures, or those which are in nearest relation to the mucous membrane of the bowel, are introduced, the ends of the sphincter of the bowel are exposed and then picked up by a tenaculum and transfixed by the lower two sutures.

The extremities of the ruptured sphincter are always marked by a dimple, and when the ends of the muscle are exposed by cutting off the skin or mucous membrane which overlies the extremities of the torn muscle, we note that which was a very superficial dimple, becomes quite an excavation.

There are no buried sutures used. It is not necessary to attempt to close the mucous membrane of the bowel by a layer of silk or catgut, introduced from the bowel side. The points of advantage are, that it is altogether the simplest of methods of closure. There are no buried sutures in the infected area. The silkworm gut is not subject to infection and gives the parts good rigid support and the duration of life is independent of tissue absorption. I have heard a good number of physicians say after witnessing the operation, that it was so simple there was nothing to it. We simply unite the torn structures with stable material and this is always the best surgery.

A word about the aftercare of the patient; she is kept on liquid diet the greater part of a week and the bowels are kept soluble. A couple of grains of calomel or other mild laxative given early, will prevent distention of the lower bowel by gas. It is a mistake to attempt to put the bowel at rest for a number of days with the idea that movements will interfere with repair. Greater harm may come from the constipated or distended bowel. I give no douche. The external parts are washed or flushed off with a solution of bichloride after the patient has voided or had bowel movement. The patient is kept in bed three weeks.

The profession has not yet learned that the time to give the rest cure is immediately after operation, and not within the next year or two. There is little use in vying with one another as to who can get his patient out of bed earliest, because, if we get foolish with our rash surgery, some one will always be a bigger fool. This is not rash language, as we are all familiar with the errors of judgment which have permitted the patient after an abdominal operation to rise on the second day.

CYSTOCELE.

We are still looking for more substantial structures with which to correct cystocele. The difficulty has always been that there is so little stable structure between the vaginal vault and bladder to give substantial support. Many operations have been devised to hold the anterior vaginal wall at a higher level and thus correct cystocele. Many of these are ingenious, yet it is questionable if any

particular operation has much advantage over a well done simple oval or triangular denudation. In procedures in which the anterior vaginal wall is carried to a higher point on body of cervix or uterus and sutured there, or retained in such position by plication of the broad ligament, the objection remains that if the predisposing cause of cystocele is not corrected, the broad ligament continues to relax and the condition of affairs will return.

Making an incision in the vesicouterine pouch and bringing the uterus through such incision and fixing it beneath the bladder, has given good results in the hands of some operators. This type of operation, of course, could be applied only to patients with a small healthy uterus and at a sterile age. Although the old simple anterior denudation has never appealed to me as a staple procedure, yet my results have been excellent. With the exception of two cases, I have been able to give my patients perfect relief. I repeated the same operation on these two patients with excellent permanent results. In each case there had been a complete prolapse of the uterus, bladder, and rectum, pulled through the vaginal canal and protruding between the thighs for five inches. My explanation of the success of the second operation is, that I had gained something by the first, through taking up all the possible slack of the anterior vaginal wall, and that at the second operation I was dealing with tissues which had had the slack and elasticity taken out of them and were of more stable quality.

Effort must be made to get all the fascia which is obtainable. We fail often on account of fear of transfixing the bladder, just as we fail in the posterior repair when we are too timid on account of the possibility of the suture wounding the rectum. In extreme cases of prolapse of the uterus, which is often enlarged and ulcerated and potentially malignant, I do a vaginal hysterectomy by the clamp method; then after sixteen or seventeen days, before the patient is allowed to rise, I do a cystocele and rectocele repair with a high Hager operation of the perineum.

The clamps, which remain on for forty-eight hours, hold the vaginal fornix at a high level where adhesions take place, and it is astonishing in many cases, even where repair is not done after vaginal hysterectomy by clamp method, how the cystocele is benefited. We cannot see how any human being could be permitted to get in such a neglected and loathsome condition as some of these poor women who have their uterus, vaginal walls, rectum, and bladder dangling between the thighs for years, until bleeding from ulceration forces the patient to obtain surgical assistance. They are difficult surgical problems, but these women may be placed in a comfortable and healthful condition by a vaginal hysterectomy by clamp method followed by proper repair. I am under the impression that many doctors do not make primary repairs, because they think the necessity for repair is an admission of carelessness on their part. Thus they permit the patient to remain in ignorance of her real condition.

If we ask these much neglected patients if they had a tear at any of their labors, they nearly always say no. There is nothing so big as honesty and

truthfulness, and the patient has a sacred right to correct information.

LACERATIONS OF THE CERVIX.

It would be within the truth to say, that at least ninety-eight per cent. of the office gynecological practice of the average physician or specialist, is due to lacerations of the cervix. There is probably no source of revenue to the physician which is so dearly paid by the patient, as that from the everlasting application of remedies to the lacerated cervix.

That condition which oftenest follows the lacerated cervix and the principal condition for which the patient consults the physician, is known as erosion of the cervix. Erosion of the cervix is a red granular surface surrounding the os uteri, and may extend well into the cervical canal and even out as far as the junction of the cervicovaginal mucous membrane. The earlier writers called the condition an ulceration, but this does not describe the condition, as there is no loss but rather an increase of tissue and the pathologist may truly call the condition a flat adenomatous growth; there is a new formation of glandular tissue.

The several layers of pavement epithelium which normally cover the vaginal portion, are replaced by one layer of columnar epithelium. When the lacerations have been long neglected and become inflamed, the exuded lymph is organized into fibrous tissue, so that the enlargement and induration of the cervix remains as a permanent source of trouble and danger. I have always felt that this tissue was possibly of transitional or embryonic type, and therefore potentially malignant, which is an urgent appeal for early repair. A very large percentage of erosions which are troublesome, are due to neglected tears of the cervix, yet we cannot say that laceration is the cause of erosion, as the condition occurs in the virgin. The true etiology is not known; however, experience teaches us that in practically all erosions of the cervix, there is some source of irritation back of the condition, trauma, discharges, etc.

The irritating discharge may be due to infection or to lowered tissue resistance, which emanates from any constitutional condition, nervous or other. To say that a local inflammatory or that flat adenomatous condition which appears as an erosion of the cervix, is due to the nervous condition of the patient, is hard to apply as cause and effect; however, we do see the typically eroded cervix in the anemic young woman, the treatment of which is constitutional rather than local.

A very large percentage of cases which give symptoms, are due to neglected tears incident to labor. These cases are surgical in every particular.

Indeed we might say that nearly all conditions of the eroded cervix are surgical. Although my specialty is gynecology, I have not treated a patient in my office with local applications for years. I have absolutely no office practice as far as local treatment of these conditions is concerned. Even in cases of erosion of the cervix in the virgin, if the patient is given a whiff of ether and the eroded surface gone over with a sharp curette, we can accomplish more in a minute than in a prolonged

course of office treatments by local applications which annoy and embarrass the patient. Were this rule carried out, it would rob many physicians of what they consider a legitimate source of revenue, and what I view as a fertile source of malignant change. The relation of cause and effect between laceration of the cervix and malignancy, is so marked and pronounced at this particular anatomical site, that we may say that laceration of the cervix is more than a predisposing cause of malignancy. Doctor Price, whose experience was as large as if not larger than any man's in America, told me he had never seen a primary carcinoma of the cervix in a woman who had not borne a child or had her cervix subjected to trauma from some source; and further, that he was not familiar with any case of primary malignancy of the cervix in which early repair had been well done. When we are familiar with the very great percentage of malignancy of the uterus which occurs at the cervical end of the organ, good repair work becomes of vital importance. I have always marvelled how little we make use of much that is positively prophylactic of the horrible malignancy. If we, as doctors, could only key ourselves up to our individual responsibility with every patient we see, and use all the knowledge we possess, how much lower would be our mortality! We hide behind the fact that our profession is not an exact science; therefore, who knows who is to blame? We do know lamentably often.

My experience is not small and I can confirm the statements of Doctor Price regarding the absence of malignant disease of the cervix in the childless woman. There are a number of cases of malignant disease of the cervix reported, but I believe that in a considerable number of these cases, the malignancy was of primary origin on the mucous membrane of the vagina and extended by continuity of tissue to the cervix. I have seen such cases, any one of which could have been reported as primary malignant disease of the cervix. This being the life history of malignant cervix, we cannot too strongly urge early and uniform repair of all lacerations. In regard to time, I do not think it necessary to repair all lacerations of the cervix at the time of labor, for the reason that a very large percentage repair themselves when the uterus properly undergoes involution. Exaggerated cases and those which cause bleeding should be repaired immediately.

If good obstetrics is practised, this percentage of early repairs will be very small; but in these days of the impatient profession, the neglect following the hurried and stimulated labor, is lamentable. The reader will pardon me for making use of an expression of Doctor Price's which had so much therapeutic truth in it, that I am justified in quoting him verbatim.

In speaking of the meddlesome obstetrician, he used to say that "the dinner coat had played hell with the birth canal."

We are indebted to no one so much as to Dr. Addis Emmet for putting the pathology, symptomatology, and repair of the cervix, on a rational surgical basis, and he gave us a substantial operation for relief of the condition.

There are very few cases in which it would be necessary to repair the cervix if the patient was permitted to reach the end of the first stage of labor independently of forceps, pituitary extract, ergot, etc. We were never more in need of obstetricians to teach that there is such a thing as normal labor, that nature is a wonderful mechanic, and that her wonderful mechanism only rarely needs assistance. It is a positive fact that the wealthy and the very poor seldom are given a chance to end labor in the normal way. There is room and necessity for a good sized volume on meddlesome obstetrics; this is not the place for it, other than to call attention to the fact that good common sense conduct of labor would do away with ninety per cent. of the cases of lacerated cervix.

In the precipitated labors of those women of high tension, inelastic, and firm tissues, we often get a considerable tear of the cervix. Morphine has a place here. The excessive size of the head I would not give as a cause of the lacerated cervix. I feel that the extreme size of the head prevents the vertex from too rapidly dilating the lower uterine canal, as it is held in abeyance by the bony structures of the pelvis, which permits the cervix during the first stage of labor to soften and dilate. It has been my experience that the undersized, hard, bullet head, which meets with no resistance from the bony walls of the birth canal, is often the cause of extensive cervical tear; as it forcibly carries the soft structures of the cervical canal in front of the descending head, and tearing of the cervix takes place before dilatation has been accomplished.

When we begin to take up surgical discussion of the lacerated cervix, we cannot but express some feeling of apprehension that gynecology is being killed in proportion as the general surgeon encroaches upon the specialty. If we could only tell the general surgeon without being thought unprofessional, that the very poorest thing he does, is his attempt to do gynecological work, perhaps we could stimulate him to better lines of reasoning when engaged in the female pelvis. Much of the repair work of the cervix at this date, is a failure.

It is my opinion that the failures are due mainly to two things, namely, use of absorbable sutures and the too superficial inclusion of tissues in the bite of the suture. Cervical tissue heals very slowly and in many instances the absorbable sutures are gone before any attempt at repair has taken place. On account of the slothful manner in which cervical tissue repairs, the patient should be kept in bed after labor or secondary repair for at least three weeks. After labor, whether the repair has been done or not, if the patient gets up too soon, the cervix is forced down against the posterior vaginal wall and has a tendency to spread apart the torn cervix, on the same principle as though pressure was made with the thumb and finger on a flat surface; the tendency would be to spread the members apart. The uterus does not return to normal size, position, and outline, until several weeks after the patient is on her feet.

Before any repair of the cervix is done, the patient should be put to bed for at least ten days, the bowels kept soluble, and a hot douche of salt solution, or an antiseptic solution if discharge is offen-

sive, given twice a day. In the exaggerated tears, the cervix is studded with Nabothian cysts, which feel like shot beneath the mucous membrane. The cyst can be punctured with a tenotome, relieving the pent up albuminous looking fluid. This softens the tissues by relieving tension and congestion and can be done before the operation with little distress to the patient. It is almost impossible to get a woman to leave a busy life for ten days to undergo such preliminary treatment, yet we know that ours is intelligent advice and has much to do with a good permanent result.

Possibly in no tissue in the body do operators so often fail to obtain good union, as in cervical tissue. It is not only due to the tardy repair of the cervix on account of circulation, but the surgery is done in the wall of a viscus studded with cysts and impregnated with fibrous or scar tissue, which is surrounded by a vaginal canal contaminated by a mixture of a discharge from a pathological mucous membrane and outside dust and filth. If there was no other reason than surgical cleanliness, it would be of sufficient importance to put the patient to bed for a number of days prior to operation, in order to clean up the field. We never do get surgical command of the patient.

Operations often fail because the surgeon has not removed the cause of the patient's symptoms, which often come from a plug of scar tissue which marks the apex or height of the tear. This plug of tissue is so sclerotic and indurated that it is almost impossible to cut and probably often contains pinched nerve filaments. I have seen two patients who could be thrown into paroxysms by simply touching this scar tissue with the fingers. If this wedge of scar tissue is not removed, the lacerated structures will not come together; on the same principle that the extremities of the toes or fingers could not appose if a spool was placed between them; and the result is often a failure of union. I go into some detail in discussing this plug of scar tissue, because in many operations the vaginal mucous membrane of the cervix only is removed, permitting this wedge of fibrous tissue to remain; such an operation is worthless. It may look well from the outside, but the operator has made, as Doctor Price said, "a cuspidor out of the cervix." Union of the vaginal mucous membrane takes place, but the deeper structures are not intact. To remove this deep area of scar and fibrous tissue, we transfix with the tenaculum well above the fibrous tissue, then with good strong scissors we cut out a good deep V, extending to or above the point transfixed by the tenaculum. This incision extends entirely through the wall of the cervix at right angles to its surface; the excised area is closed by deep silk-worm gut sutures. It does not make much difference where a needle enters or just where it comes out, as long as we include sufficient tissue. I am sure we cannot do very good plastic work on the cervix, unless we familiarize ourselves with the use of Sims's speculum and tenaculum. I use shot in all of my repair work; it is easier of application than the tie by the fingers and more definite in the amount of tension.

We are apt to tie too tightly, and produce slough

or stitch necrosis with a tie by fingers in a cramped position in the vaginal vault.

AMPUTATION OF THE CERVIX.

Practically I never amputate the cervix. I have looked upon it as a "middle of the stream" or "on the fence" operation. It is neither one thing nor the other. Possibly twice in my life I have amputated an elongated cervix; in all other conditions I have felt that either vaginal hysterectomy or repair was indicated. We must remember, about the only two causes of obstructive dysmenorrhea are, amputation of the cervix and malignant disease of the uterine canal. It is remarkable what a serviceable cervical canal we can make out of what seems to be a hopeless condition of the cervix. It has been necessary for me to remove a number of uteri following amputation of the cervix by good operators. The patients often suffer from an intractable dysmenorrhea and the fundus of the uterus remains extremely tender to touch. Retroversion of the uterus often takes place after amputation of the cervix, a position quite impossible to remedy by pessary after amputation of the lower uterine segment; also a good number of strictures of the uterine canal follow amputation.

In a young woman with a congenital elongation of the cervix, which is creeping out of the vaginal canal to the great annoyance of the patient, amputation of the cervix may be a justifiable procedure. In cases of extensive laceration of the birth canal with a major degree of prolapsus, it is popular teaching to amputate the cervix, repair the lacerations, open the abdomen, amputate the fundus of the uterus, and fix the stump by suture to the broad ligament; this seems to me to be a great deal of surgery to do and yet leave a part of the uterus with malignant potentiality and a fertile source of adhesions. In these conditions I do vaginal hysterectomy, followed by anterior and posterior repair.

The last word I wish to say in regard to repair of the cervix, is the necessity of uniform and thorough work in all lacerations as a prophylactic against malignancy. There is no neglected lesion in the body so amenable to treatment and so prone to malignancy when neglected.

Just at this place let me again urge the necessity of methodical examination of all patients who have pelvic symptoms. Price advocated the repair of all lesions incident to labor, either with or without symptoms, after the child bearing period. The operation has no mortality, places the patient just as she was before child bearing, and saves thousands of lives which might be lost from malignancy. With all that has been advocated in late months for the earlier recognition of cancer, little if anything has been accomplished. Our attempt to educate the laity to the vital importance of the earlier recognition of malignancy, especially of the uterus and breast, has availed little. We are not striking the mark because we are not placing responsibility where it belongs; the doctor will not take time to strip the patient and make some sort of intelligent examination. We lack consciousness of individual responsibility. During the past month I have had three inoperable cases of carcinoma of

the cervix, each of which had been under professional care for two years without a single examination by three physicians who had graduated at the head of their classes in two of the most conspicuous medical colleges in the United States. We find on investigation, that a large number of the late cases of malignancy come through men who have enormous practices; physicians who see fifty patients a day and examine none of them; how could they?

I did not intend to write a sermon on this subject; I have not criticized any doctor for his lack of scientific knowledge or professional attainment, but call his attention to the fact that perhaps he is not using the scientific knowledge which he has acquired.

There is probably no great operator living or dead who was so rapid as the late Doctor Price when he chose yet he never impressed his observers as being a rapid operator. He decried the superficiality and cheapness of the man who operated by the clock or increased his self esteem by the number of his operations. Thoroughness first, last, and always, was his cry.

What was the outcome of such teaching in the history of his own hospital?

It was most eloquent. Over forty-five per cent. of his surgery consisted of reoperations in cases where he had not been the first operator.

Less than two per cent. of his own cases returned for future operations.

There is a great volume which should be written concerning the contrast between the popular teaching of the hour and that of the master surgical mind of the late Doctor Price. It is impossible to reconcile a disciple of his to much that is taught today.

241 NORTH EIGHTEENTH STREET.

The Pineal Gland Inert?—That minute particle of tissue, no larger than a pea, known as the epiphysis cerebri, or pineal gland, has long been an object of curiosity to students of anatomy and physiology. Its central situation in the skull has made its exposure in the living animal without causing death a delicate and difficult operation, while the speculations concerning its functions have ranged from considering it as the source of a secretion controlling anatomical development, to an idea that it is the centre of intelligence or the seat of the soul.

Recent investigations at Johns Hopkins University by Dr. W. E. Dandy, observes the *Southern Medical Journal* for March, 1916, seem to clear up one point concerning its functions. Doctor Dandy has succeeded in removing the pineal glands from a number of puppies without apparently influencing their growth or development in any respect. They are neither larger nor smaller, fatter nor leaner, brighter nor more stupid than their controls, and their sexual development was neither precocious nor retarded. The pineal gland would seem to be a structure residual and degenerate from a long vanished form of existence, a sort of appendix coniform, so to speak.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXVIII.—How do you treat cyclic vomiting of infants? (Closed.)

CLXIX.—How do you proceed in post partum hemorrhage? (Answers due not later than April 15th.)

CLXX.—How do you prevent laceration of the perineum in childbirth? (Answers due not later than May 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscriber or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXVII was awarded to Dr. Henry R. Harrower, of Los Angeles, Cal., whose article appeared on page 649.

PRIZE QUESTION CLXVII.

THE TREATMENT OF RICKETS,

(Continued from page 651.)

Dr. Murray Burnes Gordon, of Brooklyn-New York, writes:

The treatment of rickets can well be started prophylactically by dieting the mother during the latter period of her pregnancy. She should be advised to drink plenty of milk and partake of nutritious food, so that she may have an ample supply of milk for the baby when it is born.

The baby should be put to the breast and the mother impressed with the fact that maternal nursing is the strongest factor against rickets. Her milk should be tested if the baby does not gain normally and, if found faulty, her diet should be regulated. The periods of nursing, with the proper intervals and length of time for each nursing, should be uniform. No child should be nursed for longer than twelve months. If the mother cannot nurse her child, it should, if possible, have a wet nurse. If that is beyond the financial resources of the family, the child must be placed on a proper formula. Care must be taken that the percentage of fat is sufficient, while the proportion of the carbohydrates should not be too high.

Beginning symptoms of rickets in a child that is being nursed is conclusive proof that it requires something else. This may be but the addition, in older infants, of fruit juices, like prune juice or orange juice, to the diet, or of cereals and beef juice. If the child does not improve, it should be weaned and given, if eight months or over, beef juice, raw eggs, orange juice, and cereals in addition to whole milk or a proper formula arranged according to age. Proprietary foods have not proved successful.

In the line of remedial agents, thyroid extract has proved efficacious in the writer's experience; this may be started with one eighth grain of thyroid ex-

tract twice daily and gradually increased to as much as one grain three times a day. The child should be watched for untoward symptoms, but to avoid these, the extract is given ten days on and ten days off. In the interim, the elixir of the glycerophosphates of lime and soda in half dram doses two or three times a day is given. This may be changed at times to the compound syrup of hypophosphites. In other cases, especially in those associated with convulsions, thyroid extract grain one eighth, with calcium lactate two grains, two or three times a day, has proved beneficial, the thyroid being gradually increased to one grain three times a day.

Some cases do very well on some form of arsenic and iron, especially the anemic type. Others react well to combinations of phosphorus and codliver oil, or phosphorus alone.

Constipation must be overcome. This may be done with prune juice, vegetable soups strained, or milk of magnesia in half teaspoonful doses, two or three times a day. In cases of marked inanition, olive oil in teaspoonful doses, once or twice a day, will be found very helpful. Castor oil should not be given, as it produces a laxative habit. Glycerin suppositories may also be used.

Plenty of fresh air and sunshine is absolutely essential. The child should be kept out of doors as much as possible. It should be taken to the sea shore or open country, if easy of access.

Deformities resulting from rickets require orthopedic treatment. Children should not be encouraged to walk until they have demonstrated their ability to stand firmly. Their backs should be protected when sitting up so as to prevent cyphosis.

Any other concomitant disease like tuberculosis or syphilis should also be treated.

Dr. Arthur S. Risser, of Blackwell, Okla., writes:

The most efficient treatment of rickets is that which combines dietetic and hygienic with medical measures. While the exact etiology of the disease is in dispute, statistics prove that it is found most frequently in the temperate zone, in the crowded quarters of large cities, among the poorer classes, in children from six to twenty-four months of age, who live under unhygienic conditions, who have been artificially fed, who are anemic, and whose general nutrition is impaired. Consequently our first care must be to correct as far as possible these accompanying if not directly causative conditions. Prophylaxis is important, and early diagnosis is essential to proper treatment. Early rickets may be manifested merely by restlessness, sweating, by head tossing or by a bald spot on the occiput where the hair has been worn off. In other cases gastrointestinal disturbances may prove its presence, or respiratory disorders may occur. Craniotabes and gross bony deformities develop later.

Since rickets often occurs in several children of families where the mother has been subjected to prolonged and repeated lactation, we must secure a hygienic regime for the mother. This includes a proper balance of exercise and rest, freedom from mental strain, plenty of fresh air and sunshine, a proper amount and quality of food. We must provide a diet generous in milk, meat, vegetables, fruits

cereals, gruels, chocolate, and cocoa. This prophylactic period should begin during pregnancy and continue during the nursing period.

Efficient breast feeding should be encouraged, as the incidence of rickets is much less among breast fed children. Assist the mother to nurse her child. We can do much to improve both the quality and the quantity of the mother's milk by regulating the hygiene. I have found injections of pituitrin at intervals of three days to a week markedly to increase the milk supply. After the first year—or earlier if the child does not thrive at the breast and a safe wet nurse cannot be secured—then the cleanest fresh, raw milk obtainable, modified to suit the digestive powers of the child, is our best resource. In private practice I find that the simple, uncomplicated formulas of modification are most easily followed by the mothers. Our aim should be to provide as nearly as possible the same proportions of fat and proteid as are found in breast milk. The high dilution of cow's milk reduces the fat and proteid below the proper proportion. Cream, milk, lime water, and barley water or albumin water can be combined to suit practically any child. It is a good rule to give as much fat as possible without unduly increasing the quantity of proteids, and without disturbing the digestion. To avoid gastrointestinal disturbances we must watch the stools, their number and character, as well as the general nutrition of the child. Children under six months as a rule require less starch in the food, but after this age—and before if the child does not thrive—we may add to the diet gruels, soft boiled eggs, vegetable broths, meat juices—especially veal broth—orange juice, scraped beef, and baked potatoes, all with due regard to the digestive ability of the child.

The yolk of egg contains much fat and can often be given with advantage to children of ten months even. It is well to remember that too frequent feedings and overfeeding are as harmful as underfeeding.

Longer intervals between feedings favor digestion and assimilation. Also it is true that mere quantity can never compensate for deficient quality. In this matter of feeding each child is a law unto itself. Whether rickets is due to a qualitative rather than a quantitative lack, to a deficiency in feeding or to improper assimilation, to fat loss or to failure of the bony tissues to utilize the salts from the food, our aim should be to provide a sufficiency of all the food elements in a form adapted to the child's assimilative powers.

Hygienic measures are perhaps of as much importance as are the dietetic. It is essential to provide sunlight and fresh air and cleanliness. In the opinion of many physicians these are more important than drugs. Overheated rooms are as harmful as the unventilated in that they predispose to the rheumatic diseases and respiratory complications which are especially dangerous in rickets, necessarily as they do increased respiratory effort and the tendency to bony deformities of the chest. While we must protect these children from exposure to cold and wet, we must see that they have the fresh air possible. Even in winter they should be warmly clothed and placed out of doors—

especially during the sleeping periods. This is even more necessary for nurslings than for children able to go out of doors. If possible, the room chosen for the sick child should be sunny and dry, and the air of the room should be frequently renewed. It is astonishing to find how many parents are afraid of fresh air, and the physician must be tactful and yet firm in securing this boon for his rickety patients. If they can be removed to the country or the seashore—other things being equal—their convalescence will usually be hastened.

Proper hydrotherapeutic measures are of great value in improving the general nutrition and in combating the well known liability to respiratory complications. Frequent, stimulating baths in a warm room, with cool sponging, friction, and massage are indispensable, the latter especially to overcome the muscular weakness which is so often present. But—and this is important—see that the child gets the reaction from the baths; otherwise they will be harmful. Salt added to the bath water seems to aid in controlling excessive sweating. Minute doses of atropine serve the same purpose.

Few drugs are needed in the treatment of rickets. Codliver oil and phosphorus, usually in combination, are our mainstay. Whatever may be the exact action of phosphorus (it is held to increase the retention of calcium and phosphate in the tissues of rickety children), the benefit derived from its use more than justifies its empiric employment. Phosphorus seems to increase the efficiency of the codliver oil and the best results are obtained from their combination. The nervous symptoms such as hyperirritability, tetany, laryngismus stridulus, and convulsions often yield almost miraculously to these remedies. Dentition is hastened, walking is facilitated, the anemia becomes lessened. Phosphorus, however, must be continued over months; it frequently disturbs the appetite and impairs digestion, so the form and the doses in which it is given must be a matter of concern. It may be given in pill form (grain $\frac{1}{200}$ and up) or in mucilage or as the phosphorated oil. The official emulsion of codliver oil is often better borne than the pure oil, and should be tried if the latter disturbs the stomach. If diarrhea occurs, an emulsion of equal parts of lime water and codliver oil sometimes corrects the difficulty.

During the reparative period the tissues need calcium and we may give the official syrup of calcium lactophosphate. If anemia is marked, arsenic and iron in proper doses have their place, as have the syrup of the iodide of iron, beef juice, and green vegetables. The iodides of potassium and sodium are indicated, particularly for glandular enlargements.

If nervous hyperirritability is present—the “spasmodic” tendency—we must look for all possible sources of nervous irritation and remove them when possible. Dyspepsia, gastroenteritis, constipation, and consequent autointoxication, intestinal worms, adenoids, diseased tonsils, otitis, elongated uvula, irritated gums and difficult dentition, acute fevers—all of these may contribute to maintain a condition of nervous imbalance, and require intelligent treatment. The bromides should never be continued any length of time, but they may be employed

porarily—perhaps with chloral—to check spasms and convulsions with their danger of cerebral hemorrhage. Phosphorus is the remedy *par excellence*.

The skeletal deformities are properly sequelæ of rickets; they are due to the yielding of the softened bones to mechanical strains, and though their treatment does not fall strictly within the limits of our discussion, a few points require emphasis. Reduce mechanical strains as much as possible and avoid habitual postures, for example, carrying the child continually on the same arm, allowing too early walking or too much standing. Long splints will prevent the latter. The bed should be flat and hard; as a rule no pillow is to be allowed. If cyphosis is present, a small pillow at the seat of curvature may be of service, or with the child in the prone position we may instruct the parents how to press the bend forward at frequent intervals. These thoracic deformities are particularly difficult to treat. For the deformities of the long bones we must often perform osteotomy or osteoclasia, usually about the fifth year. Craniotabes requires an air pillow.

To recapitulate: Judicious, balanced feeding with stimulating baths, fresh air, and sunshine, codliver oil and phosphorus, together with whatever symptomatic treatment the necessity of the case and our knowledge dictate—these measures constitute our treatment of rickets.

Dr. F. Richard Newman, of Wheeling, W. Va., remarks:

For convenience the treatment may be divided into hygienic, dietetic, and medicinal.

Hygienic. Remove the child at once to the country and give it plenty of sunshine and fresh air, the latter especially in the sleeping room. A cold sponge bath containing plenty of sea salt should be given every morning, followed by a gentle friction rub with a Turkish towel to promote circulation. Careful attention should be given the clothing; kindness and cheerful surroundings are of great importance and should be insisted upon.

Dietetic. Artificial feeding, deficiency of fats, and an excess of carbohydrates seem to be predisposing factors, therefore disorders of digestion must be treated on general principles. If proprietary and farinaceous foods are being used, they should be stopped and modified cow's milk should be substituted, or in young infants a young healthy wet nurse secured. For children six months or older beef juice, raw eggs, and fruit juice (especially orange juice) may be given in addition to milk with wonderful results.

Medicinal. Keep the bowels in good condition with fractional doses of calomel. Where marked anemia is present arsenic and iron are valuable. Profuse sweating is best relieved by atropine, grain $\frac{1}{800}$, for a child six months old, three times a day. Codliver oil and phosphorus in the form of emulsion are the best remedies we possess and should be used in every case. Olive oil in small doses several times a day is useful. If the stomach becomes irritable a little lime water containing a few drops of lemon juice will as a rule prove beneficial. Strong and drastic medicines should not be used, as they do more harm than good. If each case is considered

from an individual standpoint and the proper treatment instituted accordingly, sorrow, suffering, and deformity may be avoided entirely.

Dr. C. C. Henin, of Springfield, Mass., writes:

It is important that infants should be kept in nurseries that are well ventilated and clean, and should be placed in the open air as much as possible during the day. Even in the winter months the child may be well wrapped and placed out of doors for several hours. Life in the open air is of great importance. Removal to the country or the seashore is beneficial. Hydrotherapeutic measures are also of value, bathing the child in salt water, adding about a pound of sea salt to each bath and using a moderate amount of friction and gentle massage after the bath. A change in diet is essential. If the infant has been nursing, the mother's milk should be examined and efforts made to improve its quality. Failing in this, the child must be weaned or given a wet nurse. The best artificial food is cow's milk, properly modified. Of medicines, I give codliver oil, beginning with fifteen minims to thirty or more, three times a day, according to age. I use the official emulsion, fifty per cent. If the oil causes slight diarrhea, I add to the emulsion an equal quantity of lime water. At times I use very small doses of phosphorus, grain $\frac{1}{200}$, dissolved in olive oil. Other drugs I use in the symptomatic treatment of rickets are arsenic and iron in anemia and atropine in minute doses to control the profuse sweats.

Particular pains should be taken to avoid habitual postures, such as sitting cross legged. It is best to keep the infant in bed for the greater part of the day. The bed should be flat and rather hard, with no pillow beneath the head. Two or three times a day the patient may be turned upon its face, the buttocks lifted and the back pressed downward so as to correct the deformity. As the patient improves, particular care should be taken not to allow him to get about too early. As for the complications of rickets, gastrointestinal, respiratory, and nervous, they should be treated *secundum artem*.

Dr. J. Otis Carrington, of Malden, Mass., says:

Inasmuch as rickets is a chronic disease of nutrition, the result of insufficient or improper food, and markedly influenced by bad hygienic conditions, we must ascertain the etiological factors before attempting treatment.

PROPHYLACTIC.

1. *Antenatal.* There is very little evidence of hereditary rickets, but it is not poor policy to instruct expectant mothers who have constitutional taint or who have been subject to alcoholism or tuberculosis to eat plenty of nutritious food, take plenty of exercise out of doors in moderation, and get as much fresh air and sunshine as possible. If necessary, a course of phosphates may be ordered.

2. *Postnatal.* Breast feeding affords the ideal diet, unless the mother has a syphilitic or tuberculous taint. The disease is uncommon in sucklings unless nursing has been too prolonged, or complicated by pregnancy, or the maternal milk is faulty. Next in importance is a healthy wet nurse, being careful to exclude tuberculous and venereal taints. The nearest approach to breast milk is good cow's

milk properly diluted. Proprietary foods are not to be used if mother's or cow's milk can be obtained.

Do not overfeed the infant. Insist on the proper balance of proteids, fats, and carbohydrates. Hypalimination or hyperlimination as regards quantity or quality of food, or both, will cause rickets. Abundant fresh air, sunlight, daily bathing, and proper clothing, warm, but not too cumbersome, are essential.

GENERAL.

1. *Dietetic.* Correct the disproportion of proteids, fats, and carbohydrates in the maternal milk by improving the mother's diet, taking care to avoid excess or diminution of carbohydrates. Malassimilation in the infant will thus be overcome. A careful study of diet tables according to age should be made before attempting to modify cow's milk or proprietary foods. Great improvement often quickly follows the substitution of properly modified cow's milk for such foods.

Begin to feed the child at nine months, at six months, if necessary, bearing in mind that the food should be adapted to the infant's digestion without giving rise to putrefaction or fermentation. Do not allow starchy food more than once a day at the beginning. The increase in starches should be gradual. Articles of food comprise fresh raw cow's milk, cereals, and gruels (not too much nor too often), eggs, particularly the yolks, which are rich in phosphorus, light animal and vegetable soups, orange juice, beef juice, mashed potatoes; the gravy of fried bacon poured on bread crumbs is valuable after one year. It is beneficial to fortify milk feeding at four or five months.

2. *Hygienic.* Life in the open air as much as possible is the ideal for the infant afflicted with rickets. A veranda or room with sunny exposure will serve this purpose well. Let the clothing be warm, not too tight nor too heavy. Insist on a tepid bath daily. The addition of a pound of sea salt to the water is beneficial; so, too, is starch and sodium bicarbonate. Massage daily, but mild, increases the tone of the musculature, stimulates the circulation, and helps to prevent or mitigate deformity. Inunction of olive oil accompanying massage is a valuable synergist.

Avoid low lying, damp, marshy places and houses surrounded by trees. Instead, seek high, dry, sunny, and airy places. Do not limit free movement of the limbs by heavy swaddling clothes. Change of residence from city to seashore, mountains, or country frequently works wonders.

3. *Medicinal.* Drug treatment plays a minor role compared to proper dietetic and hygienic regimen, but it is a valuable ally. Codliver oil in quarter to one dram doses (one to five years), three times a day after meals, is of value when the stomach can retain it. Avoid giving large doses. Small doses can be retained and do not upset the stomach. Give it over prolonged periods, if possible. The anemia is combated with syrup of the iodide of iron in two to eight minim doses (one to five years), three times a day, alone or combined with the oil. Phosphorus gives splendid results in some cases and should have a thorough trial. Be watchful for toxic effects, and at their first appearance withdraw the drug and give appropriate treatment. Elixir of phosphorus in quarter to two minim doses in oil, three times a day

after meals, or oil of phosphorus in quarter to one minim doses three times a day in oil or milk. If these doses disagree, reduce the dose after a few day's intermission. Frequently under phosphorus walking is facilitated, teeth appear earlier, and anemia is decreased. Nervous symptoms, laryngismus stridulus, insomnia, restlessness, sweating, etc., are also much improved. Sodium bromide in appropriate doses should not be forgotten. Treat laryngismus stridulus or convulsions with inhalations of chloroform. Treat the respiratory and gastrointestinal complications appropriately as they arise.

4. *Correction of deformity.* This should be instituted early and careful vigilance maintained. A hard, flat mattress should be provided, and it is better to discard the pillow. During the active stage of the disease, the child with genu varum should be kept off its feet by applying external splints longer than the limbs. If the limbs curl up at night, keep the splints on. Practise gentle manipulation daily. Properly fitting plaster casts are efficient and furnish the best means of fixation, the bone having been overcorrected. Later, after five years of age, when the methods mentioned have failed, and the deformity is still marked, osteotomy is the usual procedure. Genu valgum is treated similarly to genu varum. Cyphosis demands the dorsal decubitus on a hard, flat bed without a pillow. If necessary, under forced extension, apply a properly fitting plaster cast or use the Bradford frame.

In girls, insist on the dorsal decubitus to prevent pelvic deformity and difficult parturition in after years. When sitting up, let it be for a short time, and keep the back and pelvis supported.

Deformities of the upper limbs are less important, and unless severe, generally get well, the general tendency of growing bones being to resume their normal shape.

Gentle massage of the entire body and manipulation of the affected parts should be conscientiously practised daily.

Dr. McW. B. E. Sutton, of Brooklyn, New York, observes:

The object in treating this condition is the removal of the cause, namely, malnutrition, lack of sanitary surroundings, and a deficient thyroid gland. While the latter condition is not considered in the textbooks, yet researches have shown it to be the most probable cause. Hygienic measures are perhaps the most difficult, as in large communities where there is much congestion, it is practically impossible to give rhachitic cases the proper sanitary surroundings. Fresh air is most essential, at night as well as in the day; use of the window board will prevent draughts.

Cool sponging followed by brisk rubs is of decided benefit in closing the pores of the skin in lessening the tendency to catching cold. In older children, exercise is useful, such as well directed gymnastics. They should lie on a hard bed without a pillow. While sitting, the shoulders should be braced, the trunk supported, and no walking should be permitted till the bones are firm. Sitting cross legged should be prevented.

The diet should be restricted as to the carbohydrates: sugar and proprietary foods should in some

cases be prohibited. Diet should consist, as far as possible, of nitrogenous foods and fats, especially milk, cream, eggs, and red meat according to age. As to drugs, though codliver oil has been so greatly advocated, I prefer a pure Italian olive oil. To aid the deficiency of the thyroid gland I give thyroid extract, grain $\frac{1}{8}$, for a child one year old, three times a day.

Regulation of the bowels is most important, so an evacuation of waste matter should occur daily. Phosphorus is the best drug we have to help bony abnormalities. For anemia I use the following:

R	Liquoris kali arsenitis,	2.23;
	Syrupi ferri iodidi,	8.00;
	Elixiris phosphori,	45.00;
	Elixiris digestantis, q. s. ad.....	90.00.

M. et Sig.: Teaspoonful half an hour after meals, three times a day.

Tablets of thymus gland (dissicated) I prescribe also, advising one tablet after each meal.

Contemporary Notes.

Phase of the Harrison Act.—A physician who receives a description by letter may not prescribe any narcotic drug therefor. This ruling of the Treasury Department at Washington may prove a hardship in cases where doctor and patient are temporarily separated, but it will drive out of business hundreds of mail order "treatment for drug habits" concerns, and prove decidedly advantageous to the profession as well as to the laity. Treatment by correspondence does not constitute personal attendance upon a patient, is the ground for this decision.

While it is certain, thinks the *Texas Medical News*, in its issue for January, 1916, that the Government will not, through its agents, deliberately prosecute any physician who, in the legitimate practice of medicine, innocently disobeys or neglects to obey one or other of the minor provisions of the Harrison act, there should be an exercise of greater care in the matter of full and exact compliance with the law; some good honest doctors are making the mistake of presuming too much on their unquestionable rectitude and failing to make and keep accurate record of their disposition of narcotic drugs.

Difficulties in Feeding British Military Invalids.—A hospital for wounded Indian soldiers has been established at Brighton, England, by the Indian Medical Service, observes the *Canadian Medical Association Journal* for December, 1915. It has accommodation for 2,000 patients, and its personnel includes officers of the Indian Medical Service, assistant surgeons (natives and Eurasians) belonging to the Indian Subordinate Medical Department, Indian nursing orderlies, water carriers, washermen, sweepers, etc. The various castes represented by patients and staff make the preparation of food an extremely complicated affair, for a cook must be of the same or a higher caste than the patient for whom he cooks. Again, a Mohammedan will eat beef, but to the Hindu the cow is a sacred animal; and a sheep must be slaughtered in a circumscribed manner according as it is to be eaten by a Hindu or a Mohammedan. In order that such customs may be adhered to, a special slaughter house has been provided in the grounds of the county abattoir.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.
CLAUDE L. WHEELER, A. B., M. D.Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.Subscription Price:
Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 8, 1916.

OUR ARMY NEEDS MORE MEDICAL
OFFICERS.

While we have urged on the medical profession the necessity of preparing for military service, we find that the Congressional committee on military affairs has failed to realize the important role which the medical department plays in modern warfare.

In some of the foreign armies there are as many as ten medical officers for each thousand troops, although military authorities generally accept seven for each thousand as the proper ratio. This latter proportion was adopted when the medical corps of the United States Army was reorganized in 1908. Since that time the fighting force has been enlarged without a corresponding increase in the medical corps, with the result that we now have only 4.06 medical officers for each thousand of the line. The consequence is that the army has been compelled to employ nearly one hundred civilian physicians and members of the medical reserve corps to meet the demands made on the medical staff, thus proving conclusively that the ratio of medical men to the fighting force is wholly inadequate even in time of peace: there would certainly be a most deplorable shortage if the army was called into active warfare.

The Hay bill, which provides for an increase of

140,000 in the fighting force supplies only 685 medical officers in addition to the present staff, making the ratio 4.09 a thousand, instead of seven as provided in 1908. As pointed out in a communication from Major General O'Ryan, commander of the National Guard of the State of New York, to the *Army and Navy Journal*, this shortage of medical officers is particularly unfortunate in view of the fact that at least one hundred officers of the medical corps of the regular army should be available for the instruction of the members of the medical reserve corps and of the medical corps of the National Guard. It is to be hoped that this serious fault in the Hay bill will be amended before its final adoption.

It is well that a distinguished officer outside of the medical corps should have interested himself in this subject. The legislative authorities discount the efforts of medical men to obtain an increase of medical officers in the army on the ground that they are prone to exaggerate their importance, therefore this independent suggestion arising from a line officer of high rank in the National Guard will probably have much more effect than anything that might be said by physicians. Now that the subject has been taken up, our readers should actively support Major General O'Ryan and endeavor to convince their representatives in Congress of the importance of a large increase in the number of medical officers.

It may be noted that the Senate army bill is somewhat more liberal in the matter of the medical corps, providing one surgeon for each 200 men in the field forces. This bill also provides for a material improvement in the status of dental surgeons and veterinarians. It is said that the House bill is not regarded with much favor in the Senate.

TAKE YOUR OWN MEDICINE.

If physicians were to take a dose of some of their own prescriptions, they would never give them to their patients a second time. It used to be supposed that the more nauseous the concoction the more efficacious it became; now not only the profession but the laity know otherwise, and the latter certainly deserve to have their drugs furnished in as agreeable form as possible.

It is not to be wondered at that the physician does not always know how his medicine will appeal to the senses of his patient, for in some of our best medical schools the taste and often the sight of the common drugs is considered of so little importance that the student has no opportunity of learning their sense-affecting qualities; and as for their combinations, while he may know something about chemical

incompatibilities, he learns practically nothing of the incompatibilities of taste, or sight, or smell, between patient and potion. Often he is taught, by his professor of therapeutics, formulas which could be vastly improved upon in appearance or taste or other qualities, without affecting their medicinal properties. If the pharmacist was consulted oftener, or the matter of compounding left to his discretion, prescriptions would often turn out better than they do.

While the maker and vender of proprietary products is amply rewarded, the pharmaceutical chemist who would serve the public through the physician does not always receive his due for the skill with which he prepares his compounds. The patient appreciates it, however, and the physician might do worse than to make use of ethical preparations—often truly “elegant”—which surpass his own concoctions.

Why should not the physician be familiar with the taste, smell, and sight of all his few prescriptions, just as any mechanic is familiar with every quality of his tools? Why should he not improve them, where possible, or accept the help of a specialist along this line of work? He will be none the worse off himself, and his patient will be grateful.

“BETTER DOCTORING FOR LESS MONEY.”

Dr. Richard C. Cabot, of Boston, seems to have the faculty of saying old things in a way which makes people take notice. His latest pronouncement, contained in the *American Magazine* for April, informs the public that pauper patients receive more skillful and better attention in hospitals than do the general public who pay private practitioners for their services. This has often been said; but Doctor Cabot's only hope for the future is to have hospitals so plentiful that every man can be treated by the hospital staff in preference to a private practitioner.

This venerable statement belongs to the dangerous class of half truths. Doctor Cabot has confounded, we think, the care which a wealthy patient receives in a private ward of a hospital with that meted out to the pauper in a ward of twenty or more beds. The rich patient may receive visits from his family and friends subject to prohibitions imposed only by the degree of his illness and not by regulations of the hospital. He may have consultations whenever he desires—by paying for them—and altogether his lot is very different from that of the pauper. There is a certain amount of discipline in the public wards to which the poor man is subject; he may receive visits only on certain days and at certain hours. Whereas the wealthy patient is in the hospital of his

own free will, the poor man is there perforce. Save in exceptional circumstances the attention he receives is confined to the reading of his chart; he is seldom questioned, for the busy visiting physician has not a moment to spare; odd moments are better devoted to private wards. Worst of all, there is an absolute loss of home atmosphere. Humble as that may be, it is usually craved for and is poorly replaced by the institutional surroundings of the public ward. If he elects to remain in his tenement, he will receive as good care from a trained charity nurse and probably as good treatment from a self respecting practitioner as he would at the hospital. The limits within which treatment for ordinary cases is confined are not very wide; indeed, the visiting physician of the poor is less likely to be a therapeutic nihilist than the hospital physician. In fact, the longer we meditate upon the lot of a pauper patient in a hospital, the less do we think of the trite epigram about the medical advantages enjoyed by the very rich and the very poor.

The hospital treatment now given by public institutions is given regardless of expense to the State and largely without remuneration to the staff. There may come a time in the socialization of medicine when all citizens will be treated, regardless of financial or social status, in the public hospital, and at the public expense; it will be no unmixed blessing. Meanwhile, the public may well content itself with the advice of the skilled practitioner in private practice. It is true that no single individual can hope to be such an all round specialist as to be master of every phase of modern medicine, but with the improvements in our methods of research, with the increased facilities for instruction, didactic and clinical, and with the higher preliminary education and qualifications required of the medical student of the present day, the public need not fear to intrust themselves to the hands of the modern, well informed practitioner in private practice, and the advice that they receive will be well worth the very small fees which they are called upon to pay.

THE CLINICAL ESTIMATION OF BLOOD PRESSURE.

The importance of recognizing changes from the normal tension of the blood in estimating the degree and character of certain disease processes has an established place in clinical practice. Neglect to take the blood pressure is inexcusable in conditions of the cardiorenal and circulatory systems where any light may be thrown on perverted physiology by such data. It is important, therefore, to have an accurate and ready means of making this determination, and, as refinement of clinical methods of diag-

nosis is constantly increasing, any new light on methods is to be welcomed.

It is asserted by Brooks and Luckhardt (*American Journal of Physiology*, XL, 49, 1916) that the ordinary methods of taking the systolic and diastolic pressures do not yield correct results, as the readings are usually too high. They found that the degree of error depended on, and varied directly with the resistance of the vessels to compression and expansion. To obtain a corrected figure it is necessary to modify the ordinary readings by a factor allowing for this variation in resistance. With softness of the artery the error decreases. Unfortunately there is not now available a method for determining this correction, and the matter requires further attention in the interest of accuracy. Brooks and Luckhardt found the same error inherent in the auditory estimation of blood pressure.

THE GRADUAL SOCIALIZATION OF MEDICINE.

The announcement that Mount Sinai Hospital, of New York, proposes the establishment of a pay clinic, where a certain scale of moderate fees will be charged in the outpatient department to patients having incomes of \$1,200 or less, has aroused vigorous protests from practitioners in New York who depend upon their practice for a livelihood.

The hospital authorities assert that the introduction of the system of moderate fees, instead of increasing the total number of patients, will simply remove from the pauper patient class that considerable number who, while able to pay something for medical attention, are still not in a position to pay the fees ordinarily charged by specialists in private practice. Whether this theory is correct time alone can tell; there can be no question, however, of the unpopularity of the proposal among the physicians of New York.

Statisticians inform us that not more than one fifth of the citizens of the United States have an income of \$1,200 or more. If the new policy of the Mount Sinai Hospital were to be universally adopted, four fifths of the population would come within the limit of income set by the hospital, and become hospital patients instead of private patients. If we assume that 25,000 of the physicians in the United States are supported by hospital, State, and municipal appointments, we should have the remainder of the physicians in the country, some 125,000 persons, dependent for a livelihood upon the fees derived from only one fifth of our total population. The very small income of the average physician under present conditions looms up as a princely sum compared to what might be expected if Mount Sinai's example was followed generally.

A NEW TREATMENT OF SOFT CHANCER.

Balzer (*Presse médicale*, March 9th) in an address to the Académie de médecine on March 7, 1916, spoke highly in favor of pulverized calcium carbide as a dressing for a soft chancre which has been previously cleansed with care; iodoform or aristol is alternated with the calcium salt. If in two days the progress of the chancroid has not been arrested, the carbide is reapplied. It is benign in its action. Balzer has also recommended calcium carbide as a dressing for ulcerating lupus.

Another of Balzer's dressings for chancroid is zinc filings made into a paste with a one per cent. solution of silver nitrate. Put on when fresh this dressing acts energetically. It may also be used for lupus.

PROCIDENTIA UTERI IN A NULLIPARA.

J. F. Keenan, M. B., communicates to the *British Medical Journal* for March 4, 1916, a case of this condition, rare in nullipare. "In the *Journal* for February 5th, p. 218, in a letter on Dystocia Due to Constricted Os, the writer, Dr. W. E. Fothergill, of Manchester, says that nulliparous women do not have procidentia uteri (the final or complete stage of prolapsus uteri). Three years ago I met with a case of complete prolapsus uteri in a woman aged twenty years, unquestionably a nullipara. The condition had existed for about five months, and was accidentally discovered by her mother, who brought her to me. The vulvar ring had contracted behind the extruded corpus uteri, and an anesthetic was needed before reduction could be effected. Here there was no overgrowth of the cervix. Cervix and body were both normal in size. It was a case of simple uncomplicated procidentia uteri in a nullipara. She was the daughter of a small farmer, and the condition was attributed by her mother to the carrying of heavy loads of farm produce. A pessary was put in; it was removed a few months afterward, and, so far as I know, the ailment has not recurred."

RAPID X RAY LOCALIZATION.

Edward W. H. Shenton, senior surgical radiographer at Guy's Hospital, London, communicates to the *Lancet* for March 11th a new method of ascertaining the depth of imbedded foreign bodies capable of demonstration by x rays. Mechanicians are now at work evolving a simple and businesslike method of applying this system, and for this reason he merely states the principle.

The tube is moved a short distance and the length of the excursion of the shadow of the foreign body noted. The screen is now raised until this excursion has doubled itself. The distance the screen has been raised is the depth of the foreign body. The extraordinary ease with which this can be accomplished, and the fact that no measurements are required except those given above, make this system the simplest and best the writer has ever come across. He hopes in a short time to be able to describe a piece of apparatus that will enable the depth of any foreign body to be ascertained in a few seconds.

News Items.

Virginia Public Health Association.—The annual meeting of this association will be held in Newport News on May 8th, 9th, and 10th.

Jefferson Hospital Clinical Society.—The following officers were elected at a recent meeting of the society: President, Dr. E. J. G. Beardsley; vice-president, Dr. Clarence D. Smith; secretary, Dr. Robert Pratt; treasurer, Dr. Erwin D. Funk.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, April 11th, Pediatric Society; Wednesday, April 12th, County Medical Society; Thursday, April 13th, Polyclinic Ophthalmic Society, Pathological Society; Friday, April 14th, Northern Medical Association.

The Prophylaxis of Malaria with Special Reference to the Military Service is the title of a bulletin by Captain Charles F. Craig, of the Medical Corps, U. S. A., which has been translated into the French language and issued to the sanitary officers by the French army, who are serving in malarial regions.

Medical Classes at the University of Pennsylvania to Be Limited in Number.—At the last stated meeting of the trustees of the University of Pennsylvania, it was formally resolved that under existing conditions the classes in the School of Medicine shall be limited to one hundred students each for the first and second years.

Louisiana State Medical Society.—On account of the general State election taking place on April 18th, the date selected for the opening of the annual meeting of the society, the executive committee has changed the date of the meeting to April 25th, 26th, and 27th. The meeting will be held in New Orleans, under the presidency of Dr. James C. Willis, of Shreveport.

The Department of Surgery of the Medico-Chirurgical College of Philadelphia.—Dr. Ernest Laplace will have charge of this department, which hereafter will be conducted under one head. The chair of the principles of surgery and clinical surgery, made vacant by the death of Dr. William L. Rodman, has been joined to that of surgery and clinical surgery, which has been held by Doctor Laplace for twenty years.

Hospital for Deformities and Joint Diseases.—A regular clinical meeting of the hospital will be held in the dispensary building, 41-43 East 123d Street, on Tuesday evening, April 11th, at 8:30 o'clock. Dr. Abraham Herzlich will read a paper on Differential Diagnosis in Hip Disease with Treatment, Dietetic, X Ray, and Fixation, with and without Traction in Bed. The advantages and disadvantages of Sayre's and Phelps's splints will be discussed. Dr. Charles Rosenheck is chairman.

American Proctologic Society.—A preliminary program has been issued for the eighteenth annual meeting of this society, which will be held in Detroit, June 12th and 13th, under the presidency of Dr. T. Chittenden Hill, of Boston. Twenty-four papers are listed on the program, and the meeting gives promise of being unusually interesting and instructive. Dr. Alfred J. Zobel, 518-520 Shreve Building, San Francisco, Cal., is secretary and treasurer of the society, and will be glad to furnish full information regarding the meeting.

Mental Clinics in New York.—The Department of Health of the City of New York calls attention to the following list of clinics where free advice and treatment may be obtained for those suffering from incipient mental diseases: Long Island State Hospital Clinic, Brooklyn, Clarkson and Albany Avenues, Saturdays, 10 a. m. to 3 p. m.; Polhemus Memorial Clinic, Brooklyn, Henry and Amity Streets, Fridays, 2 p. m.; Williamsburg Hospital Clinic, Brooklyn, Bedford Avenue and South Third Street, Saturdays, 10 a. m.; Cornell Medical College Clinic, New York, East Twenty-seventh Street and First Avenue, Tuesdays, Wednesdays, Thursdays, and Fridays, 10:30 a. m., and Thursdays, 7 p. m.; Free Synagogue House, New York, 36 West Sixty-eighth Street, Thursdays, 7:30 p. m.; Mental Clinic, New York, 155 Clinton Street, Saturdays, 4 p. m.; St. Joseph's Hospital Clinic, Yonkers, N. Y., Thursdays, 3 p. m. Competent specialists are in regular attendance.

The Right of Medical Reserve Officers to Practise in New York.—The Appellate Term of the Supreme Court of New York has recently decided in the case of Dr. James Haberlin against Paul W. Englehardt, that mere membership in the medical reserve corps of the army does not carry with it the right to practise medicine in New York State, which is granted to members of the medical corps of the army. This right is held to be restricted to members of the medical corps of the regular army, or members of the reserve corps on active duty.

New York City's Death Rate.—During the week ending April 1st, 1,649 deaths were reported to the Department of Health of the City of New York, compared with 1,831 during the corresponding week in 1915. The death rates for the two weeks are 15.40 and 17.47, respectively, in 1,000 of population. There was a decrease in the mortality from the infectious diseases, from cancer, heart diseases, influenza, lobar pneumonia, bronchopneumonia, and pulmonary tuberculosis; the only disease showing an increase was Bright's disease. The death rate for the first fourteen weeks of 1916 was 15.66, compared with a rate of 15.29 for the corresponding period in 1915.

Examination for Admission to the United States Public Health Service.—Boards will be convened at the Bureau of Public Health Service, Washington, D. C., and at a number of marine hospitals throughout the country, on Wednesday, May 31st, at 10 a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the United States Public Health Service. Candidates must be between twenty-three and thirty-two years of age, graduates of a reputable medical college, and must furnish satisfactory testimonials as to professional and moral character. For full particulars regarding the examination, address the Surgeon General, Public Health Service, Washington, D. C.

A Symposium on Alcohol.—At a stated meeting of the New York Academy of Medicine, held Thursday, April 6th, the evening was devoted to a discussion of the subject of alcohol. Dr. Francis G. Benedict, director of the Boston Nutrition Laboratory of the Carnegie Institution, delivered an address on the Investigation of the Influence of Alcohol on Man, with Special Reference to the Psychological Effects. Numerous lantern slides illustrated the address. Dr. Richard C. Cabot, of Harvard Medical School, spoke on the Relation of Alcohol to Personal Efficiency. The discussion was opened by Dr. Charles R. Stockard, professor of anatomy at Cornell Medical College, and continued by Dr. C. E. A. Winslow, professor of public health at Yale University, Dr. B. Sachs, Dr. Haven Emerson, Professor Frederic S. Lee, and others.

The Boylston Medical Prize for 1915 has been awarded to Dr. Wilson G. Smillie, of Cambridge, Mass., for an essay entitled Studies of the Streptococcus of Smith. For 1918 the prize will be awarded to the best essay on the results of original research in medicine, the subject to be selected by the writer, and the essays sent in competition for the prize must be in the hands of the committee on or before December 31, 1918. This prize is open to the public. The Boylston Medical Committee is appointed by the president and fellows of Harvard and consists of the following physicians: Dr. William F. Whitney, chairman; Dr. Harold C. Ernst, secretary; Dr. William T. Porter, Dr. Edward H. Nichols, Dr. Reid Hunt, Dr. Henry A. Christian, and Dr. John Warren. Doctor Ernst's address is Harvard Medical School, Boston, and he will be glad to furnish complete information regarding the conditions upon which the prize is awarded.

Personal.—Dr. Matthias Nicoll, Jr., of New York, has been appointed director of the division of public health education in the New York State Department of Health, and in addition will have charge of epidemiological investigations in the southern and eastern parts of the State.

Dr. Joel E. Goldthwaite, of Boston, has been appointed professor of hygiene at Smith College.

Dr. Henry M. Hurd, of Baltimore, professor emeritus of psychiatry at the Johns Hopkins University, and formerly superintendent of Johns Hopkins Hospital, gave a dinner on the evening of March 25th to celebrate the fiftieth anniversary of his graduation in medicine.

Dr. John A. Bropley and Dr. H. Maxwell Langdon, of Philadelphia, have been appointed visiting ophthalmologists to St. Agnes Hospital.

Examination for Admission into the Naval Medical Corps.—The next examination for admission into the Medical Corps of the Navy will be held on or about June 16, 1916, at Washington, D. C.; Boston, Mass.; New York; Philadelphia; Norfolk, Va.; Charleston, S. C.; Great Lakes (Chicago), Ill.; Mare Island, Cal.; and Puget Sound, Wash. The applicant must be a citizen of the United States, between twenty-one and thirty years of age, a graduate of a reputable school of medicine, and must apply for permission to appear before a board of medical examiners. Full information with regard to physical and professional examinations, with instructions how to submit formal application, may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C. Application should reach the Bureau of Medicine and Surgery not later than June 5, 1916.

Examination for Chief Statistician for Vital Statistics.—The United States Civil Service Commission announces an examination for chief statistician for vital statistics, for men only, to fill a vacancy in this position in the Bureau of the Census, Department of Commerce, Washington, D. C., at a salary of \$3,000 a year. The chief statistician for vital statistics is the administrative and statistical head and has full charge of the work of the Division of Vital Statistics. Graduation from a recognized medical school and at least four years' experience in charge of the vital statistics of a city or a State or in a position of similar importance requiring expert knowledge of vital statistics are prerequisites for consideration for this position. For full information regarding the examination, address the United States Civil Service Commission, Washington, D. C. All applications, properly executed, must be filed with the commission on or before April 25, 1916.

Free Clinics at the Government Bath House, Hot Springs, Ark.—Through the efforts of Dr. Lloyd Thompson, of Hot Springs, and Dr. William H. Parks, superintendent of the Hot Springs Reservation, a free clinic has been established at the Government Free Bath House. The purpose of these clinics, as set forth in the regulations, are, to furnish free medical aid to the indigent patrons of the Government Free Bath House, to study the clinical efficacy of the waters of the Hot Springs, and to exclude from the bath house cases which might menace the safety of its patrons. The following clinics will be maintained for the present: Medical, dermatological and syphilitic, genitourinary, and neurological. The medical clinic will be under the direction of Dr. William H. Deaderick and Dr. John M. Proctor; the dermatological and syphilitic clinic, under the direction of Dr. Lloyd Thompson; the genitourinary clinic, under the direction of Dr. E. H. Martin and Dr. E. A. Purdum; and the neurological clinic, under the direction of Dr. J. L. Greene. Assistants to the various clinics will be chosen from among the physicians of the city. Dr. William H. Deaderick has been elected chief of the clinic and Dr. Lloyd Thompson, secretary.

The Red Cross Seal Competition.—Announcement is made by the American Red Cross Society that New York State has won first place among the larger States for selling the largest number of Red Cross Seals per capita last December. New York competed in the class of States having a population in excess of 2,400,000, and won first place with a sale of 1.80 per capita, Wisconsin standing second with a sale of 1.46. Rhode Island wins first place in States with a population up to 1,250,000, her total sale being 2.29 seals per inhabitant, while Connecticut wins second place with a sale of 2.07 per capita. In States with a population from 1,250,000 to 2,400,000, Minnesota wins first place with a sale of 1.34, and Maryland is second with a sale of 0.72 per capita. The total number of seals sold in New York State was 18,243,126—an increase of 26.5 per cent. over 1914.

Of ten first prizes in the competition among cities of the country, New York State has five winners, Brooklyn, Rochester, Troy, Elmira, and Ithaca. Five other Empire State cities were given second place in their respective classes, Buffalo, Corning, Bronxville, Lawrence, and Garden City. All of the above ten cities, excepting Brooklyn, sold the seals under the State Charities Aid Association as State sales manager.

Formal presentation of banners to each of the first place winners will take place at the annual meeting of the National Association for the Study and Prevention of Tuberculosis, to be held in Washington, D. C., May 11th and 12th.

Vital Statistics of the City of New York for the Year 1915.—During the year 1915 there were reported to the Department of Health of the City of New York, 76,193 deaths from all causes in an estimated population of 5,468,190, corresponding to an annual death rate of 13.93 in a thousand of population. The total births reported numbered 141,256, with a rate of 25.83 in a thousand of population, and there were 59,097 marriages during the year, corresponding to a rate of 9.33. The total number of stillbirths reported was 6,413, with a rate of 1.17. The cases of contagious and infectious diseases reported during the year were as follows: Diphtheria and croup, 15,279; measles, 38,186; scarlet fever, 9,879; smallpox, 2; typhoid fever, 2,455; tuberculosis, 22,141; total, 22,141. The total deaths of children under five years of age numbered 20,291, and of these 13,866 were under one year of age.

The Care of the Insane in New York State.—New York State spent \$6,865,385.98 last year for the care of its insane in institutions, according to the annual report of the State Hospital Commission which was submitted to the Legislature. The per capita expenditure for maintenance was \$210.89, or only 57 3/4 cents a day. This included every item outside of buildings and permanent improvements. Patients under treatment in all institutions, October 1, 1915, numbered 36,664. Of these 34,308 were cared for in the civil State hospitals, 1,351 in hospitals for the criminal insane, and 1,005 in licensed private institutions. The capacity of the fourteen civil hospitals at the close of the year was 27,872. The institutions were thus overcrowded to the extent of 6,436 patients, or approximately 23 per cent. The average daily population of the State hospitals during the year, excluding paroles, was 32,555. The average daily number of patients on parole was 1,280. The increase in daily population over 1914 was 698, including paroles, and 559, excluding paroles. There was a total of 7,934 admissions to the civil hospitals during the year.

A Contagious Disease Hospital in the Bronx.—At the request of the commissioner of health, the Public Health Committee of the New York Academy of Medicine has again taken up the matter of the construction of a contagious disease hospital in the Bronx. In 1911 and again in 1912 the committee presented to the Board of Estimate and Apportionment the need of such a hospital, but the protests made by certain real estate interests delayed action and finally caused abandonment of the site originally owned by the department of health and the selection of another site for the proposed hospital. In 1914, \$125,000 of corporate stock was issued for the construction of the hospital. As the needs of the borough are much greater than the hospital accommodations which could be provided for that amount, it was decided to defer construction until another allotment of corporate stock could be secured. The committee voted to urge upon the Board of Estimate the issue of additional corporate stock so as to make possible the building of a hospital of at least three hundred beds, which is in accordance with the results of the investigation made on the basis of the incidence of scarlet fever, diphtheria, and measles in the Bronx and the estimated number of cases needing hospital isolation.

Civil Service Examinations.—Among the positions for which examinations will be held on May 6th by the New York State Civil Service Commission are the following:

Assistant Physician, New York State Hospital for the Care of Crippled and Deformed Children, West Haverstraw, Rockland County, N. Y. Salary \$1,200 increasing \$100 each year to \$1,500 with maintenance, including quarters, board, laundry, etc. Examination open only to men who are licensed medical practitioners in this State, who since graduation have had at least one year's experience on the resident medical staff of a general hospital. Special questions will be asked regarding laboratory work, pediatrics, and orthopedic surgery. Open to noncitizens and nonresidents. Unmarried men preferred.

Physiological Chemist, State Department of Health. Salary \$1,800 to \$2,500. Applicants should have a thorough knowledge of the principles of organic and physiological chemistry. They must have had at least three years' practical experience in physiological or biological chemistry. Open to men and women, nonresidents and noncitizens.

Special Investigator, Labor Department, State Industrial Commission. \$2,000.

For further information concerning these examinations write the State Civil Service Commission, Albany, N. Y.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted.

PITUITARY EXTRACT AS A CIRCULATORY REMEDY.

By LOUIS T. DE M. SAJOUS, B. S., M. D.,

Associate Professor of Experimental Therapeutics, Temple University.

The action of pituitary extractives on involuntary muscle tissues is a direct one, taking place without the intervention of nerve stimulation, and is more lasting than that of epinephrine. Although, in animal experiment, a rapidly established tolerance of the vascular system to pituitary extract has been observed, this apparently does not apply in the clinical use of therapeutic doses. H. B. Schmidt, for example, having noted the same or even better results after a second or even a third hypodermic injection of the drug.

The pressor action of pituitary extract is held to be more marked in conditions associated with low blood pressure, e. g., after hemorrhage or venesection, or in peritonitis, than in health (A. Fröhlich). This, among other features, has led to its use in operative shock, threatened collapse in acute fevers, and other similar conditions. C. A. Hill, in a series of 800 abdominal operative cases in which pituitary extract was used, noted complete absence of symptoms of shock, except in two or three instances, and made it a routine practice to inject fifteen minims hypodermically before patients left the operating room. Intramuscular, or better intravenous administration gives the most satisfactory results in the presence of actual circulatory depression.

Several sphygmomanometric studies of the clinical action of posterior lobe extracts have been made. According to Beck and O'Malley, such an extract is capable of increasing the blood pressure by eight to thirty-eight mm. Hg., the pulse rate meanwhile falling four to seventeen beats to the minute. Schmidt, administering the same preparation of the posterior lobe in febrile cases, found the diastolic pressure usually raised, sometimes only slightly—while the systolic pressure was variable. The drug usually began to act in from fifteen to thirty minutes, and its effects continued from one to two hours. A. W. Hewlett has pointed out that pituitary extract is the only drug which will convert the bounding, poorly sustained pulse of fever into a relatively normal pulse form. This bounding pulse is not necessarily associated with low blood pressure, and it is suggested that the vascular relaxation causing it may involve only the larger arteries, the arterioles remaining undilated. The dose used in Hewlett's cases was usually one to 1.5 c. c., subcutaneously; similar effects could, however, be obtained with smaller doses. Schmidt observed a like improvement in the form of the pulse in two cases of pronounced dirotism, without fever. While the extent to which pituitary extract is beneficial in the collapse and vascular dilatation of acute febrile

cases has not as yet been definitely ascertained, still Hewlett's observations suggest that at least one element of the circulatory weakness in these cases may be radically influenced by pituitary extract, and that by combining it with other circulatory stimulants acting in a different manner, results better than those heretofore secured may possibly be obtained.

Additional observations of the action of pituitary extract in the failing heart of acute infections and also in chronic cardiac disease with loss of compensation, have been made by Zueblin and by Rohmer. The former, in a case of acute endocarditis with dilatation of the heart, found the systolic and diastolic blood pressures augmented two hours after an injection of pituitary extract from ninety to 110 mm. and from sixty to ninety mm. respectively. The improvement in the pressures was maintained twenty-four hours later, the area of cardiac dullness being also materially reduced and the general condition better. In his other cases the effects on the blood pressure varied. In general, Zueblin considers the drug of most value where, with a failing heart, immediate action to tone up the myocardium and contract the vessels is necessary. A myocardium merely weakened and tired out seemed to respond nicely. In marked fibrosis of the vessels in the aged, however, he fears its effect. Where there is a possibility of impending apoplexy, it should not be used. It is also contraindicated where sclerosis of the ordinary vessels is suspected. Klotz says he has had good results in peritonitis with pituitary extract, by intravenous infusion with saline solution. Where a patient is already in collapse it may yet be possible to undertake operative treatment if such an infusion is administered first.

Untoward results have been reported. Thus W. F. Seeley refers to two cases in which symptoms of collapse, such as pallor, cold sweat, and a rapid irregular pulse, followed injections (presumably hypodermic) of this drug. Beco and Plumier, though observing subcutaneous or intramuscular injections, even of large doses, to be very well borne, noted such symptoms as dizziness, headache, tinnitus, a sensation of flushing in the face, thoracic oppression, a tendency to syncope, pallor cold sweat, and cold and cyanosed extremities. These disturbances, which always passed off soon without persistent harm, are ascribed to excessive peripheral vasoconstriction. Such unpleasant experiences appear, indeed, to have been unusual, and are hardly to be wondered at in view of the composite nature of the drug and the possibility of marked variation in the content of one or more of its active constituents. In the hands of the vast majority of observers, pituitary extracts seem to have proved innocuous, though not uniformly reliable from the therapeutic standpoint. The latter difficulty may in the future be in part overcome by improved methods of preparation and standardization.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Fourteenth Communication.

NITROGLYCERIN.

To have at hand a drug which will produce a definite action with fairly predictable certainty is very satisfying to both pharmacologist and physician. Such a drug is nitroglycerin. We know that a great fall in blood pressure can almost always be produced by a moderate dose of glonoin especially in dogs and in men not habituated to the drug. This fall is due to physiological as well as physical equivalencies following a remarkable dilatation of the bloodvessels. The manner in which nitroglycerin produces this dilatation has been repeatedly investigated and it now seems well established that the drug effects a direct detonizing action on the unstriated muscles of the arteries and veins. This curious action is especially marked in the splanchnic vascular region, the cerebral distribution, and in the blushing area of the head and neck. No satisfactory evidence is at hand so far to show if the drug has a similar effect on other nonstriated muscle. This detonization, with its consequent relaxation of the bloodvessels, permits a great accumulation of blood in these areas, the splanchnic vessels alone, as is well known, being capable of holding all the blood of the body.

The action on the splanchnic area is more prompt than that on the cerebral, and thereby results, in many cases, in preliminary symptoms of vertigo. This is soon followed by cerebral engorgement, frequently accompanied by an intense and blinding headache, and a marked flushing of the face and neck. All these symptoms become less marked as tolerance increases for the drug, thereby indicating the probable need for increased doses if constant therapeutic effect is to be maintained.

The heart is accelerated both directly and indirectly. There is a centric depression of the inhibitory control, beside the direct action on the coronary vessels with a consequent accumulation of endocardiac irritation. There seems to appear also the normal balancing action between heart rate and blood pressure whereby variation of the one is compensated in part at least by an opposite activity of the other. Respiration is slightly deepened and accelerated, probably as the result of diminished oxidation. Other structures seem to be but slightly affected.

Nitroglycerin and the nitrites are of value in conditions accompanied by abnormally high blood pressure. In Bright's disease, for example, there is present such a condition, which yields promptly though temporarily to the action of the nitrites. It should be borne in mind, however, that we have here simply produced a new condition that for the present is more conducive to physical welfare; we have assisted Nature to a passing adaptation. Unfortunately the drug does no more than this, the real cause of the high blood pressure—said by Crile to be excessive adrenal activity—being apparently in no wise affected. Consequently, as soon as the reaction to the drug disappears, a new dose must be

administered if the reduction in blood pressure is to be maintained, and doses must gradually be increased in order to balance increasing tolerance. There seem to be no secondary by effects such as would preclude ascending doses, but physiological logic leads us to believe that by resurgence undue muscle resistance is ultimately developed in the arteries, with a consequent final condition of marked sensitivity to the more normal adrenal influence.

The nitrites first achieved repute in the treatment of angina pectoris, in which field they continue to hold a meritorious place.

Therapeutics of Congenital Syphilis.—Although excellent and lasting results were obtainable with mercurial treatment alone, three or four years were required for such results in children in whom the treatment had been initiated during infancy. In older children the duration was still greater. With the introduction of salvarsan and neosalvarsan Erich Müller (*Berlin. klin. Wochschr.*, Oct. 4, 1915) perfected a new routine of treatment of congenital syphilis which yielded equally good results in a shorter time. During the first, fourth, seventh, and tenth weeks of each course two injections of calomel suspension are given each week. One dose of neosalvarsan a week is given in the second and third, fifth and sixth, eighth and ninth and eleventh and twelfth weeks. During the thirteenth and fourteenth weeks four doses of calomel are given. Each course is followed by a period of three months without treatment. The doses employed are one mgm. of calomel and fifteen mgm. of neosalvarsan for each kgm. of body weight. The calomel is given intramuscularly, the salvarsan either intramuscularly or intravenously depending upon the availability of veins. The treatment may be modified by substituting blue ointment inunctions for the calomel injections. The neosalvarsan should be dissolved in the smallest possible amount of water. The courses of treatment are repeated at the intervals stated until the Wassermann reaction remains negative. This reaction is tested immediately before each treatment and eight to ten days after. In favorable cases three courses sufficed to render it permanently negative; in others five or more courses were required, i. e., from one and a quarter year to three years elapsed before treatment was complete.

Treatment of Malignant Measles by Intravenous Injections of Colloid Gold.—L. A. Longin and V. Camuset, in *Presse médicale* for February 10, 1916, discuss the treatment of grave measles, such as was witnessed in a recent severe epidemic. In the majority of hospitals the mortality from the disease exceeded twenty per cent. In the typical cases the temperature rose to 40°, 41° C., or even higher, the respiration rate to 60, and the pulse to 130, the face being cyanotic and congested and the lungs exhibiting signs of congestion, without rales or bronchopneumonia. All ordinary measures, including epinephrine in saline solution, venesection, and oxygen subcutaneously, were a complete failure. Colloid gold subcutaneously was also devoid of effect. Intravenous injection of one c. c. of col-

loid gold, however, exerted a most striking action, characterized by a severe chill beginning one half hour after the injection, followed by a copious sweat, a temporary rise in temperature of one or a fraction of a degree C., and then a fall of temperature sometimes of as much as 4° C. Thereafter the temperature often never rose above 38° C., and the condition returned to that of an ordinary mild case of measles. Even where the drop in temperature was not marked, distinct subjective improvement was noticeable and the facial congestion and cyanosis passed off. Several patients, in whom results had not been permanent, requested another injection. In cases where the temperature was nearly 41° C. at the time of the injection a record was taken every half hour thereafter, and where the reaction due to the drug was observed to carry it up to 42° a cold wet pack was used to avoid hyperpyrexia. Although one c. c. of the colloid gold preparation, equivalent to 0.25 mgm. of actual gold, was the usual dose, 0.5 c. c. was frequently deemed sufficient, and is recommended as the customary initial dose, the reaction from this dose being marked in some individuals (some reacting only moderately, however, from as much as 1.5 c. c.). In malignant cases with immediate cause for apprehension, one c. c. should be given at once. The drug should, in fact, always be given promptly, even the very serious cases being sometimes apparently mild at first.

A Substitute for Glycerin.—Owing to the present shortage of glycerin, P. G. Unna (*Berliner klinische Wochschr.*, October 4, 1915) suggests means for securing the same therapeutic actions—lubrication and dehydration—without its use. For lubrication any one of many oily substances may be employed but for the dehydrating action there are only two substitutes, 1, a strong solution of sugar in water; 2, a solution of calcium chloride. Syrup increases the flow of saliva, checks thirst, moistens the dry mucosa of the upper respiratory passages in catarrhal conditions, and in enemas lubricates the large intestine. It differs from glycerin in being a reducing agent, and is therefore useful as a vehicle in aphthous conditions. Calcium chloride, either in concentrated aqueous solution or incorporated in salves, replaces glycerin in callous and pruriginous eczema, for the softening of furuncles, and as a cooling application. An excellent mixture for application to boils can be prepared as follows:

R Kaolini,	40;
Syrupi,	30;
Liquoris calci chloridi (B. P.),	20;
Ichthyolis,	10;

M. et fiat pasta.

Intravenous Injection of Alkaloidal Quinine in Minute Doses in Malaria.—F. Roux (*Bulletin de l'Académie de médecine*, February 1, 1916) states his belief in intravenous quinine medication as the method of choice in malaria. The likelihood of hematuria, hepatic congestion, tinnitus, and deafness is rendered all the greater by the rapidity of introduction of the drug. To obviate this, Roux has recently hit upon the use of basic (alkaloidal or uncombined) quinine, administered in colloidal form in a pseudosolution containing only two or three mgm.

of quinine to the c. c.; excellent results were obtained. All the patients had already been treated for months by the usual methods, most of them having received eight to twenty-five 0.5 gram hypodermic injections of quinine, without result. Many were followed for over a month after the alkaloidal quinine treatment. In all instances the malarial paroxysm, previously refractory, was completely arrested by an injection of two c. c. of the basic quinine (mild cases) or two or three like injections (cases of intermediate severity). In grave cases, a four c. c. dose was given at once, repeated if increasing if necessary the next day, or replaced by two c. c. injections on the succeeding two days. The total amount of quinine given in the course of treatment thus never exceeded 0.03 gram (one half grain). The injections had a marked influence on the enlarged spleen, especially on the tenderness in the splenic region, which disappeared after one or two injections. They also easily overcame the obstinate neuralgic pains. There was an almost immediate return of appetite and the ability to sleep. Further researches are being undertaken.

Treatment of Ecthyma.—Bodin, at a recent reunion of the surgeons of the Fifth French Army (*Presse médicale*, February 3, 1916), warned against the use of wet dressings in this condition, where it affected the limbs. Where inflammation is acute and crusts are abundant, it should be left on only a few hours, or, at most, a day. The best results are obtained with pastes and powders. Crusts having been removed from the ulcerations, these should be touched with a one per cent. solution of silver nitrate, dried with cotton, then dusted with thymol iodide or subcarbonate of iron. Around it, a zinc paste containing calomel should be applied to prevent spreading of the infection. When superficial repair is slow, the silver nitrate stick may be used, and a red cinnabar plaster extending beyond the ulcer only one or two mm. applied.

Trichloracetic Acid in Dermatology.—Charles N. Davis (*Jour. Cutan. Dis.*, November, 1915) recommends the use of this drug in degenerative seborrhea and pigmented moles. The method he employs is as follows: 1. The part is thoroughly cleansed with benzine to remove the oil and to facilitate penetration of the acid. 2. The area is then cleansed with an alcohol pad. The acid is then applied by means of a wooden toothpick, around which a little cotton is twisted, and the application is continued until the surface turns milk white. A pad of cotton, wet with water, is then applied. This appears to cause the acid to act more thoroughly on the tissues. When it is felt that the acid has acted sufficiently, it is neutralized with an alkaline solution. The treated area is then covered with ichthylol varnish, twenty-five per cent., ichthylol in a saturated solution of boric acid, to which is added eight grains of tragacanth. When nearly dry, a bit of teased cotton is applied. The patient is seen daily, and if there are no signs of secondary infection, the original dressing is allowed to remain until the wound heals over. Good results have also been reported by the use of this treatment in pigmentations, papillomata, nevus, and some other diseases.

It has also been employed in lupus vulgaris; also in the soft and flat variety of warts, in the warty mole, and in the verruca senilis type. In this latter affection the author suggests a preliminary treatment, which consists of an application of salicylic acid, which is covered, in turn, by a larger piece of ichthyl plaster. The patient wears this dressing continuously, if possible, for four or five days. It is then removed and the acid is applied with the same technic as described above. In xanthoma palpebrarum this acid constitutes an ideal method of treatment. As a rule, one painting suffices to remove the growth. The part to be treated is stretched out and the acid is painted on and the area treated is covered with ichthyl varnish without cotton. In molluscum contagiosum, the acid is most satisfactory. It is comparatively painless when applied to the growths, and the adjoining healthy parts of the skin remain untouched. One application is usually sufficient and it may be followed up, when the lesions are on the trunk, by the use of germicidal dusting powder. The author has also used this acid in beginning rodent ulcer, in fissures about the mouth and lips, in lupus erythematosus, in milium, and in acne varioliformis.

Tartar Emetic and Metallic Antimony in Kala Azar.—This disease was beneficially influenced by the intravenous administration of tartar emetic in each of a series of six consecutive cases reported by Leonard Rogers and N. H. Hume (*Brit. Med. Jour.*, Feb. 26, 1916). The tartar emetic was prepared in a two per cent. solution and used at first in doses of half to one c. c., later three to four c. c. The dose in each case was increased by one c. c. until from ten to twenty c. c. were given at once. No serious ill effects were seen from such large amounts of the drug—twenty cgm. Great care was used to avoid the injection of the drug into the subcutaneous tissues, as this is likely to produce severe inflammation. The injections were made on alternate days. The treatment was continued until the temperature remained normal for several weeks and the patient began to gain in weight. In nervous women and in children good results were secured from the inunction of finely divided metallic antimony in a ten per cent. ointment of lanolin.

Rational Treatment of the Morphine Habit.—Charles E. Scelth (*Journal A. M. A.*, March 18, 1916) advocates the following plan, which depends mainly on the use of the subjoined mixture:

R	Scopolaminæ hydrobromidi,	gr. 1/100;
	Pilocarpinæ hydrobromidi,	gr. 1/12;
	Ethylmorphinæ hydrochloridi,	gr. ss;
	Fluidextracti rhamni pursh.,	℥xv;
	Alcohol,	℥xxxv;
M.	Aquæ, q. s. ad	℥i.

If the patient is addicted to more than ten grains of morphine daily, he is given one dram of the mixture every three hours day and night for six days, half of that dose on the seventh day, a fifteen minim dose on the eighth day, fifteen minims three times during the day only on the ninth day, and thereafter none. If between five and ten grains of morphine were used daily, the initial dose of the mixture is forty-five minims, and for those who take less than five grains it is thirty minims. In both cases the

course of treatment and the reductions follow the same plan as with the larger doses. Use of this mixture is followed by tonic treatment. It is preceded by the administration of three compound cathartic pills, followed by a saline cathartic. Usually the desire for morphine is gone by the fifth day and there is little discomfort. The treatment seldom leads to delirium and withdrawal symptoms are uncommon. It can be carried out satisfactorily at home with the aid of a competent nurse. The method may be modified with advantage in further reducing withdrawal symptoms by administering half the patient's accustomed dose of morphine on the first day in several fractions, one quarter on the second, and one eighth on the third, and no morphine thereafter. With this the mixture is given as described.

Treatment of Tonsillitis.—Lapat (*Jour. Med. Soc. State of N. J.*, March) removes the exudation from the tonsils by means of hydrogen peroxide and then iodine is applied to the crypts. These applications are made twice daily. In addition, the throat is sprayed every two hours with the following solution:

Ichthyolis,	℥ii;
Olei anisi,	℥iii;
Aquæ, q. s. ad	℥ii.

For perspiration in the axillæ bathe with weak vinegar and apply the following on a gauze pad:

Salicylic acid,	gr. xx;
Starch,	℥ii;
Powdered alum, ad	℥ss.

For internal treatment give precipitated sulphur in dram doses once daily in milk. For counter irritation mix chloroform, camphor, and sweet oil, one ounce of each. Fold a piece of muslin three or four times, saturate it with the mixture, and cover with dry, warm flannel. Blistering takes place in three minutes.

Treatment of Oral Cancer with Radium.—Anton Sticker (*Berlin. klin. Wochschr.*, Oct. 4, 1915) records fifteen cases in which he obtained satisfactory results from radium, and thinks that this offers a more efficient plan than surgical removal. Radium prevents deforming loss of tissue, and the gradual destruction of the cancerous growth gives rise to antibodies which seem to prevent development of recurrences. The treatment is best carried out with special applicators attached to the teeth, which are retained for twelve hours at a time.

Treatment of Tetanus.—Salvatore Fichera (*Riforma medica*, February 28, 1916) reports two cases of tetanus cured by the use of antitetanic serum with phenol and chloral. The use of phenol was first advocated by Bacelli, and its action is mainly on the tetanic toxin, but also on the nerve cells which have been poisoned by the toxin. It is not only therefore a symptomatic remedy but also a curative measure almost equal to antitetanic serum. The phenol is injected in doses of 0.10 to 0.30 gram in two per cent. solution of chloral hydrate and may be obtained either combined or alternated with the serum. The two cases in point, together with four previously reported by Fichera, were brilliantly successful.

Antityphoid Vaccination in the Insane.—G. Vidoni (*Rassegna di studi psichiatrici*, November-December, 1915), from many observations, advises against antityphoid vaccination in mental cases except in the event of urgent necessity. The reaction is very marked and is in relation to the severity of the mental derangement. Practically all mental conditions were made much worse by the injections, especially epilepsy. The local reaction was also more intense than in the mentally normal.

Potency of American Digitalis.—L. G. Rowntree and D. I. Macht (*Journal A. M. A.*, March 18, 1916), using Hatcher's cat method of standardization, found that different samples of the infusion varied widely in activity, depending on the samples of leaf and upon the mode of preparation. American, English, and German leaves of high quality were compared; domestic leaves were the most active. They express the belief that the standardization of digitalis for clinical use is necessary and that the American leaf is superior to the foreign.

Prophylaxis of Pediculosis.—Guido Izar (*Riforma medica*, March 16, 1916) recommends the use of a saturated solution of ammonia gas in benzene with the addition of five per cent. of naphthalene. In this mixture the ammonia destroys the nits, the benzene acts mainly on the pediculi themselves, while the naphthalene prevents reinfection for at least a time. It is the most penetrating agent yet found for ridding clothes of this pest.

Treatment of Gonorrheal Epididymitis.—Henry H. Morton (*Texas Medical Journal*, March, 1916), for preventive treatment, has the patient wear a suspensory and keep as quiet as possible. No urethral instruments are passed and no forced injections given. When present, the patient is kept in bed, the scrotum supported with a handkerchief and bandage, and continuous hot applications are made—either of flaxseed or of lead and opium wash. Cold is apt to leave a hard, tough infiltration of the epididymis, which may cause sterility. If very painful, twenty per cent. guaiacol ointment is used, covered with cotton and heated. In recurring epididymitis or in very severe cases not responding to treatment, the Hagner operation is indicated. In tuberculosis of the epididymis, epididymectomy is done when the testicle is not involved; when it is involved, castration.

Treatment of Epidemic Meningitis.—Josephine B. Neal (*Journal A. M. A.*, March 18, 1916) says that the commonest errors are the giving of too few doses of serum if the patient improves after the first one or two and the failure to continue if improvement is slow. At least four doses should be given in the most favorable cases. The average case needs from four to seven doses on consecutive days until the patient seems to be out of danger. It may be necessary to make spinal punctures during convalescence for the relief of pressure. There is a small proportion of cases in which a large number of injections may have to be given before treatment is successful, and in a certain number of these death will ensue. Caution must be exercised when doses larger than twenty c. c. are given, even when very large amounts of spinal fluid have been withdrawn.

Hectine in Syphilis.—French and Mills (*Lancet*, June 26, 1915) report a case of intractable syphilis which was not benefited by either salvarsan or mercury. Hectine was given in 0.2 gram doses daily, or on alternate days. Three courses of ten doses were given with favorable results.

Treatment of Hypothyroidism.—Scott (*Jour. Med. Soc. State of N. J.*, March) tests the blood pressure both before and during treatment. Hypothyroidism is usually associated with hypertension. In these cases the thyroid extract is not well borne. To overcome this, suprarenal extract is given, the proportion being ten grains of suprarenal extract daily to five grains of thyroid.

Treatment of Uncinariasis.—According to the *Charlotte Med. Jour.* for March, 1916, for twenty-four hours preceding the administration of drugs, no meat or vegetables should be given. Oil of chenopodium is administered in one capsule after breakfast, the dose being about ten minims for every five years of age. This is followed by magnesium sulphate, one hour later. This administration is repeated for three days and then stopped. It has the following advantages over thymol: Patients are able to rise for dinner and remain out of bed; they are not sluggish and nonambitious; the length of time in the hospital is reduced, as the oil can be pushed for two days and then, after an interval of two days, repeated, taking eight days in all, compared with two months when thymol is administered; a negative stool is usually found after one or two treatments. Mixed infection with the round worms requires both santonin and thymol, but oil of chenopodium acts remarkably well in both infections. The greatest advantage, however, is the nontoxicity of the drug in therapeutic doses.

Alarming Symptoms from Diarsenol.—Abner H. Cook reports (*Journal A. M. A.*, March 18, 1916) three cases in which the administration of this Canadian preparation of dioxydiamidoarsenobenzol produced alarming symptoms of collapse. All of the patients recovered, but in two albumin and casts persisted in the urine for more than three weeks.

Continuous Saline Proctoclysis in the Pulmonary Complications of Infectious Diseases.—P. Emile Weil, at a meeting of the surgeons of the Fourth French Army (*Presse médicale*, February 14, 1916), stated that saline proctoclysis by the drip method had given in typhoid fever results as good as, if not superior to those of the cold bath treatment, even where the latter was practised under the most favorable conditions. It exerted a most happy influence on the symptoms and the lung complications. Thus in the pulmonary difficulties of typhoid fever, dyspnea was relieved and the physical signs of lung condensation caused to disappear by the measure. Even in acute, frank pneumonia, the procedure at once reduces the dyspnea and liquefies the rusty, viscid, and adherent secretions. The heart is quieted, marked diuresis supervenes, and the crisis ordinarily occurs on the fifth day, though the physical signs persist a few days longer. The procedure, which is advantageous in its simplicity, is recommended in infectious pulmonary involvements.

Pith of Current Literature.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

February 1, 1916.

Goitre, Cretinism, and Myxedema in the Hautes-Vosges District, by Léon MacAuliffe.—In the course of a stay of seventeen months as school inspector in the region referred to, the author examined 2,311 children ranging in age from two to fifteen years. Of these, 288 showed marked thyroid enlargement, eighteen had voluminous goitres, four had infantile myxedema (two of these with a unilateral goitre), three were cretins, and two semicretins. About ten children had a distinctly cretinous facies, but were nevertheless bright enough to be in school. The frequency of thyroid enlargement rose from the second to the ninth year of age, then diminished especially after the eleventh year. Large goitres were met with at as early an age as five years. Chemical analysis of the water showed absence of bromine and iodine. The water came exclusively from granitic soil, and was cold, poor in gases and mineral matter, and may have constituted an excellent culture medium for a parasitic organism. Consanguineous marriage was found to be rare in the district, the inhabitants of which were healthy. In the more elevated portions of the region, practically no meat, except pork, is eaten.

PARIS MÉDICAL.

January 2, 1916.

Hypertrichosis Following Trauma of the Extremities, by Lebar.—Among 281 cases of wounds of the extremities under observation, no less than forty-four showed distinct, localized, excessive growth of the hairy covering. In thirty-four of these, injury to one or more nerves was found—in sixteen, to the radial nerve; in seven, the median; in five, the ulnar; in five, the sciatic; and in one, the brachial plexus. In five of these cases two or more nerves had been injured. These injuries were of various sorts—compression by callus or cicatricial tissue, complete or incomplete section, etc. Of the remaining ten cases, eight had no nerve injury at all, and showed normal electric reactions, while two had neuropathic paralysis. The hypertrichosis observed was in some instances very pronounced, the dorsal surface of the hand and wrist being covered with a thick black hairy layer, and the tufts over the fingers including hairs 1.5 cm. long or more. In a case of slight injury to the ulnar nerve, the entire dorsum of the hand, the dorsal and a part of the palmar surface of the forearm, and the arm up to the deltoid muscle, showed a heavy growth. The area of hairy overgrowth never corresponded to the area of peripheral distribution of the injured nerve, sometimes, in fact, being most marked in the distribution of an intact nerve. The natural coloration of the hair was always retained. Shaving was followed by return of the hairy overgrowth. No relation existed between the degree of nerve injury and the intensity of hypertrichosis. The phenomenon is ascribed, in the first place, to immobilization, either through fear of pain, paralysis, or the use of

immobilizing apparatus, this removing muscular activity and, therefore, upsetting the reflex trophic impulses from the spinal centres. Hairy growth, according to the prevailing view, being dependent upon the sympathetic system (a nerve without definite peripheral areas of distribution), the special disturbance of this function is probably due to injury to sympathetic nerve fibres, either those accompanying the nerve trunks or those distributed with the bloodvessels.

BRITISH MEDICAL JOURNAL.

March 4, 1916.

Delayed Tetanus, by Gilbert Barling.—Three cases are cited. In one the symptoms of tetanus first appeared forty days after the receipt of the wound, which was a small flesh wound only and was completely healed at the time of onset of symptoms. The second patient developed his first symptoms fifty-one days after injury and the third fifty-three days after. In each of these two there had been a foreign body in the wound, though in the first this had been removed. The last two patients recovered under the administration of antitoxin and general treatment, including surgical care of their wounds. The first patient succumbed to gas gangrene, which developed seventy-three days after injury. He recovered from his tetanus before the gas gangrene set in.

LANCET.

March 4, 1916.

Etiology of Sarcoma in the Rat, by Albert S. Leyton and Helen G. Leyton.—On the basis of the observation that the serum from rats bearing sarcoma manifested hemolytic properties similar to those encountered in diseases of bacterial origin the authors sought evidence of bacteria in transplantable rat sarcoma of the Ehrlich strain. After sterilization of the surface of the removed sarcomata these were finely minced and emulsified with sterile saline solution and passed through a Chamberland filter. From cultures made from the bacteria-free filtrates of several different tumors there grew a streptothrix. Several rats injected with these sarcoma filtrates developed perfectly typical sarcomas. The authors were loath to believe their own findings at first, but were able to repeat and forced to accept them. They believe that the organism passes the filter in spore form and gains entrance to the nuclei of the cells after inoculation, giving rise to the typical sarcoma. Further confirmation of this theory was found in the successful treatment of several inoculated rats by the injection of several dyes which had affinities for the cell nuclei.

MEDICAL RECORD.

March 17, 1916.

Pathogeny of Diabetes and Fecal Disinfection, by C. Delgado Palacios.—The primitive phenomenon of the pathogenic mechanism of diabetes is an excess of ammoniacal and acid fermentation of the contents of the large intestine, and therefore, in accordance with this conception, diabetes must be considered as a disturbance of a fecal origin. Experimental diabetes is produced in the dog by means of

fecal putrefaction and resorption. Diabetes being entirely external and bacterial, is curable by external and bacterial methods, namely, prolonged fasting and restricted diet. Fecal disinfection is the radical treatment and may be carried out by chemical antiseptics, surgical procedures, dietetic and hygienic measures, and by biological antagonism. *Micrococcus oxycyanogenes* is a biological antagonist to the putrefactive bacteria of the intestine by means of its coloring matter, and when methodically ingested it produces absolute disinfection of fecal matter, which becomes green in color and entirely odorless.

Continuous Transfusion, by Alfred Kahn.—This is a mutual transfusion where there is a true interchange of blood between two individuals, and it has been successfully carried out by Kahn on dogs for periods of one half to two hours. The production of immunity which was attempted could not, however, be proved.

Soap, by G. K. Dickinson.—Soap is now recognized to be antiseptic, and to be efficacious must produce a lather; bacteria rubbed into soap or dropped on its surface are incapable of multiplication. The strongest antiseptic action was shown by soaps containing biniodide of mercury. The typhoid bacillus is very sensitive to soap, being killed by a five per cent. solution in a short time, more than half the total number dying in one minute, while staphylococci are only slightly more resistant. Therefore the thorough use of a pure potash soap is not only a mechanical method of cleansing, but is an active factor in cutting down germ life.

ARCHIVES OF INTERNAL MEDICINE.

December, 1915.

Carbohydrate Metabolism in Hyperthyroidism, by H. Rawle Geyelin.—In a study of twenty-seven cases of hyperthyroidism, excess of sugar in the blood was found to be a very common accompaniment of the latter condition, occurring in ninety per cent. of instances in the moderate and severe types of cases. Glycosuria, either spontaneous or alimentary (100 grams of glucose having been given), was an equally constant symptom. Alimentary hyperglycemia and glycosuria were even found not uncommonly in the very mild cases. Marked diagnostic significance is attached to the lowered carbohydrate tolerance in hyperthyroidism, its presence being highly suggestive where alcoholism, fever, asphyxia, neurasthenia, and the various other ductless gland disorders can be excluded.

JOURNAL OF INFECTIOUS DISEASES.

February, 1916.

Observations upon the *Endamecbe* of the Mouth (*Endamecbe gingivalis buccalis*).—Craig reviews briefly the history of *Endamecbe gingivalis*, but describes at some length its morphology, both in the living and stained conditions. Incidentally he does not agree with Smith and Barrett as to this form being identical with *Endamecbe histolytica*. Craig's conclusions concerning the relation of *Endamecbe gingivalis* to disease are particularly interesting. Although numerous men have stated that this organism is the cause of certain diseases of the teeth

and gums, the question is by no means settled. There is a constantly growing opinion that this *Endamecbe* has little if anything to do with pyorrhœa alveolaris, for instance, and is probably harmless. Craig quotes Chiavaro, who states that "the *Endamecbe* has not a pathogenic action; on the contrary, as it feeds on bacteria, it is most probably an aid to the autodisinfection of the mouth." Others have found it present in a large percentage of healthy mouths. Since the publication of Barrett's paper emetine has been much used in the treatment of pyorrhœa, but with uncertain results. Many hold that there is no trustworthy evidence that emetine will cure. One of the most important papers is a report (1915) prepared for the Scientific Foundation and Research Commission of the National Dental Association. In the opinion of its authors the proof is as yet insufficient that the *Endamecbe* have anything whatever to do with the production of the disease. With this conclusion Craig agrees.

JOURNAL OF EXPERIMENTAL MEDICINE.

March 1, 1916.

An Experimental Study of Parotiditis.—Martha Wollstein reports some interesting experiments made upon cats by injecting into parotids and testicles material obtained from patients suffering from mumps. The mouth secretions were used after having been filtered through a new Berkefeld candle and the filtrate tested for sterility by aerobic and anaerobic methods. Following these injections the animals showed distinct pathological changes in the parotids and testicles, accompanied by fever, leucocytosis, tenderness, and swelling. It was found that transfer of the inoculated organs into another animal would intensify the reaction. If, however, the emulsion was incubated with serum obtained from an animal that had recovered from a previous inoculation, the reaction was either prevented or reduced. No definite organism was obtained, so it would seem that the infecting agent is probably a minute filterable virus. Although it may not be the specific cause of parotiditis nevertheless it can give rise to pathological conditions closely resembling that disease.

Etiology, Mode of Infection, and Specific Therapeutics of Weil's Disease.—Several Japanese investigators draw attention to their having demonstrated during the latter part of 1914 a spirochete in the blood of patients suffering from Weil's disease or infectious jaundice. They concluded that it was the cause, and since then have been carrying on experimental work with the organism. Although the general belief is that infection takes place through the alimentary tract, it was shown that the spirochetes were able to pass through a macroscopically normal skin and infect. That either the mosquito or the flea can transmit the disease is doubted. In regard to treatment, injections of salvarsan cause a disappearance of the organisms, but the best results were obtained by the use of immune serum. In one case in which the serum from an immunized horse was injected subcutaneously, the spirochete disappeared from the blood within twenty-four hours. Numerous good photomicrographs accompany the article.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

SECTION IN GENITOURINARY SURGERY.

Regular Meeting, Held December 15, 1915.

Dr. LEO BUEGER in the Chair.

Calculus of Ureter Demonstrating the Value of the Wax Tipped Bougie.—Dr. A. R. STEVENS presented the patient, a man, forty-three years of age, who was admitted to Bellevue in May, 1915, in August, in September, and in December. Just prior to each admission he had suffered from pain in the left kidney region, apparently due to stones. During the first three admissions, not much progress was made with the case. The x ray showed no stones. During the third admission an attempt was made to get good collargol plates, but without avail. Just before going home from the third admission the patient passed a small calculus. It was supposed that nothing further would be heard of him, but he came back December 5th and went through the routine x ray examination, with the usual report that no calculus could be found. Doctor Stevens then tried passing the wax tipped bougie. It went up the left ureter about eight cm. and was twisted. When the bougie was withdrawn it was seen that the wax had been scraped off. The stone was removed from the ureter by an extraperitoneal operation. It was found just above the border of the pelvis, and was easily reached. After the removal of the stone, Doctor Stevens again looked over the x ray plate which had been taken just prior to the operation, and observed a shadow at the point whence the stone had been taken. The x ray man had not thought it was a calculus, but after having heard the story agreed that this shadow had been caused by the stone. Subsequent plates showed an absence of the shadow. The case was not a specially unusual one, but was presented to bear out a point referred to at the October meeting—that the surgeon was interested in the diagnosis of calculus in routine work, more than the possibility of showing a stone by radiography after the diagnosis was made. Doctor Stevens did not wish to be misunderstood as advocating this method rather than the x ray or collargol plates; but it seemed that the wax bougie did at times add helpful data in diagnosis, when the radiographs showed nothing or doubtful shadows. If the wax tip was examined through the cystoscope before passing it into the ureter and again immediately afterward, this method offered about as clear a diagnosis as could be desired, in cases of positive scratch marks. He had found it practical to thread the catheter in the cystoscope in retrograde fashion, having the waxed end of the catheter protrude about one and a half inch. It was better to have the bougie placed in the instrument before any part of it was placed in the patient. Dr. Burton Harris had spoken of passing the catheter first and then the cystoscope over that; but it was conceivable that one might easily pass the cystoscope in too far, or if the catheter caught in the instrument one might pull it out far enough to have the wax scrape on the end

of the instrument; but whichever way the method was used, it was important to look over the waxed tip before it passed up the ureter.

Hypernephroma of Kidney Having Ureteral and Pelvic Duplication.—Doctor STEVENS presented also this specimen from a woman who had been admitted into Doctor Blake's service at Presbyterian Hospital. This case was reported in detail in 1912, and was now presented in connection with the report of a case of double ureter by Doctor Bandler later. This patient had had frequent attacks of pain in the right kidney, accompanied with blood in the urine. Examination revealed a double ureter associated with the right kidney. This was confirmed by argyrol plates. Comparing the two pelves, it was found that although the lower pelvis was larger than the one at the upper end of the kidney, it gave a smaller output of urea and a smaller output of phthalein, and the urine was tinged with blood. These three points, coupled with the data obtained from the argyrol plates, suggested that in all probability the blood which the patient had passed, but not at the time of the cystoscopy, came from the pelvis in the lower part of the kidney. This proved to be the case; the tumor was associated with the lower pelvis, not with the upper one.

Extravesical Calculi in Acute Retention of Urine.—Dr. C. G. BANDLER presented the patient, a man fifty-seven years old, who was admitted to Bellevue Hospital, November 8, 1915, suffering from acute extravasation of urine into the scrotum, perineum, and abdominal wall above pubes. He was operated on immediately under general anesthesia. A filiform bougie was introduced through the urethra into the bladder. With patient in lithotomy position, an external urethrotomy was performed, which revealed a stricture of urethra of filiform calibre at the bulbomembranous junction. Behind the stricture there was a rupture of the urethra through which urine had extravasated. After incision of the stricture, on introducing the finger into the prostatic urethra and before entering the vesical sphincter, numerous calculi were encountered. These were removed as well as many other stones from the substance of the prostate gland. The urethra was then irrigated and many additional fragments were obtained. The finger was then introduced into the bladder, but no evidence of calculi was obtainable. A perineal drainage tube was inserted and the return flow from bladder irrigation was clear. Multiple incisions were then made in the scrotum and abdominal wall, and drainage was instituted. The patient developed pneumonia after the operation; his surgical condition was entirely relieved. The speaker added that some of the calculi were in the prostatic urethra, and some were over an inch from the urethra imbedded in the prostatic tissue. The theory was that the patient had had numerous (65) vesical calculi, and in straining to void had expressed them into the prostatic urethra, where further progress was prevented by the filiform stricture. It was true that some of the calculi looked like broken fragments, but they had been lying in position for a considerable length of time, and had become faceted. The

patient had been in Bellevue some years previously, and his history had been looked up and proved to be very suggestive of calculous disease and stricture.

Chemical analysis of the calculi proved they were not prostatic in origin, as the laboratory reports showed magnesium, calcium, and ammonium phosphates and calcium oxylate.

Ureteral and Renal Calculi in a Patient with Ureteral Duplication.—Doctor BANDLER presented this patient through the courtesy of Doctor Squier, from the department of urology of the Post-Graduate Hospital. The young man was thirty years old, and was first admitted to the hospital in December, 1914. His chief complaint was a burning pain in the urethra on urination, of three months' duration. There was no previous history of venereal disease, but he had had occasional pain in the epigastrium radiating to the back on left side during the past six years. There never had been hematuria. Six weeks before admission, the patient had an attack of acute epigastric pain, radiating to the left side. Otherwise, the patient was in good health and well nourished. Cystoscopy revealed a normal right ureteral orifice through which a catheter was introduced without difficulty. About the left ureteral orifice there was an ulcerative, bullous appearance suggestive of tuberculosis. About the orifice there was marked bulging, with the orifice itself implanted internally and laterally on the interureteric ridge. The ureter was catheterized with great difficulty, but the catheter was finally introduced to the pelvis of the left kidney. Radiography before cystoscopy revealed three small round calculi in the lower end of the left ureter, one stone resting upon the other two. Radiography with x ray catheter in the left ureter showed the three stones in a row, the upper one evidently having been displaced by the catheter. On January 11, 1915, Doctor Squier removed three calculi from the lower end of the left ureter, which specimen he now presents. Drainage was placed down to the site of the ureterotomy, and the wound was sutured. The patient made a good convalescence and was discharged from hospital in February, 1915, apparently cured. About four weeks ago, the speaker again saw the patient for the first time since his operation. He complained of pain in the left side of the back and of frequent urination, but no hematuria. Cystoscopy revealed a normal right ureter, from which a specimen of normal urine was obtained. About the left ureter there was bulging and an edematous appearance of the mucosa similar to that seen a year ago. There was also a normally implanted ureteral orifice, but on the side of the interureteric ridge, there was a slit from which urine was seen to pass. At first this was thought to be a sinus, which had formed subsequent to the operation. However, it was possible to introduce a catheter through each orifice, well up to the kidney. Radiography showed the two catheters in the kidney region, and subsequent injection with thorium solution revealed two separate ureters and two kidney pelves on the left side. In addition radiography showed several small calculi in the lower pole of the left kidney.

Calculi of the Prostate Gland.—Dr. FRANZ TOREK presented a specimen from a patient who gave a history of having suffered for twenty years from urinary troubles, consisting of frequent and painful micturition, which had become intensified during the five years preceding his coming under observation. He sometimes micturated as often as ten times during a night; once had complete retention of urine, which was overcome, but shortly afterward he was admitted to the German Hospital for a complete retention which could not be overcome, and a diagnosis of hypertrophied prostate had been made. An enormous prostate was found, and they could make out easily the sensation of stones rubbing against each other. The operation consisted of the usual perineal method, using the horseshoe incision, which gave good access. The removal of the stones was a slow procedure, as they were so numerous and, in part, imbedded in the prostate. After the operation the patient voided all his urine through the perineal wound, for a time. After three weeks he passed some through the penis, after which the perineal wound healed quickly.

Dr. FRANZ TOREK told of a case occurring under the care of a former hospital intern, who treated a patient with prostatic calculi by repeated massage and after many treatments got all the calculi out completely, as he thought. It was certainly interesting to know that massage could be employed successfully in such cases.

Suprapubic Attack in Prostatic Suppuration.—Dr. HOWARD LILIENTHAL, of New York, said that a number of years ago a young man entered one of his wards at Mt. Sinai Hospital with an acute prostatic abscess of large size. He operated by draining between the rectum and prostate through von Dittel's incision, and the patient made a quick recovery; but he became sexually impotent and remained so up to the present time. It happened about the time of the operation that the speaker was consulted by a man of about forty-eight years who had suffered from a prostatic enlargement which another surgeon had enucleated by the suprapubic method, but counterdrained through a small incision in the perineum. This man had been totally impotent since his operation, more than six months, and had resorted to perverted methods for satisfying his undiminished sexual desire. His plight was most deplorable. Since these cases came to the speaker's notice, he had heard of others in which impotency followed perineal section. He had also noted that after suprapubic prostatectomy, even in men long past middle life, there was no diminution of the sexual power present before operation and that in a good proportion of cases potentia *crandi* was greatly increased. He tried to explain the loss of power after perineal section by assuming that the nervi erigentes had been injured. The increase in power following the suprapubic operation on the prostate he thought could be accounted for by the obstruction to the return blood stream in the penile veins through aseptic thrombosis of the prostatic plexus into which they emptied. This obstruction would not be complete, but would be sufficient to permit engorgement to occur, as it were, on slight

provocation. The same mechanical principle underlay the idea of resection of the dorsal vein of the penis which was successful in certain forms of impotence.

In 1907, a man of thirty-six years consulted the speaker because of difficulty in starting his urinary stream. In the morning he would wait sometimes as long as fifteen minutes before micturition was possible. This state of affairs had persisted for more than a year. The patient had excessively indulged his sexual instinct and had more than once suffered from gonorrhea. Because of his habits, and of an irregularity in his pupils, this urinary disturbance had been pronounced of nervous origin, probably luetic in character. Examination by rectum revealed a tense elastic prostate about twice the normal size. There was no evidence of cystitis. Residual urine amounted to about three ounces. On September 25, 1907, at Mt. Sinai Hospital, in nitrous oxide and ether anesthesia the speaker carefully explored the bladder through a suprapubic incision. A prominent tense prostatic mass partly occluded the urethra. He enucleated it in the usual manner and the patient made a speedy recovery. On section the mass removed from the prostate showed what looked like miliary abscesses. The report of Doctor Mandelbaum was "Adenomatous hypertrophy with acute inflammation." The prostate, about thirty grams in weight, was honeycombed with purulent foci. During his early convalescence this man was in "a state of mind" because of the dread of impairment of function. His recovery, however, was complete and his virility greater than before his illness.

The patient presented was J. S., M. Sinai Hospital Surgical No. 154,856. He was thirty years of age and was admitted October 27, 1915. The temperature was 100° F., pulse 120, and respirations 24. Eight years before he had had gonorrhea, but no syphilis. Two days before admission, there had been pain in the rectum and perineum with retention of urine. Since then he had passed no urine except by catheter. The specimen was clear, with a faint trace of albumin, a few white blood cells, and hyaline and granular casts. There was no urethral discharge. By rectal examination a tense prostate the size of an egg was discovered. There was little pain on pressure, and the patient did not present the picture of an acute gonorrheal prostatitis. On the contrary, he was up and about, his temperature under 100° F., and his general condition good. In deciding upon the route of attack the speaker was influenced by the danger of impotence in a young man, and therefore on October 28th under anesthesia by nitrous oxide and oxygen, followed by ether, he opened the bladder suprapubically and attempted to enucleate the bulging tense prostate. No line of cleavage could be discovered, however, and his finger at last entered the abscess itself, a collection of about two ounces of thick pus. The posterior portion of the thickened prostatic capsule was now removed with a punch, a small gauze packing was placed in the abscess cavity, and the usual bladder drainage tube was inserted. A sharp reaction temperature to 104° F. followed, but thereafter convalescence proceeded satisfactorily. The patient passed his urine through the natural channel in four-

teen days, and was discharged from hospital in three weeks. Some urethral discharge followed the operation for a time, but this yielded to ordinary internal remedies. He urinated naturally and told the speaker that his sexual function was apparently normal. The culture from the pus of the abscess showed no growth, but smears showed intracellular and extracellular Gram negative organisms, probably gonococci. The transvesical method in drainage of the suppurating prostate was not difficult. It had the added advantage of freedom from urethral manipulation. Drainage was good, and with irrigation at least twice a day the danger of septic absorption was probably far less than in the perineal operation. The supervention of impotence was most unlikely. The danger of urinary fistula in the rectum or perineum was minimized.

Simple and Efficient Means for Controlling Hemorrhage after Suprapubic Prostatectomy.—

Dr. JOHN ROGERS thought that some simple and efficient means for controlling hemorrhage from the neck of the bladder after suprapubic prostatectomy was desirable. Suture or direct ligation of the bleeding point was not easy and generally required a large wound and an appreciable prolongation of the operation. The inflatable rubber bulbs which could be drawn by a catheter attachment into the prostate wound were not entirely satisfactory. Ordinary gauze packing was objectionable because of the large amount which must be employed to obtain compression. But a small gauze pad which approximated the size and shape of the prostatic wound could be made to exert any amount of compression by a traction suture which could be attached at one end to the pad, and at its free end to another pad on the external surface of the perineum. To make this contrivance, they must attach a long doubled linen suture to one extremity of a strip of packing gauze. This strip could be eighteen inches or three feet long. It consisted of a single sheet of gauze, nine or eighteen inches wide, folded four times longitudinally to make a strip one inch or two inches in width. This strip, with the double linen suture tied to one end, was then folded upon itself to produce a square pad having something of the shape of a truncated pyramid, the base of which was one or two inches square, or larger if needed. The double suture, tied about the middle of its length to one free end of the strip of folded gauze in the centre of the base of the pad, was passed through the pad from base to apex by a long, strong, straight needle. This needle was then grasped longitudinally with a long pedicle clamp, and under the guidance of the index finger and with the help of the clamp, pushed through the apex of the prostatic wound and out through the centre of the perineum. The needle was detached by an assistant, who then, by means of the double suture, drew the pad through the suprapubic wound into the raw surface at the neck of the bladder. The perineal ends of the double suture were then tied over a gauze pad laid against the external surface of the perineum. The vesical end of the suture was led through the suprapubic drainage tube out on to the surface of the abdomen. At the end of one or two days the perineal end of the suture was cut, and by means of its abdominal end, the

strip of gauze was withdrawn painlessly through the suprapubic drainage tube. Care, of course, must be taken not to exert too great a degree of compression.

Dr. JAMES PEDERSEN said that in his own experience he had frequently packed the bladder when it was only apparently necessary. He could recall a few cases in which hemorrhage had been excessive, but he now thought that he had been inclined to pack the bladder as a routine practice as well as to use too much hot water. In some instances in which the bladder had long been the seat of a marked cystitis, the irrigation was rational and was indicated, regardless of its possible effect on the hemorrhage. In support of the simpler treatment he cited his latest case of prostatectomy. The patient, only fifty-six years of age, had deferred operation for a year against advice, until on December 1st, when he had sixteen ounces of residual urine. There had never been any infection of the bladder, however. The enucleation was easily performed; neither irrigation nor packing was used; the patient was making an absolutely smooth, uneventful convalescence. A detail not yet mentioned in the discussion was the way the bladder was sutured to the suprapubic drainage tube. Instead of a pursestring suture about the tube, a small vent was left at the lower angle of the incision through the bladder, so that any unusual hemorrhage, should it occur, would have a second channel of escape and thus become evident without causing distention of the bladder with clots.

Doctor TOREK said that most men had done some packing for prostatic surgery, but had become discouraged about it, for it did not check the bleeding, as the tampon was soon soaked with urine the presence of which showed the process of clotting. To control hemorrhage by packing the tampon should be dry. In one instance he had overcome the difficulty by using bilateral ureteral catheterization through the cystotomy wound and allowing the urine to come out through the suprapubic wound by way of the catheter, then packing the bed of the prostate. This method solved the problem, as the tampon could be kept fairly dry. However, he had not done this since, for it was too much trouble, and required a somewhat larger opening, and they could get along quite well without doing it. He had been interested in this method of Doctor Rogers, and would be further interested to know what it would do in the hands of others.

Doctor WARE did not understand whether Doctor Lilienthal wished to convey the idea that the method of procedure advocated by him should supplant the classical perineal route. Of course, the end justified the means; but there were several reasons which he had counted upon hearing from other members, why the method advocated should not be endorsed as a routine. Those reasons had been pointed out originally by Segond, in his classical monograph, wherein he showed that these abscesses generally tended to point toward the perineum rather than toward the bladder—a corroboration of which observation was given by the late Doctor Alexander in his refinement, that these abscesses generally invaded the very apex of the prostate, and for the relief of which he presented his admirably planned operation by the perineal route. To attack this abscess of the prostate from

above would be going counter to the surgical principle of opening an abscess other than where it pointed. He was not unfamiliar with the procedure given by Doctor Lilienthal. Several years ago, while operating upon an elderly gentleman for a condition diagnosed as an enlargement of the prostate by the superpubic route, he accidentally evacuated an abscess of that gland. The patient went on to complete recovery. At this time he encountered a discussion in the French papers upon this measure which was regarded as feasible, but thereafter it was no longer advocated. Upon another occasion he deliberately operated for an abscess of the prostate in a young man, and while he succeeded in evacuating the abscess, he had a distinct recollection that it was accomplished with considerably more difficulty than by the ordinary route. He was present when Doctor Lilienthal operated in his case and recalled the difficulty he experienced before he reached the pus. Last year he had presented before the society several abscesses of the prostate opened from below, emphasizing the great ease with which that could be accomplished by bearing in mind the fact that these abscesses were in the fore part of the gland. The reason assigned by Doctor Lilienthal for recommending the high operation instead of the low, was based upon a most exceptional experience. The speaker was rather inclined to believe that the impotence could be assigned to the long standing and great extent of the disease rather than to the low operation.

Dr. C. G. BANDLER, a few years ago, had followed up seventeen cases that had been operated in by Dr. Samuel Alexander, and in not one of them had there been evidence of impotence or sterility. Eight of these cases were under observation in Bellevue Hospital. He had followed these patients very carefully, for at the time of the operations, the interns had thought that most of them would become sexually impotent.

Dr. HOWARD LILIENTHAL had twice employed the method demonstrated by Doctor Rogers for checking hemorrhage. One patient was saved, but the other died. He had operated up to the present time in nearly one hundred cases, and in only the two mentioned had he felt it necessary to employ this method for hemostasis. He believed that Doctor Chetwood had described the procedure some years ago. Hemorrhage following prostatectomy rarely proceeded from the bed of the prostate, but came more commonly from the vessels in the bladder wall and in the prostatic capsule. He had observed several cases in which the spurting vessels could be seen and secured at the time of the operation. In another case there was bleeding from a minute vessel, which continued for two weeks following the operation and finally had to be checked by reopening the wound and cauterizing the bleeding point. He was much interested in Doctor Squier's method of operating without packing, and intended to follow the suggestion in suitable cases in the future. The speaker then referred to his own paper and stated that if he had given the idea that he advised opening all prostatic abscesses through a suprapubic incision, he had made a false impression. He merely intended to give his experience in these two cases and to give the reasons for employ-

ing suprapubic attack. The fact that most patients did not become impotent following perineal operations upon the prostate was of little importance to those unfortunates who had become impotent from this cause. He believed that if it was proved that the percentage of impotency following prostatic operations was greatly diminished by operating by the suprapubic method, this method should by all means be preferred. Another point was that of the ancient surgical principle of opening an abscess where it pointed. In general, this was good practice, but it would be most unwise to follow it in every case. For example, suppose that an abscess pointed into the trachea. It would surely be better to go through much healthy tissue rather than to let Nature take her course. Numerous instances would readily occur to them in which the breaking of the rule to open an abscess where it pointed would be necessary if they were to save the life of the patient. He believed that probably in a fair percentage of prostatic abscess the rule to incise at the place of pointing might well be broken.

Dr. JOHN ROGERS remembered seeing Doctor Alexander operate as Doctor Squier has described, and was glad to know that none of these patients had impotence. He scarcely expected that his method of checking this kind of hemorrhage was original, but had thought that it might be of some assistance to men who encountered difficulties; troublesome if not dangerous bleeding was certainly not uncommon.

Letters to the Editors.

SILVER SALTS IN OPHTHALMIA NEONATORUM.

CHICAGO, March 27, 1916.

To the Editors:

As chairman of the Conservation of Vision Committee of the American Medical Association, I wish to protest earnestly against some statements made in the articles on Ophthalmia Neonatorum in your issues for February 5th and February 12th.

These papers are excellent in most respects, but they convey impressions that to my mind are most erroneous and dangerous—especially as they are "Prize" essays, and will therefore be regarded as quite authoritative. The most glaring error that pervades the articles is the confidence reposed in argyrol, protargol, and other silver substitutes used for silver nitrate, in the Cr  d   treatment of the eyes of newly born infants. In my judgment this is a most dangerous hallucination, and will be the means of blinding many infants unless the idea can be corrected. Unfortunately the efficacy of such silver substitutes has many advocates in high places, but I am convinced that this confidence is entirely misplaced. Undoubtedly argyrol, protargol, etc., contain silver, and are mildly bactericidal in their action, but they are not reliable and not sufficiently powerful as drugs in the prevention of ophthalmia neonatorum—in spite of the claims made for their qualities by their advocates.

If the Cr  d   treatment is to be adopted at all, let it be done right, and let us know that no seductive and fallacious experiences or literature has deflected us from following the straight and narrow path that leads to visual salvation. Silver nitrate in a one per cent. or two per cent. solution is the only reliable medicine to be employed at this critical period of a baby's life. When vision or blindness may be hanging in the balance—why hesitate? Why experiment with substitutes? Why not be sure? What is here against silver nitrate? Nothing! Some say it irritates and reddens the eye. Well—what of it? This only lasts a few hours, and I have never heard of a case of permanent injury following its use. As Doctor Howard,

of York, Pa., says in this symposium—I am confident that those cases of this disease developing in those children where the Cr  d   method has been used, could be almost entirely traced to the improper method employed. That is, the doctor in its use has not been careful that the solution should actually get into the conjunctival sac; the solution has been dropped on to the lids or cheeks, and has never reached the conjunctiva, because the lids have not been gently, but surely opened, and the eyeball exposed. It may be that some day a reliable and universally accepted substitute for silver nitrate in the Cr  d   treatment will be found, that combines lack of irritating qualities with reliability. But experiments necessary for such work should be carried on in accepted and nonprejudiced laboratories, and the eyesight of the coming generation should not be endangered thereby. At present, no such substitute exists that is universally accepted and authenticated in its character. Therefore, until such a reliable and authenticated substitute arrives, let us adhere to the drug we know is dependable, viz., nitrate of silver. I cannot, however, endorse the recommendation of Doctor Howard when he recommends dropping a twenty per cent. solution of silver nitrate into the eyes of newly born babes, and does not follow it with the neutralizing salt solution. I cannot understand this advice and feel that it must be a misprint. If it is, it should be corrected as it may lead to disastrous consequences.

Doctor Howard and Doctor Hightower also draw a fine distinction between central and peripheral ulcers of the cornea and advise that atropine be used in the former—and eserine in the latter. I am aware that this is a distinction made by other authors also, but, in my opinion, it is an unnecessary distinction to be made, for I think atropine is much to be preferred in all kinds of corneal ulceration, especially as it lessens ciliary irritation, and eserine increases it, and may even produce iritis.

Neither can I endorse Doctor Howard's recommendation of the yellow oxide of mercury in acute corneal ulceration. It is much too irritating, and would almost certainly increase the trouble rather than decrease it. This ointment should be used only in chronic conditions, where irritation and absorption are desired.

The suggestion made by Doctor Weiss that sterile, warm, boric acid cloths should be kept on the eyes is objectionable, as such warm moisture increases the virulence of the disease. Light ice cloths are a benefit at the height of the inflammation, but they should be light, and changed every one or two minutes. Unless this is done it is better to leave them off altogether, as the cloths soon cease to be cold and become warm and then they are harmful instead of beneficial. Great care should also be taken that the cloths are light in weight, as pressure and weight are undesirable. Should corneal ulceration occur, hot cloths, very light and very hot, should be substituted for the iced cloths. Doctor Weiss also recommends adrenaline as an eye wash, stating that it lessens the congestion and the tendency to corneal ulceration. I believe both of these statements to be incorrect. Adrenaline, of course, primarily constricts the bloodvessels, but secondarily it increases congestion, as the bloodvessels become refilled. The pallor of an eye after using adrenaline is but a delusion and a snare as all experienced ophthalmologists have learned. Adrenaline is of no use for this purpose. I also believe it has a tendency to aggravate corneal ulceration as it interferes with corneal nutrition.

Doctor Hightower and others also refer to ophthalmia neonatorum occurring in one eye only, which necessitates the protection of the other eye with a Buller shield, etc. Personally, I have never seen a case of this disease in one eye only, and monocular ophthalmia neonatorum must be very rare. Should such an instance occur, however, I think both eyes should be treated with silver, cleanliness, etc. I think thorough protection by a shield, etc., of a sound eye in a baby under these circumstances, would be very difficult, if not impossible.

After ophthalmia neonatorum is once established, I believe that argyrol, protargol, etc., have a very useful place in the treatment of the case. Nitrate of silver is too irritating to be used frequently, and I, therefore, feel that a one or two per cent. solution of nitrate of silver should be thoroughly applied by the physician himself *only once a day*, to the everted lids (if the swelling permits), and the solution subsequently neutralized by a weak salt solution. Throughout the rest of the twenty-four hours argyrol or

protargol may be frequently used for flushing the eyes, as they are mildly bactericidal and soothing. Of course, much flushing with boric acid solution should also be used, and the discharge frequently wiped gently away with soft cotton sponges.

Let me end this communication, however, as I began it, by strongly protesting against using anything but nitrate of silver for the Cr  de treatment of newly born infants.

FRANK ALLPORT, M. D.

ANOTHER BLOW AT THE PROFESSION.

BROOKLYN, N. Y., March 30, 1916.

To the Editors:

In your issue for March 25th, it is announced that the Mt. Sinai Hospital of New York was preparing plans for the establishment of a clinic, "where ambulant patients in moderate circumstances, who are not entitled to free treatment, may consult reliable specialists without being compelled to pay office fees which are beyond their means."

The writer, some years ago, published an article on the abuse of medical charity, gathering his claims and garnishing his statistics while serving as assistant in the outpatient department of the said hospital. More than seven years of service in this, the largest dispensary in New York, revealed the rather alarming fact, that only ten per cent. of patients admitted to the dispensaries of New York were really worthy of charity; yes, fully ninety per cent. were receiving treatment under false pretense and violating the law as printed on the back of the dispensary card. I showed, at that time, that since the law had been enacted, not one person had ever been haled to justice as an offender, let alone convicted. My statements are truer today than at that time, and besides, fewer dispensaries have this warning printed on their admission cards. Attempts to remedy this evil by personal questioning on the part of the assistants, were at once rebuked by the dispensary heads; we were told to keep our hands off—that it was the business of the clerk who sold the tickets to do the questioning. The clerk, an uninterested layman, rarely ever ascertained the true status of the patients.

Now, if we are going to open our dispensaries, intended solely and primarily for the poor, to persons who are able to pay for private medical services, to fatten the purses of a few favored sons, we might as well throw up our hands, long held by conventions and ethics, and go out of the profession. When I say "we," I mean the great silent majority, the general practitioners. Other hospitals are sure to copy this plan, and within a few years, 100 men instead of 3,000, will hold the reins of medical practice in this city.

The Mt. Sinai plan is to treat those making \$1,200 or less. Statistics say that the average income of physicians in this country is \$600 per annum. For the sake of argument, let us say that it is \$1,200 in New York. If we treat Mr. Jones, the baker, Mr. Brown, the butcher, and Mr. Smith, the clothier, at reduced rates, will these men give us bread, meat, or clothing at reduced rates? Until they do, until universal cooperation becomes a fact the world over, we must refuse to pander our morals and our State given rights, to further the ambitions of a few men, the head of whom is unfamiliar with the problems of private practice.

KARL H. GOLDSTONE, M. D.

note the correspondence between the proportion of wells and privies and the proportion of typhoid fever. One ward had about forty per cent. of wells and privies and had a little more than forty per cent. of typhoid cases. This survey is an interesting document and shows clearly the good results that may be obtained by careful and well planned investigation.

Manual of Surgery. By ALEXIS THOMSON, F.R.C.S. Ed., Professor of Surgery, University of Edinburgh, Surgeon, Edinburgh Royal Infirmary, and ALEXANDER MILES, F.R.C.S. Ed., Surgeon, Edinburgh Royal Infirmary. Fifth Edition. Revised and Enlarged. In Two Volumes. Volume I: General Surgery. With 289 Illustrations. Pp. xix-801. Volume II: Regional Surgery. With 301 Illustrations. Pp. xvi-948. Edinburgh, Glasgow, and London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1915. (Price, \$3.50 a volume.)

The division of the subject matter into two sections, general surgery and regional surgery, conforms with the best usage. The addition of a third volume dealing only with operative surgery is new and makes it possible to omit from the first two volumes all descriptions of operative procedure and to bring the latter together into one volume. The authors bring to the work unusual experience in the practice and teaching of surgery and are thoroughly familiar with the needs of the student. The work is thorough and systematic, presents the subject in an attractive form, and has in this last edition been brought up to date. Debatable questions have been largely eliminated. The authors have described surgery as it is practised in the Edinburgh school and have laid chief stress upon the method of procedure which they have found most valuable in their every day work. The whole subject is covered in a remarkably thorough manner considering the small size of the volumes.

Die Nebennierenrinde. Eine Morphologisch-Physiologische Studie. Von MAX LANDAU, Dr. Med., 1. Assistent Am Pathologischen Institut der Universit  t Freiburg i. B. Jena: Verlag von Gustav Fischer, 1915. Pp. 123.

This monograph, the posthumous work of the young author, is a presentation of the results of profound study of the morphology, development, and physiology of the adrenal cortex. The physiological ontogenesis of the cortex is discussed extensively and the deviations from normal are well presented. In the sections on physiology of the tissue the chief studies concern the lipid substance found, its relation to the general bodily functions and to the function of the cortex. The work is almost wholly original and the results of the observations seem quite striking in some respects. It is not possible in the space at command to discuss any of Landau's conclusions, and it is not sufficient to mention them without considerable discussion. The work should prove of scientific interest to physiologists and pathologists, but before it can be of any material value to clinical medicine, many of the findings will have to be confirmed by others. The presentation is technical and can hardly be expected to find an audience outside of a limited group of investigators.

Interclinical Notes.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Survey of the Public Health Situation, Ithaca, New York, 1914. By FRANZ SCHNEIDER, Jr., Sanitarian, Department of Surveys and Exhibits, Russell Sage Foundation, New York City. New York: Central Committee for Ithaca Survey, Ithaca, 1915. 11p. 33

This report shows the great good that can be accomplished by a thorough survey of the sanitary conditions in any community. As a result of an improved water supply, the amount of typhoid had been greatly reduced, but there still remained more or less "residual cases." It is interesting to

A physician who has often been a welcome contributor to the NEW YORK MEDICAL JOURNAL, Dr. Alfred Reed, is represented in the *Scientific Monthly* for March by a paper on Changsha and the Chinese, a favorite subject with this writer, who knows the Chinese about as well as a Caucasian physician can. The Malthusian Doctrine and War is another interesting and important contribution to this issue of the entertaining periodical in question, by Edwin W. James. That we may not misrepresent the *Scientific Monthly*, we beg leave to emphasize that it will prove entertaining to educated persons.

* * *

Under Cover of Respectability, by Winthrop D. Lane which appears in the *Survey* for March 25th, is one of the most astonishing documents ever brought to our attention. It is a story of an investigation into the morals of Balti-

more. It is not the facts which astonished us; in fact we often wonder how reformers remain ignorant of facts known to everybody else. It was the getting of the facts into print that has amazed us. Baltimore has a right to be aroused, for no other city has ever received such a showing up, and she is no worse than other cities. Apparently, girl stenographers, waitresses, salesgirls, manicurists, etc., who work in the large cities require either uncommon strength of moral fibre or great good luck in order to resist the attacks from all sides upon their virtue. The fabled temptations of the stage seem to fade into insignificance compared to those of a shop or business office.

* * *

The chairman of the committee which drew up this report is Dr. George Walker, associate in surgery at Johns Hopkins; other physicians on the committee were Dr. John M. T. Finney, Dr. William H. Howell, and Dr. Lillian Welch. It is the first report of the kind we have seen into which humor is allowed to creep; for example: "It is almost the universal rule for a woman not to be faithful to the man who is keeping her. Of course every man thinks that he and his particular girl are exceptions; though admitting the proposition in general, he gives you very definite reasons why he knows she is true to him, and he believes without question that his case is a unique exception in maidens' ways. But in spite of all his protestations, the poor fellow is going the way of all such men, and is suffering either from an egotistical imagination or from the timent of a disordered brain."

* * *

Four cartoons by Raemaekers and a portrait of the artist himself illustrate the *Outlook* for March 15th; with the exception of the first, which is horrible enough, these cartoons are as mother's milk compared to some of Raemaekers' which we have seen. A photograph of the armed golf club of the Philippines is another interesting picture.

* * *

The tremendous temptation to betray his government to which an ordinary private is exposed, when confronted with the big bribes of wartime, especially when there is an apparent chance to "double cross" the enemy, is told in the *Wide World Magazine* for March, 1916. The writer very naturally conceals his identity under the nom de guerre of Private X. In the Price of Gold, James A. McRae voices a common superstition that the price is human sacrifice, i. e., for every mine discovered one or more human beings lose their lives. Mines are responsible at least for a good deal of adventure; a silver mine plays a prominent part in *Out of the Darkness*, by Richard C. Collins, another tale in this veracious periodical.

Meetings of Local Medical Societies.

MONDAY, April 10th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Association of Alumni of St. Mary's Hospital, Brooklyn (annual); Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, April 11th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Federation of Medical Economic Leagues of New York; Medical Society of the County of Wyoming; Ontario County Medical Society; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); New York Obstetrical Society; Medical Society of the County of Oneida.

WEDNESDAY, April 12th.—New York Pathological Society; New York Surgical Society (annual); Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine; Medical Society of the County of Montgomery; Medical Society of the County of Dutchess.

THURSDAY, April 13th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers; Society of Sanitary and Moral Prophylaxis, New York; Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Medical Society of the County of Alleghany.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the Medical Corps of the United States Public Health Service for the seven days ending March 29, 1916.

Bahrenburg, L. P. H., Surgeon. Detailed to present a paper at the meeting of the South Texas Medical Association, at Houston, Texas, April 6-7, 1916. **Carter, H. R., Assistant Surgeon General.** Granted one day's leave of absence, March 11, 1916. **Faget, F. M., Assistant Surgeon.** Ordered to proceed to Greenville, S. C., for duty in studies of rural sanitation. **Frank, L. C., Sanitary Engineer.** Ordered to proceed to Hopewell, Va., for conference with city commissioners in regard to methods of sewage disposal, thence to Jackson, Ky., to inspect method of sewage disposal at Jackson Trachoma Hospital. **Fricks, L. D., Surgeon.** Ordered to proceed to Victor, Mont., to begin a campaign against Rocky Mountain spotted fever in Bitter Root Valley. **Goldberger, Joseph, Surgeon.** Ordered to proceed to certain localities in the Northern States to study sporadic cases of pellagra. **Hasseltine, H. E., Passed Assistant Surgeon.** Granted one day's leave of absence on account of sickness, March 3, 1916. **Hooper, L. E., Assistant Surgeon.** Detached from Coast Guard Cutter *Thetis*, and ordered to report at quarantine station, Honolulu, Hawaii, for duty. **Ridlon, J. R., Passed Assistant Surgeon.** Ordered to proceed to Brunswick, Ga., to deliver an address on filaria at a meeting of the Southwestern Sanitary Association, March 23-24, 1916. **Scott, E. W., Assistant Surgeon.** Relieved at Stapleton, N. Y., and ordered to proceed to El Paso and Laredo, Texas, for duty in measures for the prevention of the introduction of typhus fever into the United States. **Stewart, P. M., Assistant Surgeon.** Ordered to proceed to Greenville, S. C., for duty in studies of rural sanitation. **Teufel, W. C., Assistant Surgeon.** Relieved from duty on Coast Guard Cutter *Tampa*, and ordered to proceed to New Orleans, La., for duty in plague eradication measures. **Waller, C. E., Assistant Surgeon.** Granted one month's leave of absence, from April 1, 1916. **Watkins, J. A., Passed Assistant Surgeon.** Ordered to proceed to points outside the city limits of Pittsburgh, Pa., to collect data and make examinations in studies of industrial hygiene. **White, H. F., Assistant Surgeon.** Relieved from plague work at New Orleans, La., and ordered to proceed to the Quarantine Station, Quarantine, La. **Williams, L. L., Assistant Surgeon.** Granted seven days' leave of absence, from April 1, 1916. **Yarbrough, H. C., Assistant Surgeon.** Ordered to proceed to Rome, Ga., for duty in studies of rural sanitation.

Boards Convened.

Board of commissioned medical officers convened at the bureau, Wednesday, April 5, 1916, for the examination of Passed Assistant Surgeon E. A. Sweet to determine his fitness for promotion to the grade of surgeon. Detail for the board: Assistant Surgeon General A. H. Glennan, chairman; Assistant Surgeon General W. G. Stimpson, member; Surgeon George L. Collins, recorder. This board will also prepare questions for the mental examination of Passed Assistant Surgeon Francis H. McKeon.

Board of commissioned medical officers convened at Fort Stanton, New Mexico, Wednesday, April 5, 1916, to make a physical examination of Passed Assistant Surgeon Francis H. McKeon, to determine his fitness

for promotion to the grade of surgeon. Detail for the board: Surgeon F. C. Smith, chairman; Assistant Surgeon J. S. Ruoff, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending April 1, 1916:

Davis, Henry L., First Lieutenant, Medical Reserve Corps. Reports departure from Fort Michie, and arrival at Fort H. O. Wright, N. Y., for temporary duty. **English, Richard M.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in that corps has been accepted by the President, to take effect March 23, 1916. **Fox, James S.**, Captain, Medical Corps. Reports return to Fort Preble, Maine, for duty. **Flynn, James G.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person to the commanding officer at Fort Crockett, Texas, for duty. **Harris, Jesse R.**, Captain, Medical Corps. Reports departure from Boston, Massachusetts, to Harlingen, Texas, for temporary duty with 5th Field Hospital. **Hart, James W.**, First Lieutenant, Medical Reserve Corps. Has been assigned by the commanding officer of Washington Barracks, D. C., to active duty at that post on account of an existing emergency from March 12, 1916. **Hart, Lasher**, First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in Medical Reserve Corps has been accepted, to take effect on March 28, 1916. **Pardon, Joseph L.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., to take effect upon the completion of their examination for appointment in the Medical Corps of the Army, and will proceed to Harlingen, Texas, and report by telegraph to the commanding general, Southern Department, for assignment to duty with the Ambulance Corps, No. 5. **Hutter, Charles G.**, First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., to take effect upon the completion of their examination for appointment in the Medical Corps of the Army, and will proceed to Harlingen, Texas, and report by telegraph to the commanding general, Southern Department, for assignment to duty with the Ambulance Corps, No. 5. **Schiff, Leo P.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report in person to the commanding officer, Plattsburg Barracks, New York, for duty. **Siler, Joseph F.**, Captain, Medical Corps. Relieved from duty at the Army Medical School, Washington, D. C., and will proceed to Fort Sam Houston, Texas, and report in person to the commanding officer of that post for duty at the Department Laboratory, and by letter to the commanding general, Southern Department. **Straub, Paul F.**, Lieutenant Colonel, Medical Corps. Reports departure from Fort Logan, Colorado, en route to Fort Bliss, Texas, for assignment to temporary duty with base hospital. **Wheats, Julius M.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Miloy, California, and report in person to the commanding officer thereof for duty.

Each of the following named officers of the Medical Corps will proceed at once to the place specified after his name and report by telegraph to the commanding general, Southern Department, for assignment to temporary duty with the organization indicated: Captain Harry G. Humphreys, Brownsville, Texas, Fourth Infantry; Captain William S. Shields, Brownsville, Texas, Third Cavalry; Captain William N. Smart, Harlingen, Texas, Field Hospital No. 5; Captain Jesse R. Harris, Harlingen, Texas, Field Hospital No. 5; Captain Edward M. Talbott, Harlingen, Texas, Sixth Cavalry; Captain Charles L. Foster, Mission, Texas, Twenty-eighth Infantry; Captain Robert W. Kerr, Fort Clark, Texas, Fourteenth Cavalry; Captain William K. Bartlett, Eagle Pass, Texas, Seventeenth Infantry; Captain James S. Fox, El Paso, Texas, Seventh Infantry; Captain Craig H. Snyder, Douglas, Arizona, Eighteenth Infantry; Major Cosam J. Bartlett, Douglas, Arizona, Twenty-second Infantry; Captain Lucius L. Hopwood, Columbus, New Mexico, Twelfth Cavalry; Major James L. Bevans, El Paso, Texas, Twentieth Infantry; Captain Thomas I. Flynn, Nogales, Arizona, Twelfth Infantry;

Captain William B. Mesiter, Nogales, Arizona, Twelfth Infantry; Captain George E. Pariseau, El Paso, Texas, Twenty-third Infantry; Lieutenant Colonel Paul F. Straub, Fort Bliss, Texas, base hospital; Major William L. Keller, Fort Bliss, Texas, base hospital.

Births, Marriages, and Deaths.

Born.

Leichner.—In Hartford, Conn., on Friday, March 24th, to Dr. and Mrs. William Leichner, a daughter.

Died.

Bangs.—In San José, Cal., on Monday, March 13th, Dr. Frederick H. Bangs, aged fifty-seven years. **Bemis**.—In West Middletown, Pa., on Thursday, March 23d, Dr. David H. Bemis, aged sixty-four years. **Bolsinger**.—In Philadelphia, on Tuesday, March 21st, Dr. Perry Lee Bolsinger, of Johnstown, Pa., aged thirty-nine years. **Brueson**.—In South Jacksonville, Fla., on Sunday, March 19th, Dr. Mary E. Brueson, aged seventy-four years. **Capp**.—In Lancaster, Pa., on Friday, March 24th, Dr. Walter S. Capp, aged thirty-four years. **Crossmore**.—In Wyoming, Del., on Thursday, March 23d, Dr. James L. Crossmore, aged forty-two years. **Dauray**.—In Woonsocket, R. I., on Friday, March 17th, Dr. Joseph Dauray, aged seventy years. **Doherty**.—In Jersey City, N. J., on Sunday, March 26th, Dr. John W. Doherty, aged fifty-one years. **Dunleavy**.—In New York, on Sunday, March 26th, Dr. Susette E. Dunleavy, aged eighty years. **Earley**.—In Philadelphia, on Tuesday, March 21st, Dr. Thomas B. Earley, aged forty-nine years. **Garner**.—In Chatham, N. J., on Monday, March 20th, Dr. John N. Garner, aged seventy-six years. **Gunsolus**.—In Detroit, Mich., on Friday, March 24th, Dr. Kenneth M. Gunsolus. **Hart**.—In Pisgah, Ky., on Tuesday, March 21st, Dr. Robert S. Hart, aged seventy-three years. **Headen**.—In Morehead City, N. C., on Sunday, March 19th, Dr. William E. Headen, aged forty-nine years. **Henderson**.—In Marengo, Iowa, on Friday, March 17th, Dr. Edgar B. Henderson, aged forty-four years. **Hobbs**.—In Framingham, Mass., on Saturday, March 25th, Dr. Ezra A. Hobbs, aged seventy-one years. **Howe**.—In Willard, N. Y., on Wednesday, March 22d, Dr. Ralph J. Howe. **Huyck**.—In Oak Harbor, Ohio, on Monday, March 20th, Dr. Emory B. Huyck, aged fifty-three years. **Jones**.—In Stockbridge, Mass., on Monday, March 20th, Dr. Joseph Jones, aged forty-three years. **Lamb**.—In New Haven, Conn., on Wednesday, March 22d, Dr. Chauncey S. Lamb, aged forty-three years. **Langman**.—In New York, on Monday, March 27th, Dr. Gustav Adolf Langman, aged seventy-three years. **McGarity**.—In Atlanta, Ga., on Sunday, March 19th, Dr. A. E. McGarity, aged eighty-four years. **McGovern**.—In Cedarburg, Wis., on Thursday, March 23d, Dr. William P. McGovern, aged fifty-seven years. **Miller**.—In Calhoun, Ky., on Friday, March 17th, Dr. William P. Miller, aged seventy-one years. **Moore**.—In Albany, N. Y., on Tuesday, March 21st, Dr. James M. Moore, aged forty-three years. **Payne**.—In Towanda, Pa., on Friday, March 24th, Dr. Edward D. Payne, aged eighty-one years. **Sachs**.—In Chicago, on Sunday, April 2d, Dr. Theodore B. Sachs, aged forty-eight years. **Sawyer**.—In Hillsboro, Ill., on Saturday, March 18th, Dr. Amos Sawyer, aged eighty years. **Siegel**.—In Brooklyn, N. Y., on Saturday, March 25th, Dr. William G. Siegel, aged twenty-nine years. **Smith**.—In Moncton, N. B., on Sunday, March 19th, Dr. Gaius T. Smith, aged fifty-five years. **Sorrels**.—In Dallas, Texas, on Tuesday, March 21st, Dr. G. R. Sorrels, aged seventy-nine years. **Strong**.—In Omaha, Neb., on Tuesday, March 21st, Dr. Mary Strong, aged sixty-two years. **Thurber**.—In Rochester, N. Y., on Saturday, March 25th, Dr. Thomas J. Thurber, aged seventy-two years. **Ward**.—In St. Clair, Mich., on Monday, March 20th, Dr. George J. Ward, aged seventy-three years. **Ware**.—In Clarksville, Ind., on Saturday, March 25th, Dr. William H. Ware, aged sixty-nine years. **Wingo**.—In Washington, D. C., on Monday, March 20th, Dr. Christopher C. Wingo, aged ninety-two years. **Winter**.—In Maywood, Va., on Monday, March 20th, Dr. Eugene C. C. Winter, aged sixty-seven years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 16.

NEW YORK, APRIL 15, 1916.

WHOLE No. 1950.

Original Communications.

PUBLIC HEALTH LABORATORIES*.

Their Relation to the Community,

By ROGER G. PERKINS, M. D.,
Cleveland,

Professor of Hygiene and Preventive Medicine, Western Reserve
School of Medicine; Chief, Bureau of Laboratories,
Division of Health.

One of the most interesting developments in public health administration during the last twenty-five years is the laboratory. Started on various foundations it has been expanding in one direction and another, until now it is recognized as the correlation factor of most of the general public health activities. Beside this correlation within the public health service, there is another which has developed among physicians and the laity, involving the combination of the interests of the physician, of the patient, and of the official agencies of the municipality largely through the contact point of the public health laboratory.

There are two main prejudices against municipal laboratories, more or less common to physicians and laity. There is the general fear that the work of a municipal laboratory, combined with the police power of the health department, offers opportunity of infringement on personal liberty and on personal incomes. There is also an instinctive fear that the enterprise may not be free from favoritism and graft. It is, however, coming to be more and more true that an active group of physicians representing the local medical societies has it to a very large extent in its power to prevent maladministration in the health department.

Having been in intimate relation with the laboratories of one of our largest cities since they began with slender funds, small equipment, and smaller force, I have been able to follow their development through the last ten years, and to appreciate the difficulties which necessarily meet the pioneer. In these developments there are questions which are constantly coming to the fore, and it will be profitable to consider some of these in detail.

What are the proper functions of the laboratory in the community, and how great is the necessity for such an institution?

Primarily, the duty of the laboratory is to the community at large which supports it by taxation. It is, therefore, clear that its prime function is to prevent, as far as in it lies, the development of con-

ditions which will cause added expense to the community or which will lower its reputation as a place in which to live and to conduct business. We have, therefore, as one main duty, the prevention of epidemics by acquiring and giving out information to aid in controlling the disease already present and in checking further increase. This may be, broadly speaking, run on two lines; assistance in diagnosis in doubtful cases of communicable disease, and supervision of central and local conditions which may act as foci of infection.

In addition to these prime duties, however, are many others which have grown out of them. Where possible it is customary not only to aid in diagnosis of diseases, but to offer means of curing and means of prophylaxis, such, for instance, as diphtheria antitoxins and Pasteur treatments. Further, the laboratory is and should be used as a consultant by the rest of the health department and by other departments of the city in cases where a chemical or bacteriological examination may show reasons for a bad condition or give effective methods for removing such a condition.

Taking up, first, the assistance in the diagnosis of communicable diseases, the point where the laboratory is most closely in touch with the clinician, it is evident that accuracy is essential. The modern medical school aims to turn out graduates who are capable of following up their cases in the laboratory, and many of them do this in the earlier stages of their career. But when prosperity smiles upon them and cases multiply, they have less time for each case and must get the laboratory work done elsewhere or omit it. The result of this combination has naturally been the development of many private laboratories which care for the laboratory work of the clinician, and which employ men technically trained for the purpose. These, however, care only for cases in which a fee is recoverable, leaving the patient with slender finances unassisted. This is fair neither to him, for his right to health is the same as that of the wealthier man, nor to the community, which may be exposed by reason of missed or doubtful cases. It is to meet this contingency that the diagnosis work of the public health laboratory developed, and it is for this reason that in the larger centres the diagnosis division of the laboratory has usually overshadowed the other divisions.

If then we offer this free diagnosis, what conditions shall govern our assistance to the physician and patient? The need is obvious where the disease may spread and become a menace to the community at large. This is clearly the large group of the communicable diseases but in this group we

*Read before the Psychological Section of the Buffalo Academy of Medicine, February 21, 1916.

are further limited to those in which we have a laboratory knowledge of the causative organism. The most notable of this type are, of course, diphtheria and tuberculosis. A more recent accession is diagnosis in the venereal diseases, which are not only epidemic but pandemic. To the laboratory researches in immunity we are indebted for the complement deviation tests which have brought this group into our range.

We must also offer diagnosis in diseases where the infection may come from sources over which the administration has some degree of control, as for instance, water, milk, and other beverages and foods.

Our limitations in diagnosis accordingly are the degree of knowledge of the biology of the causative organism, or the knowledge of some other factor which can be put to the test of the laboratory, together with the possible value of the given diagnosis to the community as a whole.

We must not neglect the other side of the shield. If the community as a whole deems it a duty to offer free diagnosis to the practising physician, there is a duty also on his side. Unless he cooperates to the fullest extent, he is receiving something for nothing, and this, though often demanded as a right, is not a function of the government. The presentation of well considered clinical data, which will make possible accurate statistical epidemiological interpretations of disease conditions will give us an almost ideal relation. It is for this reason that most laboratories refuse to examine specimens in which the clinical data are inadequate, though it is also evident that in certain types of disease the information received must be held strictly confidential. It is also essential that the physician who is benefited by the diagnosis should not block the work of the laboratory in any way. It is astonishing that he cannot see that this type of hindrance militates against him more than against the laboratory, and that he will be the ultimate sufferer. As an example we may cite the instances only too frequent, where the physician substitutes faked cultures for diphtheria release. Incidentally we may remark that in almost every case of this sort, a competent diagnostician will know of the substitution, as the cultures from the mouths of different individuals differ almost as much as the finger prints.

A further detail in cooperation is the explanation to the patient that the laboratory is made for help and not for hindrance; that it is not the intention and the pleasure of the diagnosis division to keep a patient shut up as long as possible. It was only the other day that a woman called us up on the telephone and asked why her child was held quarantined, though now well of diphtheria, adding that *her doctor said* there was no reason for the isolation. The man concerned had recently been in the employ of the city and could not plead ignorance of the laboratory procedure and its reasons.

Another accusation of a different type is to the effect that the laboratory goes halves with the doctor on the call fees while the quarantine is kept up. We see that the question of fee splitting is not confined to clinicians. The importance of this attitude bears on the fact that no public institution can stand long without public sympathy and respect, and that

unless this sympathy is stimulated by the doctor and the nurse, progress is hampered.

The second group of activities mentioned earlier, namely, the study of foci of infection, primarily on the basis of case reports of the diseases, deals mainly, as far as the laboratory is concerned, with foods and beverages. Of these the most conspicuous are water and milk. Most places which support a laboratory have a central water supply, and it makes little difference whether the laboratory work is done under the water department itself or under the health department. The sanitary interpretation should be in the hands of the latter, which is in the last analysis responsible for water-borne epidemics. It is this divided responsibility which has kept up an unnecessarily high typhoid rate in Cleveland for the last few years. If there is an expert at the head of the water division, with epidemiological experience, he may be trusted to interpret cause and effect, but in that case there is an unnecessary duplication of experts, which in the present financial poverty of cities should be avoided. There is no commodity which reaches more of the people, and the source, the means of distribution, and the treatment, if any, should be under the guidance of the health department, with its laboratory facilities.

We believe, in Cleveland, that the water supplies of those who work in the city, even though they live outside, should be examined free of cost, as the information thus acquired will more than pay for the time spent in the investigation. A natural expansion of this is the examination of park springs, bottled waters sold, and even mineral waters.

With regard to milk, it has now become pretty definitely the opinion that the only final evidence as to the satisfactory or unsatisfactory character of a milk supply is the bacterial count when it is delivered to the consumer. This can be obtained only through the laboratory. With regard to the question of butter fats in milk, we are dealing rather with a food problem, a question of economics which will be considered elsewhere.

In addition to these duties, which are unquestionably related to the health of the community, there are others which have more or less automatically fallen to the lot of the laboratory. Just as in the health department as a whole there are many jobs which, as has been brought out by Hill, Jordan, and others, are rather municipal house cleaning than public health, so in the laboratories there are many things done which are not strictly health matters. Various reasons obtain in various places. The apparatus is similar and the combination avoids duplication; the chemist is interested in them, etc., reasons more or less valid, but the work is with us, and is likely to remain. Probably the most important part relates to the adulteration of foods and beverages. It is obvious that while they lie on the border line, most of these details are economic rather than sanitary. It is really nothing to the health department that some sugars are largely starch, that some noodles contain no egg, or that the milk dealers are allowing the rain to get into the milk cans. Yet this work is important in itself, requires equipment of the laboratory type and, finally, which is prob-

ably the most important factor, it is only one part of the food problem, which at many other points comes more directly in contact with the health department. The recent ordinance in New York dealing with physical examination of food handlers is a case in point. For proper control of a complex question such as that of food supply, a broad view of its actual principles must be possible, and through the inspection of places in which food is handled and observation of the workers, a much better idea of the problem will be obtained. One of the main objections, and a very real one, is the waste of time in court cases, where the final struggle comes. But, on the whole, the advantage to the community of having the work carried on by a department which is broadly interested in welfare as well as in its subdivision, health, rather than by a purely police power for instance, will be shown by the better results coming with greater interest and will outweigh the disadvantages.

With regard to the work which is more properly that of an assay laboratory, such as investigation of coal, cement, gas, etc., for the other departments, there should be either an assay laboratory in which work of this kind could be done and financed by those benefiting, or a special division in the bureau of laboratories should be made for this purpose and financed entirely by the departments obtaining the service. It scarcely seems fair that the health department should pay for testing gas meters or for ascertaining the quality of cement used in public works, yet in many places its budget is burdened with items of this character. Where proper financial support is given by these other departments, however, the combination may be justified by equipment and staff increase in the laboratory as a whole.

In certain other activities the laboratory acts as a consultant, and here, as a rule, the sanitary side is more prominent. Examination of air in public places and in common carriers, testing of disinfectants, school cultures for diphtheria carriers, and similar matters are examples of this sort.

Without presuming to suggest to any laboratory how it should be run, there are certain underlying principles which have been impressed upon us in observations at home and abroad. First, in regard to routine work outside of the diagnosis division, especially where there are places or outfits to be inspected, samples collected and examined, and a possible termination in court procedure, we believe that the closer the collector of the samples to the analyzer, the better the results. Everyone appreciates that examination of numbered samples gives insufficient information as to the proper interpretation of the evidence, as the local conditions may greatly influence such interpretation, and while it is not always possible for the man who obtains the sample to do the analysis on it, nor would this be necessarily desirable, yet the closer the relation the better. The identity of the sample is properly insisted on by the courts, and every transfer from one bureau to another complicates matters. Inasmuch then as the inspection of food and of milk in their final analysis, on which all action of the health department must be based, comes to the laboratory, I feel that there is no adequate reason why *all the inspections* should

not come under the laboratory, as well as the examination of samples. It would mean really that the laboratory would collect its own samples instead of having them brought to it, that the authority would be unified, that the distribution of the time of the employees would be more economically arranged, and that court procedure would be markedly simplified. It would necessitate the placing of the food and the milk inspection as divisions of the laboratory, but would not affect the meat inspection, as action in this division is rarely dependent on the health laboratory.

The next point concerns the character of work to be assigned to the members of the staff. Although the word, efficiency, is being used in the present day and generation almost *ad nauseam* there is as yet no good term to substitute. No public health laboratory is over financed and it is necessary to get the most and the best out of the staff. We hear another term a great deal, business administration. In the factories it is the growing tendency to specialize work to the last extent, to set each employee at a routine job which may be done with a minimum of intelligence and a maximum of speed, and to increase the speed to as near the breaking point as is safe. In some laboratories this is being attempted, although the atmosphere of the average city hall prevents the speed from being dangerous. The tendency is for the individual to become a cog in the mechanism and to lose touch of the relations of the work and we do not believe we shall get the same type of work, for instance, from a man who diagnoses positive or negative in diphtheria slides without knowledge of the clinical relations as from one to whom the case was a clinical entity.

For these reasons we insist that the diagnostician shall know if the physician considers the case diphtheria or not, whether the culture is for diagnosis or release, and in the latter contingency, whether the presence of the organism is of long or short duration. We insist that there shall be a certain amount of field work for each man so that the clinical side may not fade, and that where it is considered wise to isolate cultures and to test them on animals, this shall be done by the man who has been following the case through the microscope. The same rule holds good in the other divisions of the work, and we believe that while it may be possible that greater speeding up and perhaps, in the case of our largest communities, a somewhat cheaper force may be obtained by the factory method, the ultimate result to the community is better in that it gives the worker a square deal and puts him in a position for advancement and does not lower him to the role of a mechanic who is fit but for the one job. Moreover, this arrangement in the various divisions seems to stimulate the whole group to better and more conscientious efforts, and the experience of years only strengthens us in this opinion.

The third point about which we have convictions relates to the question of *research*. What are the rights and the duties of a public health laboratory in relation to original investigation?

Such laboratories are supported by the public funds raised by taxation, and the question is often asked whether the money is properly used for such

a purpose. In the last analysis, the question may be stated, Does it pay? Some places carry their negative answer so far that they discourage attendance at scientific meetings on the theory that the incumbent of a given post must be qualified and needs no such stimulus. In a science such as medicine this is obviously ridiculous, and the attitude is changing. Yet it is true that in a laboratory so supported, there is a distinction as to the sort of research advisable. Pure research, the seeking for truth with no thought of practical application, is a university function rather than a public one. It is true that many investigations undertaken in such a spirit, such for instance as the study of the Hertzian waves, may result after years in such advances as wireless telegraphy, but until the budget of the laboratory bureaus changes materially, we cannot afford to chance this. It is the duty of the research workers, then, to select subjects which have a bearing on the practical side or, in other words, those from which we may hope to derive information leading to economy of administration, or efficiency in reducing disease and epidemics. There are many problems which not only have this practical character, but which cannot be handled except in a public health laboratory with its wealth of material, a wealth obtainable nowhere else. Just as it has been the custom for many of our physicians to go abroad to study pathology, not necessarily for the foreign teachers, but because the available material is so much greater, so the opportunities in connection with municipal and State laboratories are greater in many directions than those anywhere else.

But even granting this, we may ask what time is available for research? Are not the men paid for whole time routine? This is a restatement of the original question and may be easily answered. Not every man can do research, but those who are capable and interested can always find time to fit it in if the attitude of the chief is sympathetic. They do not feel that the striking of the clock drives them from the building nor that they are cheating the city if they work over time, provided that the atmosphere of the laboratory breathes encouragement for the man who wants to get on.

One of the chief interferences with research is that there are many details which should be learned and recorded at the time of their occurrence, and this is often the busy time of routine which cannot be neglected. It is for this reason, if for no other, that a close relation with an up to date university is valuable from all points of view. In such an institution there are always men who are interested in investigation, who will be only too glad of opportunity to utilize the facts collected in regular routine and to develop them. Such men may be among the faculty or the students or both, and through them the difficulties just noted may be in large part avoided, so that the investigation may be carried on not only by them, but by the men actually in the health laboratory.

It is one of those rare combinations in which both sides are benefited, the university in gaining access to large amounts of material, the city in having these materials utilized, and standards of work established which are of university type rather than

city hall type. That this combination is valuable is established by the result of such relations in various cities such as Providence and New York. In Cleveland several pieces of work have been published jointly by the university and the health division, and at present eight men are engaged in work of this character.

Moreover, research stimulates not only the men actually concerned in it, but the whole staff down to the laboratory attendants, provided that the latter are kept advised of its progress. I have received valuable suggestions for improvements in various directions from unexpected sources, and find that the whole staff thinks in terms of improvement.

This brings us naturally to the relation of the laboratory to the university. The points just taken up, showing how much better the material may be utilized by such a combination, are really sufficient to justify it, but the importance is even greater, and unless one of the members of the university staff is in an official position in the public health laboratory, the use of research material will be in the line of a removable favor rather than provided as a routine working condition.

All recent discussions on this subject have the same trend, and the belief that such should be the case is growing in theory and in practice, but there is some argument as to the division of the university which should be concerned. Chapin, in the recent investigation of the State health administrations, believes that the undergraduate staff is the one to care for this. It is true that this has been most successful at Brown, but this is in part due to exceptional interest of the biological department in public health affairs; moreover, there is no medical department there, and whatever interest of this kind does exist must be in the undergraduate department. Most of the medical schools are developing departments of public health, and it is natural to suppose that the greatest interest in the scientific development of this branch of study will lie in this department. The professor of hygiene or bacteriology will be automatically brought into so close relation with this type of facts that his position will be more or less atrophied unless he has a hand in it, and the supervision of the city or State laboratories is the most valuable relation for both sides. Doctor Chapin is quite right, however, in his further opinion that great care must be taken in the exact relation of school and city. The health department is responsible to the people for the proper conduct of all its divisions, and therefore in all matters of policy the chief of laboratories should be directly under the commissioner. On the other hand, he should have the final voice in staff appointments (limited only by civil service rules), distribution of work, methods used, and with this latitude of action it is up to him to establish his importance to such a degree that his word will be final in such matters without argument, and that his advice will be sought in the various divisions of the health department.

The post should be a part time one, so that the duties in the medical school and the health department should go on together, for several reasons. In the first place, there is no more efficient preventive of stagnation than teaching the present type

of inquiring medical student, who is satisfied only by definite answers and is quick to pick flaws in platitudes and generalities. Absence of this stimulus has been the ruin of more than one laboratory scientist. Moreover, the relation to the university gives stability. There is no doubt that the fact that one is independent of a given position makes that position more secure, for there is less satisfaction in throwing out a man who does not care, and this stability obviously makes for good work.

To the school the advantages are also unquestionable. In addition to the increase of available research material, the value of the routine material in the laboratory, and the access to the other sources of information of the health department, make the clinic for the department of hygiene, and it is as absurd for a public health department to be without a clinic as it would be for a surgical or medical department. For the teacher in hygiene to have access by right and not by favor to water and sewage purification, to communicable diseases, to housing is to admit of real teaching and of practical research. Such a relation once established, it is very difficult for the politician to disturb it, and in this way a very important branch of the health department may be kept free from political influence.

In summation, then, the public health laboratory is a valuable asset to the community in its correlation of activities within and outside of the health department, in its provision of better laboratory aid for the man of moderate means, and for the practical advances possible through investigation of the large amounts of routine material.

For these reasons the community should take the greatest possible care that adequate funds and equipment, freedom from political influence, and association with a high grade university should be the main factors controlling its development.

EAST NINTH STREET AND ST. CLAIR AVENUE.

PYELOCYSTITIS AND METASTATIC ABSCESSES FOLLOWING TONSILLITIS.*

By H. BROOKER MILLS, M.D.,

Philadelphia,

Professor of Pediatrics, Medical Department, Temple University;
Pediatricist, Samaritan, Garretton, and American
Stomach Hospitals;

AND GEORGE A. SOWELL, M.D.,

Philadelphia,

Resident Pediatricist, Samaritan Hospital.

Pyelocystitis, according to Kerley, is a disease of infancy and early childhood and occurs almost uniformly in females, the majority being under the age of three years.

The case we desire to report is that of a boy aged two years, who was taken ill on December 9, 1915, with tonsillitis, at which time the temperature averaged 102° F. Three days later, i. e., December 12th, the tonsillitis was practically cured, but the child had no appetite and was having from three to four loose bowel movements every day. Four days later, i. e., December 16th, the temperature suddenly rose to 103° F., after having been normal for several days, and remained at or about this height for some

days. It then dropped to normal and remained there for several days, when it again suddenly rose as high as before.

Although this temperature curve is diagnostic of pyelocystitis, that is to say, the tendency to remain normal for a few days, then rise to 103° or 104° for several days, and just as suddenly drop to normal again, the various physicians who saw the case at this time looked upon it as being one of close differential diagnosis between influenza, typhoid fever, and enteritis.

The patient was admitted to the Samaritan Hospital, December 27th, eighteen days after having been taken sick, during which time there had been several spells of high temperature with corresponding periods of normal temperature. Careful examination on admission was practically negative, except for some swelling on the instep of the left foot, at the metatarsophalangeal joint of the right big toe and the dorsal surface of the left hand. All of these swellings subsequently developed into abscesses, which were opened and thoroughly drained some days later.

The temperature on admission was 101.8° F., pulse 120, respiration 28. Examination of the urine showed albumin, many pus cells, and a few red blood cells, but no tube casts. A blood examination at this time showed 3,900,000 red blood cells, 18,000 white blood cells, and eighty-five per cent. hemoglobin. A differential count showed seventy-two per cent. polymuclear, six per cent. lymphocytes, twenty-one per cent. mononuclear, and one per cent. transitionals. The Widal was negative, also the paratyphoid test.

Pus from the abscesses showed a pure culture of *Staphylococcus albus*. With the opening of the abscesses the temperature dropped to 99.4° and remained there for two days, when it suddenly rose to 104.4°; pulse 136, and respiration 36; remaining at about this height for three days, when it dropped to 99.5°, where it remained until the patient left the hospital some two weeks later.

Repeated urinalyses were made during this time, always showing large amounts of pus, examination of which showed pure culture of *Staphylococcus albus*. Blood cultures were made on two occasions and they also developed pure *Staphylococcus albus*.

Before leaving the hospital, the child was given a three or four day course of hexamethylenamine, fifteen grains daily, two or three different times, always with an interval of two or three days between the courses of medicine, and a gradual diminution in the amount of pus was observed, so that when the child left the hospital, the urine was practically free of pus.

On account of the diseased condition of the tonsils it was decided to remove them while the child was under our care, and cultures made from the caseous material gave us almost a pure culture of *Staphylococcus albus*, there being but a slight streptococcal contamination.

It is evident in this case that we were dealing with a pyelocystitis, and the question was, What relation, if any, did the tonsillitis and the metastatic abscesses bear to the pyelocystitis? We feel that

*Read before the Philadelphia Pediatric Society, March 14, 1916.

the results of the laboratory work proved pretty conclusively that the tonsillitis was, in part, if not entirely, the etiological factor in the pyelocystitis, while the metastatic abscesses were complications of the latter. Of course, we base our diagnosis of pyelocystitis on the typical temperature curve and the pus in the urine, while the finding of a practically pure *Staphylococcus albus* infection in four different places, i. e., the blood, the urine, the tonsils, and the pus from the abscesses, we feel establishes one factor as the cause of all the conditions. We are forced, therefore, to take them in the order of their occurrence in establishing the relation that one bore to the other. While we are unable to find any record of tonsillitis acting as a causative factor of pyelocystitis, we know of no reason why such a condition should not occur, and the staphylococcus has been frequently referred to as one of the common forms of bacteria found in these cases.

We learn from the patient's physician that since he returned home he has had one spell of high temperature lasting for a few days, and then dropping to normal, the pus found in the urine at the time again clearing up under a course of hexamethyleneamine. The family physician also reports pain and tenderness at the seat of the abscess in the left foot, and an x ray examination by Doctor Bird shows periostitis at this spot.

Our attention has been called of late to two other cases of pyelocystitis, in one of which tonsillitis seemed to be the etiologic factor, and in the other an otitis. In the latter case, however, the tubercle bacillus was found in the pus in the urine. Both patients are doing well.

BLOOD LETTING IN UREMIA.

BY BEVERLEY ROBINSON, M. D.,
New York.

On February 13, 1916, I was called in consultation to see an urgent case. When I entered the patient's room, he was comatose and almost immediately had a convulsion. I was told by the attending physician he had chronic interstitial nephritis. The coma and convulsive seizure were evidently due to that cause. We concluded that the best immediate treatment was blood letting. Instead of doing a venesection, we preferred to send for leeches and apply them to the mastoids. This was done within a very short time. The effect of the leeches (one dozen) was most satisfactory. Very soon after their application consciousness returned and there was no other convulsion.

Six days later, I saw the patient, a male adult, again in consultation. At that time, he seemed remarkably well and comfortable and was going the next day for rest and change to Atlantic City.

The patient, a man of middle age and stout build, had been a free liver. His habits, latterly, under the advice of his physician, had been controlled in a rational way. Singular to say, in New York city, today, leeches cannot be had at any drug store I know north of Fourteenth Street, except one. Why is it? Simply because now they are very infrequently used, either by general practitioners or specialists. To me this is truly lamentable.

I am confident that the use of leeches would save not a few lives and avoid many operations. In uremia, cerebral hemorrhage, and pneumonia, they would often be invaluable. In acute aural and ocular inflammations many operations would be prevented; likewise, in attacks of appendicitis. Obviously, they should be applied intelligently; not simply for a disease, but for a patient with a disease. The local effect of the leeching is, I believe, preferable to venesection in some of these instances, if not all—possibly, excepting pneumonia. Despite the fact that, anatomically, I cannot explain my statement satisfactorily, by reason of direct connection of the veins locally with the organs affected, I feel confident that the same amount of blood withdrawn from near the diseased organ is more useful than if it be taken by opening a vein at the elbow.

There are obvious objections to leeches with which I am familiar; there are also objections to venesection. Personally, I have not seen accidents from leeches; probably because they have been applied intelligently and with proper precautions. Nor have I seen any grave result from venesection. I have seen, however, more than once, even when venesection was done carefully and by a man who had experience and skill, the vein not give out blood as it should. The precise cause of the blood stagnation, or its inability to flow from the little wound in the arm, was not evident at the time. At all events, it could not always be remedied.

In corpulent men and women, particularly, unless the vein is dissected out, a slight change in the incision of the skin and the vein, with the lancet, may cause what is a somewhat unpleasant occurrence for the operator, also for the assistant and observers.

Blood letting in uremia gets rid of the poison in the blood, whatever it may be, more rapidly than any other method. Sometimes, especially if much blood is taken and the patient is obviously weakened, it is wisdom to follow it with saline infusion, or, what is safer and some times effective, simply a rectal saline injection with a suitable tube.

TUBERCULIN IN SURGICAL TUBERCULOSIS.*

BY ELLIS BONIME, M. D.,
New York.

Chief of Immuno-Therapeutic Department and Lecturer on Surgery,
New York Polyclinic Medical School and Hospital.

It is useless to go into the history of tuberculin, it is so familiar to all, and unfortunately its vicissitudes have remained most prominently impressed upon our minds. Let us for a minute shake off these adverse impressions and lend an impartial ear to the virtues of tuberculin. I have long since come to the conclusion that its virtues are many and the shortcomings are not its fault, but are due to the various methods of its application.

I am convinced that in tuberculin we have a positive agent in the cure of tuberculosis, but it requires care in its application. Tuberculosis is one of the few diseases that produces a hypersensitiveness, on the part of the patient, to the products of the tubercle bacillus, and the balance between the negative

*Read before the Orange Practitioners' Society, May 28, 1915.

and the positive phase is so delicate that the minutest quantities of toxin thrown into the circulation are enough to throw the balance against the patient.

In most all infections we depend upon the destruction of the microorganisms through the agencies of antibodies, and the more organisms destroyed, the quicker the cure. The destroyed organisms are eliminated without extra strain on the body. In tuberculosis we also depend upon the destruction of the tubercle bacillus for a cure, but the endotoxin set free from the bodies of the killed tubercle bacillus is highly toxic on account of the hypersensitiveness to this endotoxin on the part of the body, hence the vicious circle in tuberculosis; the host kills the invading tubercle bacillus, the killed tubercle bacillus becomes poisonous to the host and renders him more susceptible and becomes proper soil for the increased growth of the bacillus. It is thus apparent that in order to cure tuberculosis, we must overcome the hypersensitiveness of the body to the product of killed tubercle bacillus, and so establish the same conditions that hold in other infections, that is, to be able to kill the tubercle bacillus in large numbers without detriment to the body.

The most rabid antagonist of tuberculin must agree that gradually increased doses of tuberculin will slowly overcome the hypersensitiveness to the products of tubercle bacillus, if it will do nothing else, so overcoming the greatest barrier to the antibody action in this dreaded disease.

Viewing the mechanism of tuberculin therapy in the light of modern research along the lines of immunity, it is about as follows: An injection of tuberculin into the subcutaneous tissues will set up a local lysin factory; these lysins are absorbed in the circulation and there they float inactively until they come to a place where the tubercle bacillus is living and rapidly reproducing. These lysins having a great affinity for the tubercle bacillus, combine with them and lysozyme them. These lysinized bacteria are then absorbed into the circulation and act upon the body as a toxin, causing the familiar constitutional reaction. Therefore, as soon as we can establish a tolerance to the toxins of the lysinized bacteria, we will obtain the same conditions as hold true in the case of other infecting organisms, that is, an antibody destruction of the tubercle bacillus without production of toxicity.

It was my purpose at the beginning merely to give an outline of the method of tuberculin treatment in surgical tuberculosis. Knowing the usual train of thought on the part of the profession, I have become convinced during my several years of teaching tuberculin therapy that tuberculin is considered a drug with only probable beneficial effects in isolated cases of tuberculosis, and because of difficulty in handling, not worth while bothering with, therefore I have gone into greater details so as to show at the outset that tuberculin is a definite therapeutic agent, and that difficulty in handling is no excuse for its nonadoption, but should be merely a check upon its indiscriminate and unscientific application. To my mind the omission of the use of tuberculin in tuberculosis cases is just as great an injustice to our patients as a failure to use antitoxin in diphtheria.

In applying tuberculin treatment, we must aim to-

ward two distinct effects: First and foremost, the elimination of the patient's hypersensitiveness to the products of the tubercle bacillus; second, the production of the maximum amount of antibody substances in order to eliminate the tubercle bacillus faster than it can increase. The former can be attained by using minimized doses of tuberculin gradually increased, while the latter may be accomplished by giving the maximum amount of tuberculin consistent with the individual's hypersensitiveness. The method I am using I have formulated approximately as follows:

Treatment is begun by giving 0.10 c. c. of a certain dilution of the tuberculin. This dose is increased by 0.02 c. c. for each of the two following injections, giving 0.12 c. c. and 0.14 c. c. respectively. Subsequently the increase is made by 0.04 c. c., then by 0.06 c. c., thus increasing the amount of increase by 0.02 c. c. at every second injection until one c. c. of that dilution is reached, when the next dilution is begun and given in the same routine as the former. This method allows of the maximum of tuberculin being given compatible with the tolerance of each individual case, and if a reaction is reached, it will not be severe, as it is produced by the minimum of tuberculin necessary in that particular case.

When the first dilution, or the dilution representing ten per cent. tuberculin, is used, the increase of the increase may be at every injection instead of every other injection.

It is evident from this scheme of doses that a mild reaction will be reached in every case, and since a constitutional reaction simply means the waiting of a full week for the next injection, treatment is then resumed with an amount equal to the third last injection and increased subsequently as at the beginning of treatment. No two patients ever react to the same amount of tuberculin; the divergence in the schedule of doses will occur accordingly, and automatically the treatment applies itself to each individual case.

A constitutional reaction we consider a rise of temperature one degree higher than the regular daily curve in that individual. It is, therefore, necessary that a three or four day temperature record should be obtained in every case before the beginning of treatment by tuberculin.

A local reaction consists of an area of redness with an induration at the point of injection, indicating slow absorption, and when this is not accompanied by a rise in temperature, it should not be followed by any decrease in the amount of tuberculin, but by lengthening the intervals between injections to one week, otherwise there may follow a severe constitutional reaction due to overdose from the cumulative effect of the two injections.

A focal reaction means a hyperemia at the point of infection and indicates the all important curative property of tuberculin. Upon hyperemia depends the curative mechanism in all infections. This focal reaction is well demonstrated by a reddening of the skin over the tuberculous glands, the reddening of scars from former operations, the increased amount and thinning of the fistulous discharge, and the temporary increase of pain and swelling in the joint or bone conditions.

METHOD OF MAKING DILUTIONS.

Dilutions are made in multiples of ten, and this is done in a Record tuberculin syringe, subdivided into 0.02 of a c. c. The diluent is half of one per cent. carbolic in normal saline. The first 0.90 c. c. diluent is drawn in, followed by 0.10 c. c. tuberculin. An air bubble is then drawn in, the syringe is shaken, and the contents are put in a receptacle, and labeled solution No. 1. It is of the strength of one in ten. Then 0.90 c. c. diluent is drawn into the syringe with 0.10 c. c. solution No. 1; this is well shaken, and labeled solution No. 2; 0.90 diluent is drawn in, followed by 0.10 c. c. solution No. 3, and this is well shaken and labeled solution No. 4, and No. 5 is prepared in similar fashion by using No. 4.

In most surgical conditions we begin treatment with the fourth dilution, except in an acute joint tuberculosis, particularly the knee, where the fifth dilution should be chosen. In tuberculous cervical adenitis, however, we could begin with the third dilution, except in recurrence after radical operation, where the hypersensitiveness is greatly increased, requiring much smaller doses. The fourth or even the fifth dilution may be indicated for beginning treatment.

In cases of surgical tuberculosis it is not enough to get rid of tubercle bacillus alone; we have other difficulties to overcome, the most important of which is the damage which has already been done. For instance, the eradication of the tuberculous process cannot replace destroyed bone, nor obliterate fistulous tracts. These tuberculous bone cavities and fistulous tracts are usually infected with other bacteria, especially *Staphylococcus albus*. An autogenous vaccine to combat the mixed infection is especially indicated; bismuth paste to encourage the filling in of all bone cavities is also important. Orthopedic appliances as indicated must not be forgotten, for although they may not be necessary after tuberculin treatment is finished, they are as much indicated during the treatment as they are where no tuberculin is used.

However, I see no sense in applying heavy plaster casts to limbs that are acutely affected, for the patients in such instances are bedridden. Why obstruct circulation and cause so much inconvenience, when a posterior splint would be sufficient to prevent what little motion might occur in a patient that is bedridden. I have seen a great deal of damage done by casts applied without skill and always try to obtain the desired results by much simpler practical methods.

I wish to cite one case of the many that are under treatment at the New York Polyclinic Hospital and in my private practice, representative of a type of case that runs on for many years, a constant burden to themselves and to those they depend upon for support. An insufficient immune response kept them in their misery for years until at last tuberculin, properly administered, made up the deficiency long withheld, replacing them in the proper sphere with their fellow beings.

CASE. MRS. S. C., aged twenty-two years, was attacked by tuberculosis of the left ankle joint at four years of age; six months after the onset of the trouble, the ankle became so swollen that an operation was advised. Several incisions were made and after this suppuration had lasted for

a year, amputation of the leg about six inches below the knee was performed. Soon after the operation, pain and swelling began in the right hip. There were six operations performed on that hip, and when the patient came to me there were eight open fistulas discharging thick creamy pus. These fistulas were situated as follows: Two in the groin, two on the anterior aspect of the thigh, and four around the ischium, on the gluteal region. Most of these fistulas discharged for at least fourteen years; bismuth paste injection and x ray showed an obliterated hip joint with a cavity, holding about three ounces of bismuth, forming the anastomosis of all the fistulas.

Tuberculin injections were begun December 7, 1911, and continued until May 19, 1912. The first and only reaction was produced by 0.30 of No. 3 solution. The mixed infection consisted mainly of *Staphylococcus albus*. An autogenous vaccine was made and beginning with 200 million was continued at weekly intervals for eight injections, the last injection being 1,000 million when no more bacteria could be grown from the discharge. After the discharge had become mucoid and thin, the bismuth paste injections were begun and continued until all the fistulae had closed. This occurred two months after her last tuberculin injection and she remained well thereafter.

24 WEST FORTY-EIGHT STREET.

EPISIOTOMY.

A Plea for Its More Frequent Use,

BY GEORGE L. BRODHEAD, M. D.,
New York.

Episiotomy, in my opinion, has not received the degree of attention which its merit warrants. It is so simple, so devoid of danger, and so successful in its results, that we believe it is performed far too infrequently. Lusk, in his textbook, stated that "it is essentially the operation of young practitioners," but he also stated that when rupture of the perineum seemed to be inevitable, the operation was justified. The late Professor Jewett, in his *Practice of Obstetrics by American Authors*, said that episiotomy substitutes for a posterior laceration, which is often difficult of complete repair, incisions through less important structures which can easily and perfectly be closed by sutures. Again, the same author, in the *American Textbook of Obstetrics*, stated that "no method yields better results for the ultimate integrity of the pelvic floor than episiotomy rightly timed and properly executed. The ultimate condition of the pelvic floor after the operation correctly performed is even better than after many natural deliveries in which the parts escape rupture."

Among the indications for the operation which I would mention, are rigidity of the perineum, so common in elderly primiparae, edematous soft parts which we know are easily torn; cases in which large fetal heads must pass through small vulvar outlets; any condition such as the passage of meconium in vertex presentation, or a rapidly failing fetal heart necessitating speedy delivery through a small outlet; cases in which there is a large amount of cicatricial tissue in the perineum, and finally, and of great importance, the operation is indicated in my opinion as a prophylactic measure under certain conditions before breech extraction.

The operation is performed by making two incisions, one on either side, at a point about one third of the distance from the fourchette to the anterior commissure. An ordinary straight blunt pointed scissors may be used, and the incision should be

made horizontally, about one half to three quarters of an inch in depth. The skin should be pulled outward so that the incision will be largely through the mucous membrane. The incisions are easily repaired with catgut sutures, and usually heal readily.

The writer attributes the fact that he has never had a complete laceration of the perineum in a vertex case to the beneficial result of episiotomy, without which in many cases he feels certain that the sphincter would have been torn. He confesses, however, to a considerable number of complete lacerations of the perineum in breech cases, but he can remember no instance in which the sphincter was torn after episiotomy had been done. During the past few years, the writer has performed the operation, in a number of instances, as a prophylactic measure in breech cases, where the child was evidently of large size, and the outlet small. He believes that in these cases, the operation will not only facilitate the introduction of the hand in order to bring down extended arms, but will save the patient in nearly every instance, from a complete laceration. The operation is harmless, and so very useful that he would urge its more frequent performance for all of the indications mentioned, believing that with episiotomy rightly done, complete or severe laceration of the perineum will seldom occur.

144 WEST FIFTY-EIGHTH STREET.

MALNUTRITION.*

A Problem in Medical Inspection,

By IRA S. WILE, M. D.,
New York.

Popular articles relating to the physical health and welfare of public school children frequently mention the dangers and horrors of the undernourishment of the children. Considering the literature of medical inspection we are astonished to note the infrequent recognition of the occurrence of malnutrition in its protean forms.

Medical inspection aims to eliminate contagious diseases from the public schools as well as to ascertain the physical and mental defects requiring corrective attention. A moment's thought as to the nature of our statistical tables, evidences the fact that medical inspection all too frequently takes cognizance of symptoms, but fails to get down to the underlying factors responsible for their existence. Modern preventive medicine demands a knowledge of the causes of defects in order to establish an efficient program for prophylaxis. It is difficult to analyze most of the available statistics relating to medical inspection, owing to the variable personal equations of medical inspectors and their varying standards of judgment in differentiating significant defects.

The relation between malnutrition and the numerous recognizable physical defects has not been determined. Indeed, more adequate study of the problems of nutrition has been made by educators than by medical inspectors. Possibly, it is because

teachers recognize with Bacon that "the brain is in some sort in the custody of the stomach."

During the early years of school life nutrition may suffer from maladjustments. Between the ages of eight and ten years metabolic activity is decreased. During this resting period, slight causes induce tremendous effects upon physical resistance, the decline of which increases susceptibility to infectious diseases.

The metamorphosing years preceding puberty severely attack nutrition and it has long been recognized that the chronically underfed or malnourished child requires a longer period of time for puberal development than his better cared for brother. The Royal Commission on Physical Training, in 1903, recognized malnutrition as a marked cause of low physical standards among children.

Wherever they are gathered together in communities, we may discover inadequately fed children suffering from anemia, underweight, enlarged glands, and similar conditions. Without doubt, malnutrition is a factor, though certainly not the only one, in the etiology of anemia, adenitis, defects of vision, mental dullness, chorea, tuberculosis, impaired resistance to infections, and protracted convalescence from disease.

The preponderating proportion of dental defects is evidenced in the inspectorial statistics of all communities, but insufficient thought has been given to the fact that the permanent teeth develop during the school period. Carious temporary teeth call for unusual measures of prophylaxis in order to safeguard the development of the permanent teeth. There is a marked relation between deteriorated dentition and malnutrition. Poor food, lacking in lime and other salts, leads to weakened teeth and consequent decay. Following decay, infection, and toothache, improper mastication results, the appetite decreases and malnutrition supervenes. Hence, there arises a lessened demand for food essential for dental growth; more decay ensues and a vicious circle is formed. General nutrition requires the proper functioning of a good set of teeth and a strong set of teeth demands adequate food.

Insufficient attention has been given to the effect of undernourishment during the years previous to entrance into school. Michaels has shown that children who have been breast fed for ten months or more present only nine per cent. of carious teeth in the early school period, compared with twenty-two per cent. among children fed on cow's milk. The relative starvation in proteids, lime, iron, calcium, and magnesium during the first five years of life helps to produce the child suffering from malnutrition upon entrance into the public school. The report of the medical inspector, however, will probably class such a child in the group with such physical defects as enlarged tonsils, anemia, or enlarged glands. The diagnosis of malnutrition is rarely made if any other defect is present. The dependence of such defects upon malnutrition, or their interdependence, or their coincidence is not entered on the record, and so the statistics of medical inspection, as related to malnutrition, are decidedly false and misleading.

Chronically underfed children are vulnerable to

*Read before New Jersey State Association of Medical Inspection and School Hygiene, June 25, 1915.

contagious disease and susceptible to protracted colds and bronchitis. Their poor musculature and sluggish circulation make them more likely to fall victims to the various diseases to which they are exposed through the intimacy of school life, and as a result their absences are more numerous. For the same reason their convalescence is retarded, their complications are more numerous, and their loss of education and training through absence is far greater than that of other children of the same age in a better state of nutrition. One of the underlying factors in chorea is a disturbance of nutrition. The New York Committee on the Physical Welfare of School Children found 26.2 per cent. of chorea among children suffering from malnutrition, opposed to only 3.6 per cent. among 1,400 children examined by them. This same committee found that malnutrition occurred to the extent of 10.4 per cent. among 1,400 children in October, and twelve per cent. in April among 900 children re-examined. This shows the deterioration of children during the course of a school year due to inadequate home feeding.

Hogarth has defined malnutrition as "an abnormal or disordered growth in the development of the tissues and organisms of a child's body, not necessarily synonymous with underfeeding," and he wisely states: "Malnutrition is at once the most common, and until recently, the least observed of all the unrecognized (*sic*) diseases and affections among children attending elementary schools." The problem of malnutrition is not concerned merely with the breakfastless children or those without any particular single meal, but with all the children who, for long periods of time, are receiving at home a dietary that is not adapted to their needs, and in consequence of which there is marked physical deterioration.

McMillan, of Chicago, found fifteen per cent. of kindergarten children physically below par, and estimated that underfeeding was the cause in eleven per cent. in kindergartens and 7.8 per cent. in other grades. MacKenzie regards one third of all the school children in Edinburgh as poorly nourished. Maxwell is reported as saying to the National Educational Association, in 1904, that there are hundreds of thousands of children unable to learn because of hunger. Warner and Tuke found 28.5 per cent. of London school children suffering from deficient feeding. The New York Committee on the Physical Welfare of School Children, in 1907, declared thirteen per cent. of 990 children examined to be suffering from malnutrition, and Sill, in 1909, estimated that forty per cent. of the children in the elementary schools of New York city were poorly nourished. The New York School Lunch Committee, in 1910, in an examination of 2,150 children, adjudged thirteen per cent. to have marked cases of malnutrition. In Chicago, in 1908, of over 10,000 children examined, twelve per cent. were reported to suffer from malnutrition. In Boston, in 1909, underfeeding was found in sixteen per cent. of over 5,000 children. In Philadelphia, in 1910, twenty-four per cent. of 500 children examined were found to be suffering from underfeeding. In St. Paul, in 1910, twenty per cent. of 3,200 chil-

dren in schools in the poorer districts were reported to manifest evidences of marked underfeeding. In Rochester malnutrition was noted in five per cent. of the children examined.

While the causes of undernourishment are exceedingly numerous and undoubtedly closely connected with such sociological problems as housing, overcrowding, low wages, underemployment, alcoholism, poor hygiene, and ignorance of food values, it is impossible to attack these causal factors in specific instances without the recognition of malnutrition by the medical inspector. Poor assimilation, insufficient clothing, overstimulation, worry, grief, or sorrow may also enter into the basic causes leading to individual states of malnutrition. The initial step in the solution of the problem of chronic undernourishment is the determination of malnutrition.

In a memorandum of the British Board of Education we find noted: "Medical inspection seeks to secure ultimately for every child, normal or defective, conditions of life compatible with the true education, which is the free and effective development of its organic functions, special senses, and its mental powers." This places inferentially the burden upon medical inspectors to appreciate all obstacles to the effective development of the organic functions. Low nutrition or malnutrition should come properly within the scope of their studies.

The symptoms of malnutrition which are too frequently overlooked or are insufficiently considered, are anemia with various types of blood deficiencies, pallor, harsh and inelastic skins, muscular weakness with spinal curvatures or flat foot, carious teeth, squints, diseases of the external eye, lassitude, inattention, twitchings, backwardness, and mental dullness. The height, weight, and chest measurements are usually below par. The stunted growth, the delayed physical and mental development, the weaknesses of the muscles, the increased susceptibility to infectious diseases, and marked liability to tuberculosis may all be related, to a greater or less extent, to a more fundamental condition of malnutrition.

While coefficients of growth and vital capacity have been determined, they are not to be relied upon as final determinants in diagnosing malnutrition. Valuable information is to be secured by the application of Oppenheimer's formula which makes the index of nutrition equal:

$$\frac{\text{Index of the arm (midway between shoulder and elbow)}}{\text{Chest girth (average of inspiration and expiration)}}$$

This should equal at least 30.

Twenty-five per cent. of our public school children fail to attend school seventy-five per cent. of the time. Preventable disease is a large factor in this unfortunate number of absences, and malnutrition plays no small part in preparing the soil for such preventable diseases. Physical education must embrace more than a question of muscles; it involves brains, sex life, and general stability. It is not a question whether a muscle is hard or soft, short or long, or thin or broad, but it is a question as to the general physical efficiency of the child, and this involves its mental as well as the ordinarily termed physical attributes. The opportunity to

affect the puberal development of the children is given only during the prepuberal period, and this represents the period of greatest activity of the schools.

The part that medical inspection may play in determining the state of nutrition is of immense hygienic value. The prompt detection of downward tendencies in nutrition and vitality would enable the child's parents to appreciate the necessity of encouraging heartier eating or of affording a more concentrated dietary.

The paramount activity of medical inspection should be among the children entering schools for the first time. Its maximum value can be secured only when medical inspection virtually becomes medical supervision. The medical inspector has the marvelous opportunity of becoming a prophylactic advisor for six, seven, or eight years to the race determiners of the next generation. Frequent inspection is indicated because the new school environment with poor air, overstrain, excitement, and worry may spend itself upon the appetite and digestion with a resulting deterioration in nutrition. The early recognition of lassitude, anemia, and irritability may be the means of preventing a marked decline in nutrition and vitality. To quote from the Report of the Poor Law Commission, in 1909: "I am satisfied," writes Newman, "that much illness is prolonged quite unnecessarily, and that there is a lamentable and disastrous amount of failure to deal with the beginnings of disease. Neglect of such things leads to mortality more than any other factors."

Gaspar, of Stuttgart, has demonstrated that the proportion of defects varies with the state of nutrition of the school children, and the better the state of the nutrition, the fewer the number of defects.

The reports of medical inspections are not uniform, as may be judged by the single fact that, in 1906, malnutrition was reported in New York city as 6.3 per cent., while Minneapolis, in 1908, reported 23.3 per cent. It is obvious that such disproportion does not exist. This fact is accentuated by a comparison, in the two cities, of the diseases and defects that are closely related to the problems of malnutrition. For example:

RELATIVE PREVALENCE OF DISEASES IN SCHOOL CHILDREN.

Disease.	New York, 1906.		Minneapolis 1908.	
	Number examined.	Proportion.	Number examined.	Proportion.
Anterior cervical glands.....	37,3 per cent.	53.0 per cent.	.....	.....
Posterior cervical glands enlarged.	11.0 per cent.	.....	.....	.....
Chorea.....	1.7 per cent.	0.2 per cent.	.....	.....
Defective vision.....	22.8 per cent.	3.9 per cent.	.....	.....
Defective teeth.....	55.0 per cent.	43.5 per cent.	.....	.....
Hypertrophied tonsils.....	23.3 per cent.	31.1 per cent.	.....	.....
Adenoids.....	12.0 per cent.	12.8 per cent.	.....	.....

Obviously these figures relating to the symptoms of malnutrition show that the New York figures of 1906 are too low.

The relation between defects of vision and malnutrition is suggested by the examinations in Cleveland, in 1907, when the defects of eyesight in well to do districts were stated to be 32.4 per cent., while among the children in congested districts they were 71.7 per cent. Appreciating the importance of a correlation between malnutrition and defects of vision, which are not all essentially optical in character, it is well to consider the extent of defective vision in some of our cities and States.

OBSERVATIONS ON DEFECTIVE VISION IN CHILDREN.

Locality.	Number examined.	Defective vision, proportion.
Bayonne.....	4,610 per cent.	7.7 per cent.
Camden.....	10,028 per cent.	27.7 per cent.
State of Massachusetts.....	402,937 per cent.	22.3 per cent.
Milwaukee.....	1,660 per cent.	14.9 per cent.
New York city.....	79,065 per cent.	31.3 per cent.
Pawtucket.....	4,663 per cent.	11.1 per cent.
Worcester.....	11,953 per cent.	19.1 per cent.

The nature of the defects of vision is not stated in definite terms.

Among the 20,000,000 school children of this country, Wood has estimated that five per cent. have spinal curvature, flat foot, or some other moderate deformity. Even the question of flat foot or scoliosis is not always so much a question of muscle as it is of relaxation from undernourishment. It has been estimated that forty per cent. of our children in high schools suffer from flat foot, and it is fair to assume that a still larger proportion of this difficulty is to be found among the children of the elementary schools, who are twelve times as numerous. Five per cent. are said to suffer from defects of hearing, twenty-five per cent. from defects in vision, thirty per cent. from enlarged tonsils, adenoids, or enlarged cervical glands, fifty per cent. from defective teeth; and twenty-five per cent. are regarded by him as suffering from malnutrition, in many cases due, in part at least, to one or more of the defects noted.

The relation between cause and effect may not be clear where so many varying factors are concerned. It is evident, however, that malnutrition is not regularly considered in its causative relation. Whenever another defect is noted, malnutrition is not regarded as worthy of notation unless starvation is apparent. Regardless of the primary factor in malnutrition, whether it is due to a deteriorative reaction against an oppressive physical environment, to unhygienic home conditions, or to lack of adequate or sufficient food, no inspection card should be regarded as complete without some notation regarding the state of nutrition. This position is strengthened by the comment of the chief medical officer of London (1910): "It is certain that malnutrition and physical defects are closely associated and react upon each other, but it is difficult to determine their exact relation to each child or to say in what degree malnutrition causes the other physical evils. Merely to increase the supply of food would in many cases not solve the complex problem of the individual child, although in many cases lack of food lies at the root of the mischief."

The statistics of medical inspection make another error that is extremely misleading, inasmuch as they are calculated all too frequently in terms of the number of examinations made, instead of the number of children examined. It is impossible, therefore, to come to a correct understanding as to the exact number of defects in any one child, or to an appreciation of the relative number of children in the school population suffering from any single pathological condition. The total absence of the term, malnutrition, in many statistical tables shows that this phase of the problem is entirely omitted in a consideration of medical inspection. For example, the State of Massachusetts, in 1906 and 1907, reported the examination of 343,000 children having 27,342 de-

fects, but malnutrition is not numbered among the conditions.

The relation between nutrition and medical inspection is patent. Medical inspection should be so thorough as to indicate, not merely the names of various symptoms and conditions, but whether or not malnutrition could possibly be an underlying etiological factor.

In a general way, I am calling attention to the inadequacy of our knowledge regarding malnutrition among school children. The extent to which malnutrition is productive of physical defects or the degree to which physical defects are responsible for malnutrition, has not been determined. Their interdependence appears to be certain. The solution of the problem of malnutrition is not at hand nor will it be until medical inspectors give greater consideration to malnutrition. Considered as a unit defect, it possesses unusual significance in a constructive program for the establishment of the preventive and correctional measures so necessary for the protection or the conservation of our school children. The mere placing of the word, nutrition, upon our blanks is insufficient. The concept should be positive and the defect to be recorded should be malnutrition. When malnutrition is considered in its generic sense and noted along with concomitant defects, we shall have gone a long way toward an intelligent attempt to solve one of the more important problems of medical inspection.

230 WEST NINETY-SEVENTH STREET.

ANAPHYLACTIC CONDITIONS OF THE RESPIRATORY TRACT.*

Their Diagnosis, Especially of Asthma and Vasomotor Rhinitis,

BY ALEXANDER C. HOWE, M. D.,
New York,

Associate Laryngologist, Methodist and Jewish Hospitals.

Vasomotor rhinitis and bronchial asthma are anaphylactic symptoms, or evidence of the absorption of an unmodified or unchanged protein through the respiratory or alimentary mucosa, occurring in a sensitized subject.

The absorption of a native or unmodified protein through the mucous membrane of the nose and nasopharynx—in a sensitized subject—induces the following picture: More or less occluded nares, a profuse serous secretion, and a pale or blanched edematous membrane, ballooned up to its fullest distention. This group of symptoms, when not caused by adenoids, intranasal deformity, or infection, is known as vasomotor rhinitis. The condition may be constant, may occur at certain portions of the day, or at certain seasons of the year. The severity of the symptoms depends upon the amount of protein absorbed, or upon the severity of the sensitization. If the absorption or the sensitization is considerable, the same symptoms or changes are produced in the bronchial mucosa, and bronchial asthma results in conjunction with the vasomotor rhinitis. The absorption of an undigested or unmodified protein from the intestinal tract in sensi-

tized subjects produces anaphylactic conditions of the lower respiratory tract, but usually not of the upper. Bronchial asthma is not a disease by itself. It is not a spastic or spasmodic condition of the circular muscles of the bronchioles, due to a neurosis, but is a group of symptoms that indicates an anaphylactic condition of the lower respiratory tract.

Friedenthal and others have bronchoscoped patients during severe attacks of asthma, and all report the bronchial mucosa to be pale and swollen and the greatly diminished lumen of the bronchial tubes filled with a glairy viscid secretion or fluid.

The distended or edematous mucous membrane causes difficult inspiration and expiration. The profuse secretion explains the mucous rales. If, during this condition, a probang or bronchoscopic tube is passed or adrenaline applied, the edema is relieved and the secretion is easily expelled through the increased bronchial lumen. Pressure and adrenaline will give the same temporary results in anaphylactic conditions of the nasal cavities. In fact, bronchial asthma might well be called vasomotor bronchitis to identify it with the similar condition due to a similar cause in the nares.

This anaphylactic condition of the upper and lower portions of the respiratory tract can be reproduced in the skin in sensitized subjects. If a subject sensitized to rag weed receives an intradermal injection of the extract of rag weed pollen, a large wheal quickly forms, with a larger or smaller circumscribed area of redness. The pallor and edema around the point of injection in the skin is the counterpart of the intranasal and intrabronchial condition in anaphylaxis. Because of this correlation between dermal reactions and anaphylactic conditions of the respiratory tract, it is possible to determine by skin reactions the probable protein that the subject is sensitized to and that is responsible for any vasomotor symptoms that may exist in the upper or lower portions of the respiratory tract. If a hay fever subject is sensitized to rag weed, only the rag weed pollen rubbed into an incision in the skin will produce a greater or lesser reaction according to the individual sensitization, but no reaction will occur with any other pollen unless it is chemically identical. Skin reactions occur only when the protein used in the test is from the same species of plant or animal that sensitized the subject or is so closely related biologically that the proteins are chemically identical. Hence in testing for a protein, material must be secured from the same or a closely related member of the same family. A subject sensitized to cat dandruff cannot wear aivet cat furs without anaphylactic reactions. One sensitized to wheat protein will react to rye, but not to buckwheat, because the biological relation of the latter is not so close that their proteins are chemically identical. Hence in testing, protein from one member of each animal or vegetable family only is necessary and that protein will prove positive to all other closely related members of that family. Sensitization to animal proteins is determined in the same way as sensitization to pollen.

It has been established by Wells, Goodale, and Osborn that subjects may become sensitized to any of the vegetable proteins used as food or inhaled, and to the proteins of any animals we may come

*Read before the Brooklyn Pathological Society, March 9, 1911.

in contact with or use as food; that they may be sensitized to several proteins at the same time, but that only one of these proteins may produce anaphylactic conditions in the respiratory tract. If sensitized to more than one protein, the protein giving the most decided skin reaction usually produces the anaphylaxis. Except in tuberculosis, sensitization to the various bacteria has not been demonstrated by skin reactions, yet I am positive that in chronic infections, anaphylactic symptoms are due to a sensitization to the protein of that particular infection. Further on I will illustrate this by brief histories of one or more cases.

In a paper on entameba published last summer, I stated that although a very large percentage of human beings are carriers of entamebas in the mouth, or nose, or intestinal tract, yet only those sensitized to entamebic proteins are affected systemically. So far as I know, that is the first time in medical literature that that statement has been made. The failure to grow entamebas artificially makes it impossible to secure material enough to prove sensitization by skin tests.

To find or determine the specific protein in each case of anaphylaxis of the respiratory tract, search must be made for an animal or vegetable protein by means of dermal reactions; for a bacterial protein by exclusion, or for an entamebic or parasitic protein by the use of parasitocides.

The following case histories were selected because each illustrates the relation between anaphylactic conditions of the respiratory tract and different proteins, and the method of diagnosis or attack.

CASE I. Woman, aged twenty-two years, had two attacks of acute coryza or vasomotor rhinitis daily the two preceding winters. Similar attacks began with the onset of cold weather of the winter of 1914, when she first consulted me. During the warm intervals between each cold season she had been free from the attacks, which consisted of sneezing, profuse serous nasal discharge, and nasal occlusion or stuffiness. These attacks occurred usually about 9 a. m. and 7 p. m., lasted about an hour, and then rapidly cleared up. A diagnosis of anaphylaxis of the upper respiratory tract was made and a hunt for the offending protein instituted. By exclusion it was found the attacks were due to the perfume or pollen in a scented face powder. The attacks could be induced readily at any time by using the powder and would remain absent just so long as the face powder was not used. The nearness of her dressing table to a window explains why the attacks occurred only during cold weather. This anaphylaxis was due either to the perfume or the pollen of the flowers.

When anaphylaxis is due to the perfume of flowers, it is impossible to immunize subjects, but when due to pollen, injections of a pollen extract will immunize.

CASE II. Young woman employed in Brooklyn public schools; home in Boston; hay fever when a young girl. Freedom from any but the usual nasal troubles since, except as follows: No nasal trouble when in her home in Boston; no nasal trouble the winter of 1913 and 1914, her first in Brooklyn; nor the following summer. Within twenty-four hours of her return to Brooklyn—September, 1914—severe vasomotor symptoms occurred and persisted till she returned to Boston the following June, 1915, when they cleared up at once and remained so. On her return to Brooklyn, September, 1915, severe nasal symptoms developed at once and persisted except when she left the city for week ends, when the nasal trouble rapidly cleared up, but returned when she came back to the city. The patient and her friends blamed the Brooklyn climate. Examination showed a condition of severe vasomotor rhinitis. Questioning developed the fact that sternal oppression and

difficult breathing frequently occurred. A diagnosis of anaphylaxis of the upper and lower respiratory tract was made, and the offending protein sought by dermal tests. A severe reaction was obtained from cat dandruff. Now the story and answer. There was no cat in her Boston home; none where she boarded the first winter in Brooklyn; but a large pet cat occupied the apartment with her last winter and this. Her symptoms cleared up at once when she and the cat were separated.

CASE III. Young woman employed in Brooklyn public schools. Home in Canada. Gave a history of active vasomotor rhinitis during her stay in Brooklyn, last year, of its clearing up at once when she returned to Canada, and of its prompt return when she came back last September. Dermal reactions were positive only to cat dandruff. The patient stated positively there was no cat where she lived, nor did any of her friends possess one. Nevertheless she was instructed to go home and hunt for the cat. A few days later, she returned and stated that there was no cat where she roomed, but one lounged in the dining room, between meals, where she ate. All symptoms cleared up with a change in place for meals.

CASE IV. Woman, aged about fifty-five years; more or less invalided by bronchitis and asthma for twelve or fifteen years. The asthmatic attacks were distressing and lasted for weeks. Her physician referred her to me to secure a nasal polyp from which to make an autogenous vaccine. She had had every sort of asthmatic treatment without relief. Stock vaccines had proved useless. The autogenous vaccine also proved ineffective. Nasal examination showed a large necrotic area of the right posterior ethmoidal cells. This area, with the polyps, was cleaned out without relieving the asthma. After healing had been completed, a nasal smear was made and found to be filled with entameba. Emetine was suggested. The asthmatic attacks cleared up for two weeks and then began again. Under emetine, the asthma cleared up a second time. Some two months later, during an acute bronchitis, the asthma began and again cleared up with emetine.

From that time to the present—some months later—the patient has remained absolutely free from asthma, although she had three attacks of acute bronchitis subsequently. Were it possible to prove sensitization to entamebic proteins by skin reactions, I am sure the foregoing would prove to be a case of bronchial anaphylaxis due to entamebic sensitization.

CASE V. Woman, aged about fifty-two years, gave history of almost constant asthma for many years. She was operated upon last summer for pelvic conditions that her physician felt might be the cause of her bronchial asthma, but without relief. Her brother and sister, being prominent physicians, had sought relief for her from the best men in our medical ranks. She had no nasal symptoms. Her anaphylaxis was strictly of the lower respiratory tract. For that reason, I made my search for the offending protein in her food and found egg protein the evident cause. Within three days after the elimination of eggs from her diet, the asthma disappeared permanently.

CASE VI. Child, aged seven years, referred to me by physician for removal of adenoids and tonsils, hoping thereby to help a particularly bad asthma that for two years had made sleep almost impossible. In the search for the offending protein, I found she was sensitized to both geese feathers and egg protein. The substitution of a hair pillow for the feather one gave no results. Eggs were discontinued and the asthma disappeared.

CASE VII. Woman, aged sixty-two years, with long history of asthma and bronchitis. Saw her in consultation, when her physician stated that by painting the anterior end of the right middle turbinate and the adjacent septum, her asthma had been relieved for several hours. He felt the asthma was a reflex from the reddened and irritated area in the nasal cavity and requested me to operate. The turbinate was removed as far back as it came in contact with the septum, and gave absolute relief which has continued to the present.

Believing that asthma is an anaphylactic, and not a reflex condition, I would explain her relief by stating that her anaphylaxis was due to a bacterial pro-

tein. The infection found a habitat between the turbinate and septum, where they were in very close contact. Here their proteins were absorbed. Painting with a strong solution of silver formed an albuminate coating which prevented absorption for a few hours. When the coating was sloughed off, or disappeared, absorption began, and the asthma returned. This coincided with the history, as the relief from the silver treatments rarely lasted more than ten or twelve hours.

CASE VIII. Woman, aged thirty-five years, with the following history: Had severe gripe and bronchitis several days before I saw her. She seemed to be gradually getting better of the bronchitis and infection, when suddenly, a little after 1 p. m. on the day I saw her, she had one of the worst attacks of bronchial asthma I have ever witnessed. She was cyanotic, drenched with perspiration from the tremendous effort necessitated by inspiration and expiration. The attack came on as suddenly as if it had fallen on her. Within two or three minutes of the onset, her breathing was as labored as at any time. This attack was a perfect picture of the symptoms produced when an overdose of pollen toxin is injected. She had never had asthma before, except a short attack twelve years before during an attack of acute bronchitis. I made a diagnosis of an anaphylaxis of unknown origin occurring during an acute bronchitis, but in no way related to it, and suggested a hunt be made by dermal tests for the offending protein. I did not believe it was of bacterial origin or the bronchial vasomotor disturbance would have occurred earlier in the acute bronchitis. Circumstances prevented me from seeing the patient again for some five weeks when I obtained the intervening history. The asthma continued for two weeks during which time it seemed that the woman would die from exhaustion. After that it gradually lessened till, when I saw her the second time, she was able to be about her room, but was still unable to resume her duties. The bronchitis and fever had disappeared about two weeks earlier. Dermal tests proved her sensitized to milk proteins. Thirty-six hours after milk was excluded from her diet, all symptoms of vasomotor bronchitis or asthma disappeared and continued absent.

What is the explanation? The patient never used milk, except a few drops in an occasional cup of tea. She had eaten very little of anything during the first five days of her illness. The sixth day, her father, a Scotchman, brought her a bowl of oatmeal gruel with plenty of milk, which she ate to please him. Within an hour she was gasping for breath. Milk constituted a considerable portion of her diet for the following two weeks. Then as she recovered from the bronchitis and gripe, she used less and less till, when I saw her the second time, the amount was small, although enough to continue her asthma. These symptoms cleared up, as I have stated, when milk was discontinued.

This work has been the direct result or sequence of the effort to diagnose and treat hay fever. In hay fever, the diagnosis of the offending protein has become almost positive and the immunization of the patient practically certain. Bronchial asthma has been just as great an unsolved problem. It could be relieved at times, but seldom prevented. When attacks failed to reappear, all sorts of explanations were given. Regarded as an anaphylaxis, its relief becomes possible through the diagnosis of the particular protein affecting each case. By means of dermal tests, sensitization to animal and vegetable proteins can be determined.

When by these methods the etiology of each case of respiratory anaphylaxis can be established, asthma and vasomotor rhinitis will be classified ac-

cording to the source of the offending protein as a vasomotor bronchitis or rhinitis of vegetable, animal, endamebic, or bacterial origin.

40 SOUTH OXFORD STREET, BROOKLYN.

A LITTLE PHYSIOLOGY IN THE CONSIDERATION OF CONSTIPATION.

By ALBERT C. GEYSER, M. D.,

New York,

Professor of Physiological Therapeutics, Fordham University, Consultant, Nazareth Trade School, Farmingdale, L. I.; Etc.

Apropos of Prize Discussion CLXVI, The Treatment of Constipation in Sedentary Men, on page 507 under treatment of the atonic type, Dr. John I. Fanz states: "The aim is to develop normal muscle tonus. . . . In the attainment of this nothing excels nux vomica, physostigma, and cascara."

From a physiological viewpoint a question might justly be raised as to the correctness of this statement. That such drugs may cause more or less tonic or even clonic contractions we can afford to admit. Such drugs do act upon an atonic muscle fibre much as the whip does upon a tired, underfed horse. Just how a horse in such a condition of hypotonicity can be permanently or even temporarily benefited by the application of such a stimulus is difficult to see.

What is the cause of this atonic condition of the intestines? The writer informs us that it consists of: "Deficient innervation of the intestinal tube, resulting in faulty peristaltic movements favoring stasis and fermentation."

Assuming that this statement is at least partly correct, how can the administration of the drugs mentioned overcome the "deficient innervation." The only way that a nerve or any other tissue can be improved physiologically and anatomically is by nature's method, the performance of its function. How then can an atonic nerve of the involuntary type be made to perform its physiological function? The answer includes many factors. Is the atony the result of stasis and fermentation with its consequent overdistention of the gut, or is the "deficient innervation" the cause of the stasis and fermentation?

If the atony is the *result*, not the cause of stasis and fermentation, then it seems that the prescribing of a nonfermentable diet would be the proper physiological procedure. If, on the other hand, the stasis and fermentation is the *result*, not the cause of deficient innervation, then only some agent that is capable of restoring this deficient innervation is indicated. We must clearly distinguish between cause and effect.

If the nerve requires stimulation because of the acquired habit of nonperformance of function, then some form of electricity (to be discussed later) is certainly indicated.

Suppose we are dealing with a case of dyschezia. In multiparous women it frequently happens that after injury to, or atrophy of the levator ani, we have just such a form of constipation. In the habit of constipation of sedentary men we must bear in mind the physiological function of this muscle. It is of the voluntary type, and can therefore, at the

will of the patient, resist the call for defecation. When this occurs the desire soon passes off until the arrival of new feces. It is the *distention* of the rectal pouch that induces the desire to defecate. Frequent repetition of this restraining influence soon obtunds the normal sensibility and the rectum will accumulate a large amount of fecal matter.

Although such a patient is constipated there is no delay in the onward passage of the intestinal contents until the rectum is reached. Drugs which may act upon the normal involuntary muscle fibres of the intestines certainly can have no effect here because they do not reach the spot, and if they did, they would have no effect because we are dealing with a palsied voluntary muscle and an obtunded sensibility from habit.

It is certain that there is no drug known that can exercise a selective action comparable to an electric current. The effect of an electric current can almost be localized, while drug action must be more or less general.

In Potter's *Materia Medica*, 1913, page 351, we read: "The action of nux vomica is that of its principal alkaloid strychnine. . . . It stimulates the motor cells of the spinal cord, the cardiac motor ganglia, the respiratory and vasomotor centres in the medulla. . . . The most marked feature of the action of strychnine is the great increase which it causes in the reflex excitability of the spinal cord and other reflex centres. . . . Strychnine does not directly affect the muscular tissue, the motor nerve trunks, or nerve endings. . . . It probably affects all the nerve centers in some degree." Under incompatibles is stated "physostigmine is a physiological incompatibility," yet Doctor Fanz causes this drug to be combined with nux vomica. The argument may be "physiologically it may be incompatible, but in practice it works." That may be so. When a man is struck over the head with a sand bag he is rendered unconscious, but for the purpose of performing a surgical operation an anesthetic would be more acceptable.

We want an agent to cause response with the least possible harm to the system.

It was not my intention to criticise this particular drug combination, but rather to point to the fact that, while an electric current is clearly indicated in the condition described by Doctor Fanz, he does not even mention it.

On page 508 of the JOURNAL Doctor Neuwelt advises: "Electricity is suitable for constipation due to weak abdominal walls and atonic intestinal musculature. The faradic current is applied over the colon, beginning at its cecal end along its entire length. One electrode is placed over the spine and the other is pressed deep into the abdomen. A frequently interrupted galvanic current may also be used with one electrode in the rectum and the other passed along the abdominal wall over the colon."

On page 509 Doctor Shaw writes as follows: "When electricity is available it may be used, the operator directing the vibratory massage only over the part affected."

Doctor Neuwelt makes a common error in thinking that the faradic current which he "presses deep into the abdomen" passes through the intestines

from front to rear, otherwise there would be no need for the "deep pressure." The faradic or any other electric current passes by the path of least resistance. Since the resistance is less through the parietal wall the current takes that route and not through the gas laden intestines, which are in imperfect contact with the abdominal wall.

When the doctor places one "electrode with the galvanic current in the rectum," even though it is frequently interrupted, it causes electrolysis at the point of contact and may even cause erosions. The frequent interruptions cause a tonic spasm of the parts. If those parts are suffering from an atonic condition, it will generally be made worse by this overstimulation.

Involuntary muscles do not contract "frequently," their contractions are of a slow, wormlike character. They are peristaltic, they are neither tonic nor clonic such as follow the frequently interrupted galvanic current. Such a method is unphysiological, and is therefore contraindicated.

Doctor Shaw uses the electric current for the sole purpose of actuating a vibrator. The mechanical irritation of the vibrator "only over the part affected" may cause a temporary bowel movement. I cannot perceive any physiological basis upon which to build such a procedure.

Now, what are the facts in this case? Let us admit an existing atony of the large bowel. The bowel must be emptied; how, is simply a question of expediency. The trouble is not in the small intestine, where the contents are fluid. If we take the case before us, that of a man of sedentary habits, the best treatment would be to remove all fecal matter at least once every twenty-four hours. A high enema to which some sodium bicarbonate or soap has been added is the simplest. The quantity of the enema is increased from day to day. At the end of a week or ten days from two to three quarts should be retained for five minutes or longer, then voided. Bear in mind that the parts treated must be trained or reeducated to this procedure. After two weeks of the high enema treatment, we are prepared to start the electric treatment if it is still necessary. We must also be sure that the atonic condition is not due to old age. When tissue is worn out in those of advanced years, neither the electric current nor any other method will rejuvenate the tissue. If that could be done with one part of the economy, why not with the rest? We would attempt to make old men young again.

Place your patient in the lithotomy position or even a modified Trendelenburg. One pole of the galvanic current, it matters not which, is placed with a bifurcated cord over the abdomen and sacral region. The pads must be moistened with a warm sodium bicarbonate solution, they must be not less than six inches square; they may be larger. The other pole is connected to a hydroelectric rectal electrode, made of hard rubber. This is attached to a fountain syringe containing not less than two quarts of water to which a teaspoonful of tincture of green soap has been added. A douche pan is placed in proper position to avoid accidents. The rectal electrode properly lubricated is inserted its full length (eight inches). The water from the container is

started with a slowly flowing stream and stopped the moment contractions are set up. When the contractions have abated the flow is again started, and gradually the entire two quarts of water are contained within the intestines. The necessity for the two weeks' previous training becomes apparent.

Now turn the galvanic current into the sinusoidal apparatus; have not more than twelve alternations to the minute; so far the patient has received no electric current. Slowly turn current on to the patient until a point of comfortable tolerance is reached. This may be from ten to thirty milliamperes. When the electric current is turned on, the rectal electrode is disconnected from the fountain syringe and a small stream is now flowing from the patient into the douche pan. When about three quarters of the injected water has thus been withdrawn, reduce the current to zero, disconnect the patient, and allow him to expel the remaining fluid in a normal manner.

The rationale is this. Assuming that all other conditions have received appropriate attention, yet there is the hypotonicity to be overcome. The patient must first learn to hold at least three quarts of water with some degree of comfort. It takes the average patient about ten days to do this. In applying the sinusoidalized galvanic current to the involuntary muscle and nerve fibres in gradually increasing doses, there comes a time when muscular contractions will be set up. Whatever the milliamperage is, that is the dose for that patient at that time.

By recording the dose from time to time progress will be indicated by obtaining the same results with less and less current. Should, on the other hand, more and more milliamperes be required, a bad prognosis is warranted.

The reason that the electric current is not started until the water begins to flow out, is based upon the fact that all peristaltic movements come from above downward.

The hydroelectric electrode is made of hard rubber so that no metallic contact is possible.

If a case of constipation is still curable, and most of them are, this method will yield results, all other conditions being equal. It is not the agent, but the reaction of living cells to an agent that must guide us in the selection of our therapeutics.

231 WEST NINETY-SIXTH STREET.

THE DISPUTED POINT IN APPENDICITIS.*

BY CLIFFORD U. COLLINS, M. D.,
Peoria, Ill.

Surgeons practically all agree that the appendix should be removed in appendicitis before it has become perforated. After it has become perforated and the resulting peritonitis has ended in a walled off abscess or resolution instead of death, again surgeons all agree that the abscess should be drained, or the appendix removed. The greatly disputed point is whether surgical treatment should be applied during the condition of acute peritonitis following the appendicitis.

During the development of our knowledge of appendicitis when it came to be considered as a surgical condition, operations were done at any stage of the disease. Some close observers, among them Dr. A. J. Ochsner, of Chicago, saw that the results of surgical treatment were sometimes brilliant and satisfying and sometimes unsuccessful and discouraging. An analysis of the results soon showed that the heavy mortality occurred after operations which were done after the appendix had been perforated or after peritonitis was present.

Probably one of the most striking illustrations of the heavy mortality of operations during peritonitis is found in some of the early statistics of John B. Deaver (1). In 1901, he reported 124 cases operated in before the appendix had become perforated, with one death or a mortality of 0.8 per cent., while in 144 operations done in the presence of pus and gangrene during the consequent peritonitis, the number of deaths were twenty-six, a mortality of eighteen per cent.

From 1904 to 1908, I lost eight patients after operation for acute appendicitis. Two were operated upon on the third day of the attack, one on the fourth day, two on the fifth day, one on the sixth day, one on the seventh day, and one on the eleventh day. In all of them the appendix had been perforated and peritonitis was present. Seven were operated on in their homes, and only one in a hospital, which is quite an important point.

One patient had a low temperature and a high pulse, with cold extremities and a leaky skin, and was almost dead when a quart of pus was drained through a small incision, and one had acute peritonitis with a high pulse and temperature. Six of these patients had a reasonably low temperature and pulse, and were getting along very nicely at the time of operation. Shortly after the operation, in five of them the pulse and temperature went up and death approached rapidly, seemingly from a septicemia. It seemed to me that something connected with the operation had changed the condition of those patients from progressive improvement to a rapid decline toward death. I wished that I had deferred operation until their convalescence was more completely assured.

About this time, I became familiar with what is known as the Ochsner method for the treatment of acute peritonitis supervening on a ruptured appendix. Since that time the Ochsner treatment has been applied to patients who are brought to us after the appendix has become perforated and acute peritonitis is present. We have believed that during acute peritonitis, especially while it is at its height, as indicated by a high temperature or a rapid pulse or both, the Ochsner treatment and not surgical treatment will give the lowest mortality. We operate readily on patients brought to us before perforation of the appendix, or on patients who have a walled off abscess, or have recovered from the attack; but if they are suffering from acute peritonitis following an appendicitis, we feel that surgical treatment is not best at that particular time.

We know that Deaver, Murphy, Crile, and other excellent surgeons have advised operation as soon as the diagnosis is made, without reservation as to

*Read at the meeting of the North Central District Medical Society, Peoria, Ill., December 8, 1912.

whether acute peritonitis is present or not, but we believe that this teaching has been productive of great harm.

While we are willing to admit that the mortality of operation in acute peritonitis following appendicitis is less in the practice of experienced surgeons with the patient in a well equipped hospital, we also insist that the mortality is much higher in the practice of the general practitioner who operates occasionally, with the patient in his home without the facilities of a hospital. All the factors must be considered in deciding which is the best treatment. But under the best conditions we firmly believe that the Ochsner treatment gives the best results for the patient in acute peritonitis following appendicitis.

It has been argued that men who do not operate during the peritonitis, are afraid of their mortality record and are, therefore, cowards. We feel that this accusation is unjust. If a surgeon felt that he could save more lives by operation and refrained because of the few he would lose, he might be called cowardly; but if he refrains from operating because he feels that more lives will be saved by not operating at that time, he certainly cannot justly be called cowardly.

We deviated from the Ochsner treatment once in 1912. The patient, a lad aged ten years, was brought to the hospital on the third day of the attack. The abdomen was somewhat distended and the muscles were rigid. His temperature was 100.4° F.; pulse 130. The appendix had evidently been ruptured. The physician in charge, who was an excellent internist, believed with those who advocated operation at any stage of the disease and urged that an operation be done. We had followed the arguments on both sides of the disputed point for several years, and sometimes wondered if our views were correct, so we told him we would operate this time and try and do the operation so that any bad results could not be attributed to the quality of the surgery. The incision was made under gas-oxygen anesthesia, the appendix removed, and two drains were put in. The entire operation was completed in nine minutes. The attending physician was kind enough to say that the surgical work had been done skillfully and expeditiously, and no fault could be found with it. The patient became very septic and finally died, four weeks afterward, with acute edema of the lungs. Since then we have not operated in the stage of acute peritonitis following appendicitis.

In the last year or two, the pendulum of surgical practice seems to have swung toward the view of those who believe in the Ochsner treatment and not surgical treatment.

Deaver (2) has modified his earlier views considerably and admits that the operative mortality is much higher during the height of the peritonitis. In the fourth edition of his book on appendicitis he says: "I am convinced that the less interference with diffuse peritonitis when at the height of its systemic effects, the better for the patient. By interference is meant not merely operative interference, but medical interference as well" (meaning cathartics, etc.).

A recent article by Dr. W. D. Haggard (3) says:

"It has been notorious that the most inopportune time for intervention is the period too late to anticipate the widespread invasion of the peritoneum and too early to allow for the effort which Nature puts forth in her own behalf." And again: "It is not to be denied that interference at an inopportune time sometimes brings disaster, when the utilization of the Ochsner principles, plus deep morphinization, might have availed."

E. MacD. Stanton (4) also says: "After the first thirty-six to forty-eight hours of a diffuse peritoneal infection the lesions encountered are of such a character as to be essentially undrainable and not well suited to surgical interference, a condition which continues until the period of localized abscess formation."

Thus the evidence accumulates that the active stage of peritonitis following an appendicitis is a very unsafe time to operate, and the surgical treatment had better be deferred to a future period when the conditions will render an operation much safer, if the patient lives.

It will take a large series of cases to demonstrate which gives the lower mortality, the surgical or the Ochsner treatment in the acute secondary peritonitis of appendicitis; but one thing should be remembered. It devolves on surgeons who advise an operation at any stage of the disease to prove that their treatment gives a lower mortality than the Ochsner treatment. If their results are only as good and not better, why subject the patient to an operation at that critical time?

No matter what our views are on this disputed point in the treatment, it should be emphasized that the safest time for operation, for the patient, is while the inflammation is limited to the appendix.

REFERENCES.

1. The Mortality of Appendicitis, *Journal A. M. A.*, October 9, 1915.
2. Appendicitis, Its Diagnosis and Treatment, *Proc. Roy. Soc. Med.*, 1915.
3. The Application of the Various Theories in the Management of Peritonitis, *Ibidem*, September 25, 1915.
4. The Sequence of the Pathological Changes in Acute Appendicitis and Appendicular Peritonitis, *Amer. Jour. Med. Science*, April, 1915.

427 JEFFERSON BUILDING.

Treatment of Scarlet Fever with Fresh Blood from Convalescents.—

The technic advocated by Abraham Zingher (*N. Y. State Jour. Medicine*, March, 1916) consists either in the immediate injection of freshly drawn whole blood, or of blood to which sodium citrate has been added in the proportion of one c. c. of a ten per cent. solution for each ounce. The injections should be multiple and intramuscular, a syringe (one ounce) being injected into the gluteals, external thigh muscles, calves, and the triceps. Four ounces can readily be given to a young child in this way and twice this amount to an older child or an adult. Usually the absorption of the blood is rapid, although it clots in the muscles. Zingher summarizes the effects as follows: Within two to four hours the temperature declines and reaches its lowest level in nine to fourteen hours; the impulse becomes stronger; cyanosis and cardiac symptoms improve; respiration becomes normal; the rash fades; and the general condition of the patient shows marked betterment. Secondary septic complications are not appreciably affected.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism in Health and Disease

FOOD IDIOSYNCRASIES.*

The Relation of Those Acquired Through Protein Sensitization to the Development of Cardio- vascular-Renal Disease (Arteriosclerosis),

By LOUIS FAUGÈRES BISHOP, A. M., M. D.,
New York,

Clinical Professor of Heart and Circulatory Diseases, Fordham
University, School of Medicine; Physician, Lincoln Hospital.

Food idiosyncrasies are legion and exist more or less in all individuals. Lately they have become more commonplace because of their frequency. As to the proteins, the study of animals, sensitized by design or accident, has made us realize that there are discoverable laws governing occurrences that we had almost decided were freaks of Nature.

It has seemed to me justifiable to go a step further in clinical medicine and attribute some of the most serious and fatal diseases to a continued reaction of the human body against certain foods to which the particular person has become idiosyncratic.

The general impression that all food idiosyncrasies manifest themselves in disagreeable or at least striking symptoms has led us to overlook this phenomenon, though analogy should have told us that many forms of chronic poisoning may be without pain and, indeed, even extremely agreeable.

The most difficult lesson to learn is that the relation of food to the individual—as far as it pertains to this disease—is *qualitative* rather than *quantitative*.

We are accustomed to thinking of food with regard to its nutritive properties—a large amount of food being supposed to increase the bulk of the body and add to its strength, and a small amount of food being supposed to starve the body and detract from its strength—that we forget the fact that food has a direct influence upon function. When a man is exhausted and weak from hunger, a small amount of food immediately restores strength out of all proportion to its amount and before there is any possible chance for an effect upon nutrition.

In the same way, certain foods in certain individuals cause almost immediate headache or pain referred to the joints. I saw a woman this afternoon who has been under observation for several years; she presents a typical history of cardiovascular-renal disease from chronic food poisoning. She had been doing marvelously well on a diet limited to a very few proteins. A few months ago meat in small quantities was resumed. For a time this acted as a stimulant, and she felt particularly well, but the day of reckoning came, and she suffered from all the disagreeable symptoms of very high blood pressure and defective kidney function. When the diet was readjusted, she gradually recovered, so that it seemed as if she might again be comparatively well. She now realizes that it would have been

better for her to have maintained her strict diet.

It is because of the lengthy explanation that I had to give this woman to get her cooperation that this matter is so vivid in my mind at the present moment. I told her that the food was not poisonous to her, but that she reacted in a poisonous way to the food—that in small quantities it acted like a match in lighting a flame.

It has been absolutely proved by experiment that food idiosyncrasies can be produced by protein sensitization. In other words, anaphylaxis can take place by things used as food, in the ordinary sense of the word—that is, material taken by mouth for the sake of nourishment.

It is also agreed by many authorities that sensitization can be produced by materials introduced through the intestinal wall. The healthy intestinal wall seems under ordinary conditions to be a barrier against the introduction of native proteins into the tissues. Hence, some lesion of the mucous membrane is probably necessary. Such lesions are, however, quite common.

It is not necessary for me to discuss at length the nature of usually recognized food idiosyncrasies. We are all able to recall them from our own experience. Wood's *Reference Handbook of the Medical Sciences*, v, p. 502, says of food idiosyncrasies:

There are many instances of idiosyncrasies as regards special articles of diet. One person, for instance, not only cannot eat cheese without violent gastrointestinal irritation, but cannot eat comfortably at a table when it is served. A special form in which these food idiosyncrasies assert themselves is in the production of urticaria from the use of certain foods. Familiar examples are fish and shell fish, especially lobsters; also strawberries and peaches. The latter fruit with some patients will cause an intense coryza apparently like a rose cold. Herpes and angioneurotic edema are similarly produced. Bread, especially fermented bread, and pastry are intolerable in rare cases. The same is true of honey, which is recorded in one case, when it was supposed to be a matter of whim, to have been incorporated into a plaster and applied to the feet of the patient, without his knowledge, but with serious results. Milk is an article of diet which many persons, general mistakenly, think they cannot take. But there are really some who undoubtedly do have an idiosyncrasy against it. Regarding this as with every other article of diet, a person should, often with medical supervision to guard against error, establish the fact of his own idiosyncrasy, and having once established it, should thereafter respect it.

These idiosyncrasies are usually of long standing and perhaps congenital. On the other hand, food idiosyncrasies acquired through protein sensitization may happen at any time through some accident whereby the cells of the body come in contact with protein in its crude form, or by other means with which we are not familiar. This food idiosyncrasy is different in that it is without conscious symptoms, and for that reason the irritation proceeds continuously and for a long time without the knowledge of the individual.

In trying to arrive at a cause of this condition, we are driven to an examination of the histories of patients whom we find suffering from the diseases.

*Presented to the Rochester Pathological Society, Rochester, N. Y.,
March 1911.

particularly cardiovascular-renal disease, that in our belief result from continuous cellular irritation. Thus we find disturbances of metabolism dating from a severe attack of typhoid fever, from a period of great nervous strain or anxiety, from an acute infectious disease, or from a definite and severe attack of food poisoning. This happens most often in the latter half of life, and is one of the great elements in interrupting the happy enjoyment of the two score years of comfortable life that we should enjoy after we are forty.

Of late a number of men have been attempting to demonstrate food sensitization by means parallel with those employed so much now in picking out the offending vegetable protein in hay fever. I had hoped to repeat some of these experiments on a few of my patients, but have not been able to do so on account of the press of work; also because the methods are not yet at all standardized.

Sensitiveness to eggs seemed to be the easiest one to demonstrate by the skin reaction. A well known chemical company has furnished me with soluble proteins from egg white for vaccination tests.¹

In practical clinical work I proceed by the method of variants, that is, I remove all classes of usually offending proteins, as contained in eggs, fish, meat, and stock soups, and when there is a sufficient improvement in the person under treatment and conditions make it seem wise, I return to the dietary one class of food at a time and observe the effect on the progress of the arteriosclerosis. This obviously takes a great deal of time, but as people with a tendency to arteriosclerosis should be under constant supervision (I see them once a month), that is no particular disadvantage. This diet I have named the "few protein diet" because the quantity of protein is not considered as in the "low protein diet."

The theory upon which my attitude toward the disease known in clinical medicine as "arteriosclerosis" has been founded, predicates a disturbed physiology of the cells of the body of wide general distribution. It seemed to consist of a disturbed relationship between the cell and the nutritive material with which it has to deal, or to proteins of bacterial origin with which it comes into accidental contact.

As a general proposition I venture to assert, and I am sure no one will deny, that there is a close relationship between the ultimate destination and disposal of food and the general disorder of the body known under many names, but surely existing in those persons who are said to have arteriosclerosis. It is a general degenerative disease, involving changes in the heart, bloodvessels, kidneys, liver, lungs, and indeed nearly all parts of the body.

For a very long time it has been recognized that people suffering from these conditions benefited by the diminution of the intake of animal food. This benefit has been plausibly explained on the theory that the trouble was primarily in the kidneys, and that the relief of these organs from extra work was the cause of benefit.

Some thoughtful workers have recently doubted this simple relationship between kidney work and degeneration of distant organs. This crude me-

chanical and chemical theory of cardiovascular-renal disease has given place to an ever increasing knowledge of the physiology of the cell—an appreciation of its importance as a unit of life. The cell constitutes a clinical aggregation of potentialities with regard to many different proteins. It has the power of digesting and being nourished by the proteins of food; it has the power of dealing with certain proteins in the form of bacteria; and under certain conditions it has altered its nature so that it reacts in a violent manner against particular proteins of food or bacteria.

It seems to me from clinical observation that the irritation of the tissues of the body which leads to arteriosclerosis may be traced to an acquired idiosyncrasy of the individual against certain proteins which are habitually taken into the body, or which have their origin in the protein of bacteria from some focus of bacterial activity.

The particular points that I should like to submit to consideration are:

1. Whether I am right in regarding the clinical disease known as arteriosclerosis primarily as a general disease, finally localizing itself in the heart, bloodvessels, and kidneys, recognizing that there are certain special examples of primary kidney damage from infections and toxins.

2. Whether it is fair to assume that constant irritation of the cell by materials which have become sources of irritation can account for the origin and progress of this condition.

3. Whether, clinically, the distinction between the low protein diet and the few protein diet is as valuable as I suppose it to be.

I ask for careful consideration of the difficulties in the application of this broad generalization of which I am perhaps more conscious than any of my readers.

54 WEST FIFTY-FIFTH STREET.

THE METABOLIC BALANCE.*

By GEORGE VAN NESS DEARBORN, PH. D., M. D.,

Professor of the Philosophy of Physical Education, Sargent Normal School, Cambridge, Mass.; Instructor in the Physiology of Exercise, Etc., Harvard Summer School.

There may be said to be three metabolic planes of efficiency, based upon the nutritional condition of the organism. By this term is meant the balance of metabolism, a balance of many strongly opposing conditions. We can have a high or a low plane of efficiency; and we can be in a low, medium, or high plane of efficiency and be physiologically correct. Whether the metabolism is greater or less, determines what the plane of efficiency shall be.

Let us consider a moment first the *lowest* plane of efficiency of the normal individual. We find an illustration in a person who is just recovering from an exhausting illness, such as typhoid fever or pneumonia; or a severe childbirth. Such a person is on the lowest plane of efficiency. Metabolically speaking, the plane has gone down while

*Advance copy from a forthcoming work, *The Physiology of Exercise*.

¹These were presented for inspection.

the person was ill. Many such persons have distinct memories of the shock of trying to walk and finding that their legs, from absolute weakness, would not support them. Another example is that of a paralytic lying in bed for years and years, eating little food and expending very little energy. His intake of food has been low and his outgo of energy has been correspondingly low. This is the very lowest logical plane of efficiency. So far as the plane is concerned, that may be normal living for that individual at that time. There is no reason why a person should not live for years on a milk diet, making only absolutely necessary movements. So long as expenditure of energy does not exceed the intake of nutriment, or vice versa, that is a normal condition so far as metabolism is concerned. If a person takes too much nutriment, more than his organism uses, he "suffers from the lack of exercise," and many different things, more or less serious, result from this lack. The same thing might be true in a very sedentary person, such as a clerk at a desk. If he ate too much, more or less serious results would follow. His intake and outgo of energy must be equal, and then all is well and physiologically correct, from a clerk's standpoint.

The middle plane of efficiency is the average condition of the average sedentary man and of most women. Clerks in dry goods stores, bookkeepers, and all sorts of people who are still most of the time and who never think of taking exercise for the sake of exercise, would fall under this class; and many professional folk. Here, again, as long as the intake of fuel or nutriment corresponds to the outgo of energy, the person is living a normal sort of life. A clerk in a store is not suffering very much from the lack of exercise, but, if he should eat two or three times as much food, or exercise twice as much and eat half as much food, there would be trouble. As long as he eats a reasonable amount, he can live a very inactive life, and a long and healthy one, perhaps. Only when such a person eats too much or too little is there trouble.

The man who becomes rich and retires from business is an illustration of the lack of balance, frequently. The man who hustles from 8 a. m. till 5 p. m.; makes his pile; buys an automobile; joins two or three clubs; largely increases his eating because he has more time and more money; exercises less; so *breaks the balance of efficiency*, the result being, perhaps, arteriosclerosis, or some other ill; he "goes stale" and ends his life years, often ten, before he needed to end it. Here is a defect in the balance of the plane of efficiency.

The third or *highest* plane of efficiency we will consider from the standpoint of a lumberman in the Maine or Nova Scotia forests, working often in the water; often with the thermometer at ten degrees below zero; working from daylight often long after dark; and doing more than three times as many horse power of work as the sedentary man. He could not stand it a week unless he ate three times as much food. He is sure to be living on a normal physiological plane and a plane obviously much higher.

Another example of the third or highest plane of efficiency is the athlete in training in college. However, the athlete is at a disadvantage in comparison

with the lumberman, for the trained athlete is almost always overtrained and lacks the hygienic basal conditions which make the work of the lumberman, however hard, an ideal physical condition. But as regards the intake and outgo of energy, both the athlete and lumberman are living on the highest plane of efficiency.

Observe that a change of plane upward is *beneficial*. And there are few men, aside from the discomfort at first of the vigorous labor and of working long hours, who would not *enjoy* life more as a lumberman than as a clerk. A change downward, however, especially if sudden, is dangerous. This is often seen when college athletes, after graduation, give up all physical exercise. Their lung capacity decreases and they are likely to have tuberculosis. A change downward from one balanced plane to another is attended by considerable risk, unless it be done very gradually so that the organism becomes adapted to the lower plane of efficiency. If the change is too rapid, there will be chronic staleness, which we might properly discuss under the head of fatigue.

Metabolic balance is essential, thus avoiding the Scylla of obesity (tending to incapacity and early death) and the Charybdis of hypopliposis with its unattractive and dangerous malnutrition and weakness.

DIET IN INTERNAL DISEASES.

By OTTO LERCH, A. M., PH. D., M. D.,

New Orleans,

Professor of Medical Diagnosis and Treatment, Tulane University of Louisiana, Postgraduate Department.

(Continued from page 601.)

Hyperacidity and hypersecretion are readily influenced by rational dietetic measures. The food has to be given in purée form; lumps and fibres irritate the gastric mucous membranes. In some instances, it may become necessary to begin the treatment with rectal feeding to secure a thorough rest. Condiments, which may all be classed as irritants, have to be avoided, or given in great moderation. The food is to be served not too hot nor too cold, unless nausea exists, in which case small pieces of crushed ice eat often like magic. Coffee, tea, and alcohol are allowed.

Fats decrease secretion and protect an inflamed mucous membrane. Olive oil or fat emulsions given in larger quantities before meals, stop pain and have a beneficial effect on bowel evacuations. This is of importance, as constipation is a frequent cause of hyperacidity of the stomach. Of the albuminous foods, eggs, soft cheese, and vegetable albumins are to be preferred. Meat is best boiled and allowed only in small quantities. The carbohydrates are poorly digested and ought to be given in moderation. Fruit juices freshly pressed, and not too acid, are usually well borne; and vegetable purées are useful as carriers of larger quantities of fat. Patients relieved by eating have to be advised to take something between meals, just enough to neutralize the acid; a cup of milk with lime water, sipped, a cracker well chewed, or grated hard boiled eggs are suitable for the purpose.

If motor insufficiency exists, small and frequent

meals must be served; liquids only in small quantities at a time.

Patients who cannot take enough water by mouth must take it by rectal injection; wine, bouillon, and salt may be added to the enemata.

An addition of larger quantities of fat to the daily diet facilitates the emptying of the stomach. In severe cases, a fat, albuminous diet is indicated, to which carbohydrates gradually may be added as improvement continues.

The treatment of gastric ulcer has to be varied according to the severity of the case, and when hemorrhage exists, feeding by mouth has to be stopped and rectal feeding substituted. Absolute rest of the organ is of paramount importance, as tearing and pulling of the ulcer cannot be avoided even if liquids are given.

If the danger of inanition is great, a small addition of liquids may be tried by mouth.

To obtain good results from rectal feeding, a soft Nélaton rubber tube with a glass window through which to observe the flow, is to be inserted into the rectum for some four to six inches. The injection ought to consist of about 300 c. c. of a thick liquid at body temperature, allowed to flow under low pressure. Not more than three injections are to be given in one day, and a cleansing enema of one half to one quart of normal salt solution should be administered in the morning, one hour before the first rectal feeding. Milk is especially suitable; it contains the fat in a finely emulsified condition; yolk of egg and sugar of milk are valuable additions. Salt and pancreatin increase absorption. Boas uses for one injection 50 grams of milk, two yolks of eggs, a pinch of salt, a tablespoonful of starch, and a tablespoonful of claret. Strauss adds to this one or two tablespoonfuls of sugar of milk.

Thirst is allayed by moistening the lips with glycerin and rinsing the mouth with ice or lemon water.

In case of irritation of the rectal mucous membrane, six to ten drops of tincture of opium may be given with the nutrient enema. Feeding by mouth is best begun with milk, if well borne, a cupful every few hours, to which gradually yolk of egg and cream may be added. Fruit and meat jellies, yolk of egg, and soups made of flour with an addition of butter and sugar are given when milk cannot be taken. Meat extracts are contraindicated in the first part of the treatment. As improvement continues, we may add the clear broth of chicken with various additions in forms of soups; milk soups with yolk of egg, butter, cream and fine flour of wheat, rice, cream of wheat, soft scrambled eggs, or omelet without crust, cream cheese with cream, later scraped chicken or tender steak and fish with butter sauce, finely mashed creamed potatoes and purées of the tender green vegetables, with apple butter, crackers, milk toast, rice, and macaroni. This dietary regimen, designed to save the organ, must be carried out for a long time, in any disease prone to relapse.

When carcinoma of the stomach has been diagnosed, a similar plan of treatment has to be adopted, modified by existing conditions, anacidity, hyperacidity, or dilatation, and as the disease so far has been proved to be incurable, the wishes of the patient have to be considered here more than in any other disease.

In neuroses of the stomach, patients will digest a heavy meal one day and throw up milk toast the next; they usually have acquired strong idiosyncrasies against certain foods, and dietary measures have to be altered to suit the case.

Diseases of the intestines are frequently associated with diseases of the stomach, and in acute catarrhs the indications for treatment are the same. Feeding has to be stopped for a few days, or reduced to a minimum. White of egg in water, or water alone may be given. In cases of great weakness, especially cardiac weakness, small quantities of claret or whiskey may be added. In the severe forms of acute enteritis, in Asiatic cholera and cholera morbus, when a rapid desiccation of the tissues is progressing, subcutaneous injection, and in cases in which the colon is not specially involved, enterocolysis of normal salt solution may be employed to counteract this threatening feature.

In subacute intestinal catarrhs, it is not necessary to withdraw food entirely, but it is better to continue a liquid diet for some time, to give the organ a chance to recover. It is the custom in the intestinal catarrhs due to typhoid, dysentery, and malaria, not to change this diet till the patient has been free of fever for one week. When the appetite returns milk, butter, eggs, and cereals may be given in the form of soups. A pure milk diet, frequently employed, is not of advantage; it is too monotonous. In acute intestinal obstruction, feeding must be stopped, till a diagnosis of the character of obstruction can be made. Water may be allowed. It is not absorbed in the stomach, allays thirst, keeps the stomach clean, and can be withdrawn after ingestion.

Chronic catarrhs of the intestines require long treatment, and selection of a suitable diet is of the greatest importance. The inflamed mucous membrane will not stand further insults. Hard particles of indigestible vegetable fibres and tendinous meat particles, raw fruit, salads, cold food and drink, pepper, mustard, salt and extractives, anything that may act as an irritant, must be avoided with the greatest care. In the severer forms, it is best to begin with a liquid diet, rice or barley water, milk with various additions, cocoa and tea, in the form of soups, with sifted flour, butter, and yolk of egg added, followed by a semisolid diet of mashed potato, tender white meat, and vegetable purées. Wasting, usually marked in catarrhs of the small intestines, may be counteracted by increase of butter and yolk of eggs. Milk, well borne in colitis, has frequently to be withdrawn in catarrh of the small intestines. In these cases, it is first tried in small quantities, and when a tolerance is established, the amount may gradually be increased. If stomach digestion is good, meat, fish, and eggs may be added to the diet.

Cold increases peristalsis and may give rise to severe colic. Warm drinks soothe. If absorption of fat is deficient, we have to limit the amount or withdraw it altogether, and substitute carbohydrates.

To treat chronic constipation, the character of the constipation, spastic or atonic, must be known. Fats, olive oil, butter, and cream in larger quantities soften the fecal matter. Fruit sugar in the form of honey, and sugar of milk, freshly pressed

fruit juices, and fruit jellies, apple butter and plum butter, buttermilk and clabber, when well borne, and vegetable purées, increase movements and bulk. If the constipation is atonic, the same foods may be given in coarser forms. Raw fruits and stewed fruits with every meal, and of these, prunes, figs, dates and raisins have a specially good effect.

Drinks may be given cold in forms of fruit juices and lemonades or aerated waters to increase peristalsis.

In flatulency, food that causes it, like cabbage, carrots, beans, and peas, has to be struck from the diet, and in mucous colic, always a symptom of a catarrh, the diet advised for spastic constipation must be adopted. In all inflammatory conditions of the intestines, dietary measures that have been outlined for spastic constipation, must be adopted, and in intestinal hemorrhage, the regimen for gastric ulcer. In intestinal stricture and appendicitis, it must be the object of the treatment to procure a soft and bland stool.

Diseases of the liver.—The acute diseases of the liver require a liquid and fever diet. During the acute attacks of cholelithiasis and cholecystitis, little attention need to be paid to the nutritious value of foods; the attacks are as a rule of short duration. Frequent and small meals should be served. Passing of chyme causes the opening of the common bile duct and allows the flow of bile into the intestines. Warm drinks soothe, cold may cause colic. Bile emulsifies fats, yet a considerable amount of fat will be absorbed when given finely emulsified in the form of milk, butter, and cream, unless the pancreas is seriously involved; milk, malted milk, milk soups with the addition of cereals, purées of tender vegetables, fruit juices, tender meats, and eggs may be allowed. The digestion of albumin and carbohydrates is not interfered with. Alcoholics, coffee, and the condiments have to be struck from the diet; they are all injurious. Frequent and small meals prevent a sudden overloading of the portal system. Much has been said in favor of and against the administration of larger quantities of liquid in order to insure a free flow of bile. Experiment does not favor the theory.

In obese patients with fatty weak hearts, the amount of urine voided is a guide to the administration of liquids. In lean subjects, with a good circulation, the administration of larger amounts of liquids will probably prove beneficial.

Moderate amounts of albumin and fat with larger quantities of carbohydrates, including sugar of milk, seem to be the best combination to save the liver parenchyma, and the food should be prepared so as not to irritate the gastrointestinal canal.

If the pancreas is seriously involved, it becomes a difficult problem to nourish these patients, and milk in some form, with additions as one or another digestive function for fat, starch, or albumin fails, will then be the diet. The administration of pancreatin is useful as a substitute for the missing secretions.

Diseases of the heart.—The object of treatment is to lighten the heart's labor, to protect it from injurious and unnecessary stimulation, and to strengthen its muscles. An important feature of the

treatment is gradually to produce a normal weight corresponding to the size of the patient, the most favorable condition for the proper functioning, not only of the heart, but of all organs. A state of undernutrition as well as overnutrition weakens the heart. The quantity and forms of the food may be varied according to the severity of the case. The diet must be rich, but not too rich in albuminous foods, and contain enough of the carbohydrates and fats to meet the demand. Strong tea and coffee, wine, beer, and whiskey, meat extracts, the condiments, pepper and salt, stimulate and irritate and should be withdrawn, given in moderation, or used only when indicated. Foods that cause flatulency and large meals are injurious on account of the close relationship between stomach and heart, and on account of the always more or less disturbed function of the digestive organs.

The amount of liquid to be allowed in heart disease is of great importance; every drop of liquid ingested has to be pressed through the circulation before it can be eliminated. Hard and fast rules cannot be laid down; too many points bear upon the question—the strength of the heart muscle and state of compensation, the function of the kidneys, the existing intoxication, and many others. It must be left to the physician to judge. Withdrawing or moderating the use of sweets and appetizers, especially salt, will diminish the call for liquids sufficiently. Only in cases of a seriously broken compensation, perhaps with a coexisting hydemia, a systematic reduction of liquids may be practised with advantage. In some selected cases, pure milk in small quantities, frequently given, may be tried to reduce a fat patient.

Diseases of the kidneys.—Similar measures have to be adopted in the diseases of the kidneys, in all of which the heart is taxed, and insufficiency of the heart muscle is the usual sequel of the chronic forms of Bright's disease. Besides, the patient must be protected from the danger of renal insufficiency.

Meat extracts are irritating, and, in some cases, meat may have to be entirely excluded from the nephritic diet; in others, white meats, containing less extractive matter, or a small quantity of any kind of meat may be allowed, quality and quantity to be considered.

Albumin is best increased by adding milk, cheese, and vegetable albumin in form of soups or purées made of leguminous flours. Coffee, tea, alcohol, and the condiments, salt and pepper, celery, radishes, and raw onions are injurious. Asparagus is said by some not to cause trouble, whereas others exclude it from such a diet. Fats and carbohydrates do not irritate the kidneys and may be given in quantities to suit each case. Milk is an ideal food in nephritis and milk cures have been known in this condition for many years. In acute parenchymatous nephritis and in exacerbations of the chronic forms, such a diet is indicated; it limits the ingestion of toxic substances to a minimum. In the chronic forms, and especially in interstitial nephritis, a disease that frequently lasts from ten to fifteen years or more, such a diet would be monotonous and insufficient.

Nephritic polyuria has been spoken of as com-

pensatory and antiuremic, depending on heart strength and vascular sclerosis barely sufficient to carry off the waste matter, yet it has been urged to flush the kidneys by giving milk in large quantities or adding water to the diet. There is really nothing to wash out, and whether such procedure with more or less impermeable kidneys can be successful is questionable. It taxes the heart and the polyuria ceases as soon as the heart weakens. The first symptoms of uremia require prompt action. To dilate the capillaries and increase the permeability of the kidneys seems to be more rational and an easier way to get rid of toxic substances. In acute nephritis, it is desirable to free the tubules and glomeruli from débris. In these cases, if edema is present, the state of the circulatory apparatus must guide the administration of liquids. If the congested and diseased kidneys refuse to eliminate, the liquids will be retained and increase the edema. The natural thirst of the patient, established with a proper diet, after withdrawal of condiments, will be found a good guide in most cases.

Milk is the best diet with which to begin the treatment, gradually adding crackers, zwieback, tender vegetables, freshly pressed fruit juices, eggs, and meat. Raw eggs are injurious in every case; they increase albuminuria.

In recent years, Strauss and many others have shown that salt is poorly excreted by diseased kidneys, and that it gives rise to the characteristic local edema of nephritis. This is a further reason why salt ought to be used in moderation, or entirely withdrawn from the nephritic diet; though it is not necessary for patients that excrete salt fairly well to dispense altogether with such a valuable creator of thirst and appetite.

The amount of albumin taken by nephritics must be limited, as it has been shown that retention of nitrogenous substances may produce uremic conditions and increase blood pressure. In cases with threatening uremia, it has to be struck from the diet. It must not be lost sight of, however, that it is necessary to keep the nutrition of the heart muscle intact. It is best given in these cases in the form of milk and eggs, not raw, and vegetable albumin. Meat, if needed, must be given with caution, and fats and carbohydrates to suit the case; the latter preserve body albumin.

In inflammations of the ureters, bladder, and urethra, a diet similar to that prescribed for the diseases of the kidneys must be selected. Lemonades and mineral waters ought to be used freely to dilute the urine. Linseed tea, especially in tenesmus of the bladder, acts soothingly and has become a household remedy. The liquids must be given at certain regular intervals, for instance, a cupful every two or three hours, and morning and night if no contraindication exists.

If gravel and urinary calculi are the cause of these conditions, the diet will depend on the nature of the sediment. This can be done only if the sediment is uniform; if it consists entirely of urates and uric acid, of phosphate or of oxalate of lime. If the sediments are mixed, as is frequently the case, we can modify the diet to influence the reaction of the urine. Dilute the urine and keep the diet free from irritating articles of food.

Uric acid is derived from substances rich in nuclein, all kinds of meat and fish; especially such organs as the liver, spleen, kidney, brain, and thymus contain it, and must be struck from the diet. Meat, if boiled, is less injurious and may be allowed in small quantities. Nucleins also increase the acidity of the urine and cause precipitation of the sediments. A diet rich in lime salts will increase the solubility of the sediments. The alkaline mineral waters neutralize the acidity of the urine. In general, a milk, vegetable, and fruit diet with an addition of eggs, a small amount of boiled meat, and a liberal allowance of liquids, is suitable. It is far more difficult to influence the deposition of lime salts, oxalates, and phosphates by dietary measures. The sediments are deposited in an alkaline urine, and in order to increase its acidity we have to decrease the amount of liquids and increase the amount of meats contraindicated in the majority of cases. In oxaluria we have to withdraw vegetables that are rich in oxalic acid, such as spinach, rhubarb, cress, tomatoes, beans, carrots, beets, and asparagus, select a diet poor in lime salts and moderate the amount of milk and eggs.

Phosphaturia is still less amenable to dietetic treatment, but as this condition usually depends on disturbances of the nervous system, it needs little attention. The urine must be diluted and the diet modified as indicated in each case.

Diseases of the lungs and the fat making diet.—The diseases of the lungs do not require a special dietetic regimen, with the exception of tuberculosis, which demands a fat making diet in common with other chronic infections, the chronic gastrointestinal diseases, and the paralytic type of Glénard's disease, the basis of tuberculosis and of neuroses.

A mere increase of nitrogenous substances in the diet does not cause an assimilation of albumin and increase of muscle, except during growth and in a state of malnutrition. Only exercise will cause muscular growth, if these conditions are absent. Rest favors the assimilation of fat, exercise that of muscle. In the beginning of such a treatment, absolute rest in bed or a prolonged rest is frequently indicated; with improvement, rest and exercise must be prescribed in proper proportion. Increase of fat and carbohydrates coupled with rest causes fat assimilation. Fat, ingested in small quantities, is almost all absorbed, and of the carbohydrates, that portion not used for the production of heat and energy is converted into fat and some glycogen. Even then, exercise, especially in the open air, is the best appetizer and ought not to be dispensed with, if possible.

From the foregoing, it is plain why nitrogenous substances ought to be given in slight excess, and fat and the carbohydrates allowed in larger quantities. Fat should be given in forms of milk, cream, butter, the yolk of egg, and cheese. To these, some of the artificial food preparations and plant fats may be added. Meat fat is hard to digest and usually is not liked. To increase the appetite, a liberal use of appetizers is necessary, condiments and salt, which may be added to milk or may be given in caviar, herring, sardines, crisp bacon, etc. The sensation of thirst caused ought to be satisfied with milk to which cream and yolk of egg has been

added. Most patients like butter and it should be used freely. The green vegetables take up large amounts, also bread and potatoes. Coffee, tea, and cocoa are used to disguise the taste of milk.

Malt extracts, small quantities of wine, ale, or porter are sometimes found to be excellent appetizers. The preparation and serving of the food must be careful and designed to excite the appetite. Bread is best given well toasted in thin slices, as crust of bread and as crackers, which are easily crushed with the teeth and mixed with the saliva. Macaroni, grits, oatmeal, and similar dishes are served in forms of soups with milk.

The number of meals during the day and the quantity served with each meal depend largely on climatic conditions, on the habit of the patient, the food at disposal, and the progress of the treatment, as shown from week to week by the scales, his general appearance, and by his subjective feeling. A smaller quantity in the morning, increase of the amount toward noon, and decrease toward night, is usually a good plan to follow.

(To be continued.)

POISONOUS PROTEINS.*

A Series of Five Lectures,

By VICTOR C. VAUGHAN, M. D.,

Dean of the Department of Medicine and Surgery, University of Michigan.

LECTURE III.

Doctor Vaughan's first subject for the third day of the series of lectures was vegetable proteins. Thanks to the researches of Osborne, a number of vegetable proteins might be obtained in a pure state and in quantity. The work done in the speaker's laboratory was upon some of the seed proteins, especially zein from cornmeal, and edestin from hemp seed, which were prepared by Leach according to the methods of Osborne. From these poisons the protein poison was split off by the same process employed in the cleavage of the bacterial proteins. The poisons obtained from zein and edestin showed no difference either in response to chemical tests or in physiological action from those obtained from the cellular substance of bacteria. The purpose in bringing out these facts lay in the evidence which they bore in support of the contention of the speaker that protein poison was a group in the protein molecule and was present in all true proteins. The importance of this was more evident when attention was called to the fact that, some years ago, Pick and Spiro were unable to obtain from edestin the substance which when injected into animals retarded the coagulation of the blood, and they concluded that this body was not a true cleavage product of proteins and that it was not an intramolecular constituent of pure proteins.

Returning to animal proteins, Doctor Vaughan said that in his laboratory the protein poison had been prepared from a great number and variety of animal proteins, such as egg white, casein, serum

albumin, serum globulin, blood cells, muscle, brain, liver, kidney, etc. In fact, no true protein had been found which did not yield the poison when split up by the method mentioned—a two per cent. solution of sodium or potassium hydroxide in absolute alcohol. The proteins of most simple structure were found in seeds and in the casein of milk in which the carbohydrate existed in the form of milk sugar, the fat existed as such and the protein in the form of casein supplied the aminoacids, and the mineral substances were found mostly in the ash; the ferments were furnished by the digestive organs of the young. The casein, while supplying abundant aminoacids for growth, might easily account for the introduction of poison. The speaker was inclined to the opinion that if every child fed artificially were given milk absolutely germ free, there would still be cases of infant diarrhea and milk poisoning. Two or three investigators had found casein in the blood of children suffering from summer diarrhea; but bacteria rendered the absorption of casein more easy.

THE PROTEOSES.

Pick and Spiro were unable to obtain a poisonous derivative from pure proteins, edestin, and casein, and concluded that the poisonous agent present in mixed bodies was not a protein at all, but an enzyme for which they proposed the name peptozyme; they held that the poison never resulted from the hydrolysis of protein with alkali. This was interesting in view of the fact that in the speaker's laboratory cleavage with dilute alkali had been found the best way of obtaining the protein poison. Underhill had shown the incorrectness of the statement of Pick and Spiro, and had demonstrated that the proteoses were in and of themselves poisonous.

The behavior of Doctor Vaughan's protein poison, both chemically and physiologically, closely resembled that of the proteoses. Though soluble in alcohol, it gave the protein reactions and was a biuret body; some proteoses behaved in a similar manner. Underhill had recently shown that the protein poison inhibited the coagulation of blood, and Edmunds had proved that it lowered the blood pressure in dogs just as the "peptone poison" did. Underhill had recently compared the action of the protein poison with that of the proteoses and found that the resemblance was strong, but he said that Vaughan's preparation differed from the proteoses in that it produced marked symptoms or even death in relatively small doses in the rabbit whose refractoriness to proteoses is well known.

It seemed highly probable that the poisonous group in the proteoses was the protein poison, and that its powerful action was due to the fact that it had been more effectually stripped of those groups which tended to neutralize its effects. The free poison was easily split out of the proteoses by proper chemical agents.

It was not yet known what the protein poison was. Doctor Vaughan had never been able to obtain it in a pure condition. He was inclined to the opinion that it was a proteose, but a little more poisonous than those found in seeds because it was free from the combination of constituents which neutralized it.

*An abstract of the contents of these lectures is the Copyright of the University of Michigan, and is hereby received by the Editor expressly for the NEW YORK MEDICAL JOURNAL. See our issues for March 4th, 1909, and March 11th, 1909.

It might be asked, why, if all proteins yielded poison so easily in normal metabolism, was the body not poisoned? In order to make this clear it was necessary to say something about the physiological cleavage of proteins. All proteins when removed from the body underwent spontaneous cleavage. This was called autolysis. Proteins that were not cellular underwent this process just as cellular proteins did; fibrin would split as readily as liver cells. It was well known that in multicellular animals proteoses were generally distributed; at first it was assumed that these consisted of the alimentary ferments which had been absorbed and distributed through the body, but research had shown that the autolytic ferments differed from either pepsin or trypsin as they were possessed of a degree of specificity not characteristic of the alimentary enzymes.

Protein tissues disintegrated normally in the animal body without the formation of poisonous products. It had been suggested that the autolytic enzymes were blood ferments; that this was not true was shown by the fact that blood and blood serum had an inhibiting effect upon autolytic action. Besides, proteins which contained no blood, such as egg white, underwent autolytic cleavage.

Rosenow had shown that pneumococci suspended in salt solution and kept at 37° C. for forty-eight hours, under ether or over chloroform, underwent autolysis with the liberation of a poison. Doctor Vaughan took powdered pneumococcus cellular substance which had been prepared nearly seven years before. Microscopic examination showed the pneumococci as clearly defined and in as perfect form as in a fresh preparation. Five hundred mgm. of this powder was suspended in 500 c. c. of salt solution, ten c. c. of chloroform was added, and the mixture kept at 37° C. After twenty-four hours ten c. c. of the opalescent supernatant fluid was administered to a guineapig intravenously. Within two hours the animal's temperature fell to 94° F., but recovery followed. The same experiment repeated after forty-eight and seventy-two hours, killed the animal within two hours, with symptoms of subacute anaphylactic shock. A like injection after six days killed within three minutes, with the same symptoms and post mortem findings.

The cholera bacillus did not readily undergo autolysis *in vitro*; the pneumococcus readily split up. After death from acute cholera the bacillus was found only in the intestinal canal; in some instances, at least, all the internal organs were sterile. Whether this was due to autolytic cleavage or to some digestive action of the contents of the intestines, could not be asserted.

The gonococcus early underwent autolysis and the autolysates were fatal to guineapigs.

PARENTERAL PROTEIN DIGESTION.

Diverse proteins were taken into the alimentary canal, and through the activity of the enteral digestive ferments were split into aminoacids which were used by the body cells in growth and in function. Under normal conditions the amount of protein reaching the blood and lymph undigested was small and negligible in effect. Minute bits of unbroken protein might find their way into the circulation through the respiratory and digestive tracts;

in the former case they might cause local sensitization, which manifested itself in the complex of symptoms usually designated as hay fever, rose fever, horse fever, or asthma; in the latter case, passing through the walls of the alimentary canal in undigested form, they might lead to the untoward effect of certain articles of diet and possibly might exert a more serious action on some of the more distant organs, the kidneys especially.

While there was a promising field for research along this line, it was safe to say that in man in health, the amount of unbroken foreign protein reaching the circulation was small. Protein in appreciable quantities reached the blood only when injected intravenously.

INTERMEDIATE CARBOHYDRATE METABOLISM.*

By R. T. WOODYATT, M. D.,
University of Chicago.

Following the course of food through the body, the general subject of its alterations from ingestion to the passing out of the end products of its decomposition and use, may be divided into two circuits. The grosser of these comprises the changes which take place in the substance to prepare it for entrance into either the circulation or the tissues, and in its waste products for their excretion. The lesser circuit includes the changes which occur during its metabolism in the tissues and circulation. To this circuit the name, intermediate metabolism, has been given. We shall consider these changes.

It is not difficult to determine the nature of the ultimate excretory products of the metabolism of the carbohydrates, since chemically these are fairly stable. Modern chemistry has carried us a step further and we can recognize and isolate certain other products occurring in the blood or tissues during the metabolism of carbohydrates and these have been thought to be some of the intermediary metabolic substances. It is questionable, however, whether we are warranted in believing that these relatively stable substances are really the intermediate substances, since the processes of isolation may be such as to yield substances which do not actually exist as such in the blood or tissues. Before we can speak definitely on this matter we must approach the problem of the intermediary metabolites from a point of view which does not introduce the sources of error invariably connected with chemical isolations. It seems altogether possible that the intermediate substances exist in the form of products too liable to be isolated, and that this phase of metabolism is made up of a succession of chemical and physicochemical reactions of extreme subtlety. The changes are probably not the same in the body as those which we can bring about in the test tube, for in the body there is a series of physical and chemical factors which we cannot reproduce *in vitro*.

When acetic acid is dissolved in benzene the solution does not redden litmus, does not conduct electricity, and gives no effervescence on the addition of

*Summary of a lecture delivered before the Harvey Society, Academy of Medicine, New York, March 25, 1916.

dry sodium carbonate. Such a solution can be proved by physicochemical methods to contain the acetic acid in molecules grouped in pairs and in equilibrium with single molecules. When the acid is dissolved in water the common reactions of acids can be obtained, and it can be shown that the acid exists in the form of molecules of the acid in equilibrium with the ions—H and the radicle—of the acid. In the one solution the acid is chemically active; that is, it is a chemical solution; in the other the acid is inactive, the solution being a physical one only. The conditions in the body are probably analogous and the blood probably corresponds to the benzene, while the cell fluids correspond to the water. A given substance may exist simultaneously in both solutions and the whole be in equilibrium. This role of the blood has been proved to a certain extent by the results of vividiffusion experiments with Abel's celloidin tubes. By these it was found that sugar circulated in the blood stream as such, probably in the form of a physical solution.

In order to approach the problem of the intermediate metabolism of the carbohydrates, experiments were planned with the injection of glucose directly into the blood stream of animals. With a single intravenous injection there is a rapid rise in the concentration of the sugar, and upon completion of the injection the concentration falls to normal again quite as promptly. In order, therefore, to maintain any given concentration of the injected sugar in the blood for a period of time, it was necessary to devise an apparatus for the continuous injection of the sugar at any desired rate. Such an apparatus was constructed which enabled us to continue an intravenous injection for an indefinite period of time at the desired rate [apparatus demonstrated by the speaker], and this was employed in a large series of experiments on dogs.

It was found that if glucose was injected at the rate of 0.85 gram per kilo an hour into the blood stream of a normal dog, the animal would maintain indefinitely a perfect equilibrium and would show no glycosuria. When this rate of injection was exceeded, glycosuria appeared and increased with rise in the rate of injection until a certain point was reached, after which further increases did not alter the ratio of excretion to intake. When over 3.6 gram of sugar per kilo an hour was injected, about forty per cent. of the sugar appeared in the urine, the remaining sixty per cent. disappearing in the body.

By means of determinations of the respiratory quotient in animals receiving such excesses of sugar it was determined that none of the sugar was converted into fat. The carbon dioxide output showed that about thirty per cent. of the sugar injected was burned, while the rest was probably converted into glycogen. These observations may be explained on the basis of the hypothesis previously outlined by supposing that four molecules of the sugar passed into physical solution and were excreted in the urine, while six entered chemical solution and were either converted to glycogen or were burned to carbon dioxide and water. That there was a selective utilization was shown by the fact that from six to eight times as much glucose could be injected as of any other sugar.

Since the splitting of glucose may first result in the formation of two molecules of glyceric aldehyde from each molecule of sugar, this has been thought to be the first step in its metabolism. If this was true we should be able to inject twice as many molecules of glyceric aldehyde as of glucose with the maintenance of equilibrium and without harm to the animal. Such was found not to be the case and only one tenth to one sixth as much glyceric aldehyde as of glucose could be injected without its appearance in the urine. It is evident, therefore, that not over about one tenth of the glucose can be split in the body into this aldehyde. Experiments were conducted with the other substances commonly thought to be possible intermediates in the metabolism of glucose, and the findings were much the same, showing that none fulfilled the requirements of intermediates.

These experiments lead us back to our original contention that the more stable compounds, the less likely they are to be intermediates. We are forced to the hypothesis that glucose exists in the body, in part in chemical solution, and in part in physical solution. The entire gamut of changes occurring during its metabolism is probably run by the fraction existing in chemical dissociation, and the several stages in its decomposition exist in the form of dissociated, unsaturated molecules which never escape into the blood stream as intermediates.

The physical reactions of the unchanged glucose circulating in the blood in physical solution deserve mention. When glucose is injected at or below the tolerance rate, no diuresis is produced, but when this rate is exceeded the molecules which then exist in physical solution attract water and carry this out through the kidneys with the production of diuresis. In our earlier experiments this removal of water led to dehydration of the animal's tissues with the production of high fever and death. When we simultaneously introduced water in sufficient quantity to maintain a water balance in the tissues, this fatal effect was not observed and an enormous diuresis was produced—amounting to a litre an hour for a small dog. In diabetes, where the sugar tolerance is low and glucose circulates in physical solution in the blood, the same effect is observed in the resulting polyuria.

Before closing, some of the clinical applications of these studies should be mentioned. Since the procedure of continuous injection is wholly devoid of danger, it was possible to carry it out carefully on man; it was found that in cases with disturbance of the function of the hypophysis there was a slightly diminished sugar tolerance. In hyperthyroidism this diminution was greater, and it reached its highest points in cases of diabetes.

A second possible clinical application lies in the continuous intravenous feeding of certain cases with glucose. This has actually been conducted successfully in several cases, as high as 6,000 calories per diem being possible without exceeding the limits of tolerance.

The diuretic and dehydrating effects of glucose in physical solution might be supposed to offer possibilities in the removal of certain edemas. It was tried in cases of cardiac edema, but was unsuccessful.

since it led to a greatly increased work of the heart by overloading the circulation with fluid. It was equally unsuccessful in cases of pure renal edema, since in these the kidneys proved incapable of excreting the large excess of water drawn into the circulation. One case of glaucoma was encountered in which the intraocular tension was too high to make an iridectomy safe. Dehydration with glucose was carried out on several occasions with resulting enormous reduction in the intraocular tension. In this connection the observation of soft eyeball in certain cases of advanced diabetes deserves mention, for it illustrates the occurrence in disease of the same dehydration which we produced artificially in the case of glaucoma.

Finally, the possible advantages of great diuresis for the washing out of poisons seemed evident. We tried the method on dogs and found that it was of no avail in poisoning with mercury bichloride or arsenic, since neither of these was readily washed out, although the diuresis produced was enormous. In some cases, however, of poisoning with chloral, chloroform, and diphtheria toxin, the production of diuresis did save the animals from doses greater than the certainly fatal ones for normal animals.

PROPER FOOD FOR YOUNG CHILDREN.

Simple bills of fare, helpful recipes, and practical directions for the preparation of foods for children between three and six years of age are contained in *Farmers' Bulletin 717, Food for Young Children*, just issued by the Department of Agriculture. The bulletin, which was written by Caroline L. Hunt, under the direction of Dr. C. F. Langworthy, chief of the Office of Home Economics, is easy to understand and should be helpful to mothers who are trying so to care for their children that they will grow up into stalwart and efficient men and women.

The author has carefully avoided the use of all technical dietary terms or systems of grouping and has so classified foods that any mother can meet the following definition of a satisfactory diet for a little child:

A little child three to six years of age, who is carefully fed in accordance with his bodily needs (as these are now understood), receives every day at least one food from each of the following groups:

1. Milk and dishes made chiefly of milk (most important of the group as regards children's diet); meat, fish, poultry, eggs, and meat substitutes.
2. Bread and other cereal foods.
3. Butter and other wholesome fats.
4. Vegetables and fruits.
5. Simple sweets.

The relation of food to the condition of the bowels is also an important matter. Grains, particularly those containing the outer or branny layers or coats, are laxative; so, too, are such mildly acid fruits as apples, oranges, and grape fruit. So far, therefore, as the important matter of preventing constipation is concerned, coarse grains and mildly acid fruits serve the same purpose. When fruits are to be obtained in abundance, the kind of cereal served is

not of great importance. When they are not, the coarser cereals should be used.

A quart of milk a day. The basis of a child's diet should be clean whole milk—at least a quart a day. Such milk, in addition to water, contains about half a cupful of the very best food substances—butter fat, milk sugar, lime, and other materials needed by the child to make muscle, bone, and teeth. In addition, milk contains a substance thought to promote growth by helping the body make good use of other foods. Where good whole milk is not obtainable, clean, fresh skim milk supplies these substances, with the exception of the butterfat, and is, of course, preferable to dirty or questionable whole milk. Milk, however, contains very little iron and therefore spinach and other green vegetables and egg yolks, which are rich in iron, combine well with milk.

The child should drink the milk with the chill taken off, or should consume his full quart a day with cereals and in milk toast, cocoa, milk soups and stews, in cereal puddings, egg and milk puddings, custards, junkets, or simple ice creams. Milk stews may be made with vegetables or fish, or to vary the diet these things can be combined with cream sauce and served on milk toast. The bulletin gives a large number of recipes for the preparation of various milk dishes which will help children consume the requisite amount of milk without growing tired of this valuable food. Those for milk soups will be found particularly useful, as they give the mother an easy means of preparing many vegetables which are essentials in the child's diet.

Bread and cereals. Well baked bread and thoroughly cooked breakfast cereals are good for children and with milk should make up a large part of the diet. Bread and cereal mushes are to a certain extent interchangeable, but neither can take the place of milk, meat, eggs, fruits, and vegetables. An ordinary slice of bread is equal in food value to about half a cupful of boiled or steamed cereal and about a cupful of flaked or puffed cereal. Different kinds of bread may be used for variety.

The yeast raised bread given to young children should be at least a day old or should be toasted or twice baked. Hot breads are likely to be swallowed in large pieces and are therefore not desirable. Hot breads which are almost all crust, like thin tea biscuits or crisp rolls, are best of the hot varieties.

Meat, fish, and eggs. Under the heading, Meat, Fish, Poultry, Eggs, and Meat Substitutes, the author states: "In some families children do not get enough meat and eggs; in others they get too much. A good general rule commonly followed is to give a child two years old or over an egg every other day and about the same amount (two ounces) of meat, fish, or poultry on the intervening days. Where meat is omitted, care must be taken to see that other suitable foods take its place—preferably an extra amount of milk and eggs."

Fried (*sauté*) meats should not be given to a child, because they are likely to be overcooked and tough and also because the fat may be scorched and thus changed in composition. Scorched fat is almost certain to be hurtful to children.

Meat is best given as broiled chop meat or in

simple meat stews combined with vegetables. Poultry may be boiled and served with rice. When roasted, only the tender portions should be fed. Highly seasoned stuffing or rich gravy should not be given to a young child.

Dried and other fish, and oysters, may be used in milk-stews. Well boiled fish is good for variety. Eggs must not be overcooked or they are likely to cause indigestion. The best way to cook eggs is to poach or coddle them. Scrambled eggs may be served occasionally, provided that care is taken not to scorch the fat or to overcook the eggs.

Fatty foods. Fat is an important part of the food of children. There is more than an ounce of fat (at least two and a half level tablespoonfuls) in a quart of whole milk. If the healthy child gets a quart of milk, has butter on his bread, and meat or an egg once a day, he receives enough fat, and in wholesome form. It is well, therefore, not to give such fatty foods as pastry, fried meats and vegetables, and doughnuts or rich cakes. If the child is constipated, the occasional use of cream or salad oil is desirable, for fat in abundance is laxative.

Bacon or salt pork, cut very thin and carefully cooked, may be given occasionally. It is very important not to burn the fat.

Vegetables and fruits. Vegetables and fruits are grouped together because they are similar in that both supply iron, lime, and other mineral matters, and also mild acids. Vegetables are an important but often a neglected part of the child's diet. They should be served at least once a day, as they help to keep the bowels in good condition. Fruits are important for their flavoring, for their laxative effects, and doubtless for other reasons, and should be served in some form at least once a day. Fruit juices and the pulp of cooked fruit, baked apples and pears, and stewed prunes, are the safest. The child should not be allowed to eat the skins, unless they have been made very tender by cooking.

Simple sweets. Sugar is a desirable part of the diet, provided that it is given in simple sweets and not allowed to take the place of other foods and spoil the child's appetite. Simple sweets are such things as lump sugar, maple sugar, syrups, honey, and plain candy, and foods in which sugar is combined in simple forms with fruit juices (in lemonade, water ice, jelly, etc.), with flour or starch, as in plain cakes (cup cake, sponge cake, cookies), and with fruit, as in jams, marmalades, and similar things.

Value of Nuts and Fruits in the Diet of Children.—George Dow Scott (*N. Y. State Jour. Med.*, March, 1916) shows that nuts are especially high in food value, particularly in respect of protein and fat. Nuts are digestible if properly prepared and should form, together with fresh fruits, part of the dietary of children after weaning. They are best given in the form of freshly prepared nut butters, made by rubbing the nut pastes with fresh fruit juices. This form of food also serves as a mild laxative and intestinal lubricant. The fruit juices are also of value in scurvy and many forms of digestive disorders.

Feeding the French Army.—F. W. Zinn, who is with the French troops, in *Leslie's* for March 23, 1916, writes that in the French army biscuits or hardtack are carried only as a reserve ration. The ordinary campaign food is bread. The daily ration is one loaf for two men and it never fails. Whether the regiment is in the trenches or on the march or in a train it always comes on time. It is of clear wheat, heavier than civilian bread but fully as white and edible, and on account of its shrapnel-proof, watertight crust it is as good when two weeks old as when it is first baked. It certainly gets some very hard usage before it reaches the soldiers. From the interior bakeries it is transported by train and some twenty or thirty miles from the line it is transferred to the regimental wagons. They take it as close to the trenches as possible and for the rest of the distance—a mile or so—the men pack it on their backs. In sectors where there are long, narrow communicating trenches to go through the usual way is to stick four loaves on a bayonet and so carry them over one's shoulder.

Except in the winter, when one's appetite is unusually large, a half a loaf is more than one eats in a day, being equivalent to two ordinary American loaves, and a large part is thrown away. In the front trenches it is pure waste. If we are back, it is fed to the horses unless we happen to be in a village where there are civilians. In that case the thrifty French villagers see to it that there is no waste. The boys come around with sacks and collect every morsel of the surplus. This is one of the small compensations these frontier people have for the losses they have suffered.

They tell us that the aeroplane and the motor transport have revolutionized war, but from the soldier's standpoint the *cuisine roulante* has done more revolutionizing than any other factor. It is the field kitchen on wheels, or to translate literally the "rolling kitchen."

At the beginning of the war the whole German army was equipped with field kitchens, which in no small degree accounted for its ability to make its long, fast marches. The French had only a few of the kitchens, and practically all of the regiments had to do their own cooking. On the march each man carried a *marmite* strapped to his knapsack. It was a prehistoric method, very wasteful of food, wood and labor. One man out of every ten was detached for cooking service.

A meal in civil life, however, has charms beyond compare. I shall never forget the Fourth of July of last year. We had never had an hour's real holiday in ten months. As a surprise the American newspaper men in Paris petitioned the Minister of War to give all the Americans in the Legion a forty-eight hour permission in Paris to celebrate Independence Day with the American colony there, and for a wonder it was granted. Can you imagine it? Being taken off guard in the rottenest sector of trenches on the whole front at three o'clock, and the following evening sitting down to the Chamber of Commerce banquet in the Palais d'Orsay where the wine was served out of five kinds of dusty bottles and everything else was in proportion?

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 15, 1916.

ISOLATING THE VITAMINES.

Since the promulgation of the theory of the presence in fresh foods of vitamins upon which their value depended, when contrasted with preserved articles of diet, the general practitioner has perhaps wondered if they were tangible bodies or merely special molecular arrangements which age gradually broke up. Atherton Seidell, in the *Public Health Reports* for February 18, 1916, in an article, *Vitamins and Nutritional Diseases*, tells how he isolated a vitamin from brewer's yeast. This was tested on pigeons fed with and without the addition of the vitamin to polished rice; without the newly recovered body the birds promptly succumbed to polyneuritis, while the addition of the vitamin to the rice diet kept them in excellent condition—at least for the two months during which the experiment lasted. The experimenter's great difficulty came in trying to condense the product, for in its early form doses of 200 c. c. would have been required for human subjects. Vacuum distillation, evaporation in dry air, freezing, the addition of alcohol, etc., proved fruitless; but a specially prepared hydrous aluminum silicate known as Lloyd's reagent enabled Mr. Seidell to obtain a solid residue with all the hoped for dietetic effects, while the liquid filtrate proved practically useless.

Preventive experiments with 0.5 gram of this solid on alternate days enabled pigeons to retain normal health and weight on an exclusive diet of polished rice. On the basis of sixty kilograms as the weight of a man, compared with 300 grams for the pigeon, the dose would be ten grams on alternate days, or five grams a day, a quantity which could be easily taken in capsules or as an aqueous suspension. The activated solid is tasteless and odorless.

Polynuritis in pigeons is practically the same disease as beriberi in man, consequently Mr. Seidell expects the new solid to be an efficient remedy for beriberi. That it will be valuable in the treatment of pellagra, he is not prepared to say until clinical tests have been made in human cases. Experiments have already shown that if yeast does not turn out to be a suitable source of the vitamin for all uses, the latter can be obtained from certain food products, notably the potato.

ACUPUNCTURE AS A THERAPEUTIC
PROCEDURE.

It not infrequently happens that some therapeutic procedure which has survived from an earlier medical generation on a purely empirical basis is finally proved to have real scientific merit. Again such procedures sometimes survive because in spite of failure to establish an experimental scientific basis, the results are so evidently efficacious that their empirical employment stands justified. If these two facts are found in the realm of our own therapeutic inheritance, they may well be kept in mind in the consideration of empirical therapeutic agencies of wide and ancient usage among foreign races.

Lacking means for the control of pain and hemorrhage, surgery has made no progress in China. The Chinese division of medicine into external and internal diseases led to two types of curative efforts. One type consisted of the development of a large materia medica in which are many drugs used in western practice, and perhaps some drugs having new potent principles or at least new sources of known principles. The second type consisted of the development of the system of acupuncture which has been frequently described and as frequently derided. Yet analogy would show that so widespread and persistent a clinical practice probably had some element of value, which, although empirical, is none the less deserving of study.

According to Cadbury (*China Medical Journal*, XXVIII, 375, 1914), 388 points are described as suitable for acupuncture, and the practice rests on the theory that puncture of the vessels connecting the different organs will abort disease. Careful observation of the practice has seemed to show that it

has a certain value in relieving pain by counterirritation and in relieving stiffness and swelling under certain conditions. J. Cantlie, in an editorial article in the *Journal of Tropical Medicine and Hygiene* (xix, 46, 1916), records some personal experiences with this method of treatment and has found it of real value in a variety of conditions such as so called rheumatic pains in the gluteal region, hip, and lumbar muscles, swelling and pain following minor injuries to joints, and sciatic pain where no cause is found. He suggests that not only does acupuncture or needling have a counterirritant effect, but it also pierces and relieves local edema and congestion, especially under fascia. He cites the Chinese use of two coins between which the skin is nipped, as another effective mode of counterirritation.

As Cantlie points out, hepatic puncture in the effort to locate abscess often shows no pus, but nevertheless causes improvement and sometimes seems to lead to cure, by local depletion and relief of tension. Where the lung has been pierced, instead of dangerous symptoms, we find that the associated deep congestion of the lung is greatly relieved. Cantlie has found clinical justification for acupuncture in a limited group of cases. He presents the subject "to bring up for discussion a practice which has tradition—that is experience—for its justification; and there can be no doubt that as a rational treatment is has much to commend it."

This seems to be a matter which deserves further study and it might well yield a new clinical procedure which has so far been employed only tentatively and spasmodically.

DIET IN ACUTE GASTRITIS.

It is becoming more and more borne in upon us that diet plays a dominant, if not the predominant part both in the prevention and in the successful treatment of disease. There are, indeed, diseases which are almost wholly due to overeating, to overdrinking of alcoholic beverages, and to dietetic errors generally. Overeating and indulging too freely in spirituous drinks are more greatly responsible for certain diseases than any other one cause. Quantity of food is, on the whole, more harmful than quality, although quality must by no means be disregarded as an important factor. The stress and strain of modern urban existence, coupled as it generally is, with sedentary habits, are forces whose evil effects can scarcely be overestimated. When in conjunction with the strain on the nervous system and lack of sufficient healthful out of door exercise, the influence of large and unsuitable diet is taken into

consideration, there can be no reason to wonder that chronic diseases are on the increase.

Gastritis, both acute and chronic, is essentially a disorder in which diet is of the utmost importance in prevention and cure. Gastritis is usually brought about by indiscreet methods of feeding, albeit it should be pointed out that the personal equation and individual idiosyncrasy must always be taken into account.

It may be stated that, as a rule, however, gastritis is the result of errors of diet, such as overeating or of eating indigestible or acid foods. Moreover, the disorder is more apt to occur if the food is bolted either through carelessness or on account of defective teeth. And as suggested previously, it is obvious that some persons have a natural tendency to acquire gastric catarrh on very slight provocation, and in these more particularly a regulation of diet is all important.

With regard to chronic gastritis, it is in the very nature of things, a disorder of frequent occurrence among civilized people. As noted before, it is mainly induced by overeating and by imbibing too much alcohol and other beverages such as tea and coffee, which are likely to irritate the lining of the alimentary tract. Of course, if this mode of living is long continued, it will generally bring about chronic gastric catarrh of a more or less obstinate character, even in those whose digestive powers are of the strongest. Strumpell is of the opinion that the most common form, indeed the only frequent form of chronic gastritis in adults, is due to hard drinking. Other authorities do not go so far as the German professor, and probably would attribute to overeating as great responsibility for the condition as overdrinking, but all are unanimous that the two combined constitute a dual source of danger whose possibilities for evil are practically unbounded. Chronic gastritis is a disorder which often leads to various grave chronic diseases and conditions, and should be treated, and, if possible, checked at its outset, before enough time has elapsed to lay the foundation for other and more serious maladies.

Just as chronic gastritis is chiefly caused by dietetic indiscretions, so its successful treatment must be based on dietetic principles, and must proceed somewhat on the lines of "a hair of the dog that bit you," but this must be by an entirely different kind of hair. Strict regulation of the diet must be the essence of treatment, and the patient must have a perfectly definite bill of fare prescribed for him. The main object to be kept in view is to prescribe food of a quality and in such amounts as not to overtax an already encumbered organ.

To resume, the extreme importance of diet in the

treatment of disease is now recognized by the medical profession at its true value. In the prevention of disease, however, it is impossible to gauge its value, and it may not be overstating the case to say, that if people generally were careful of the quality of their food and did not eat or drink to excess, many diseases would vanish almost entirely. In the treatment of certain diseases and disorders, diet is the staff on which we must mainly lean, while in all diseases it is of considerable consequence. "Many men dig their graves with their teeth," now a stale aphorism, is more true, at the present time, than when Sydenham first uttered it.

OUR MOST COMMON DISEASE

The most common disease to which the human body is now subject is caries of the teeth. This is no new statement, and, like previous statements of the same kind, it will doubtless arouse no revolt of endeavor to check or abolish the evil. The admission of the prevalence of this loathsome disease—for it makes the mouth a veritable cesspool—is an admission that the average human body is a physiological failure. There is no more reason why the teeth should be imperfectly developed, or fail to stand up under use, than that any other structures in the body should be so defective. Doubtless the other structures of the body may be correspondingly inadequate, if we only knew it, but we do not, for the present, realize this possibility. Wild animals have perfect teeth, or at any rate, no large percentage of them have rotting teeth in their heads before they are half done with life. Our natural inheritance is, therefore, not to blame for the condition, and indeed there are still a few specimens of man with perfect teeth. Either physical degeneration of our parents is to blame, or the fault lies with the individual, and, according to what little we know of the laws of heredity, the blame would seem to fall upon the owner of the faulty teeth.

The cause cannot be simply one of not using a toothbrush or some alkaline lotion. Wild animals and many men have the most beautiful teeth without the use of either. As for the alkaline wash, its action can last but a few minutes at most, and, as a preservative of the teeth from destruction, it is manifestly an absurdity. It is also absurd that a body which is given the right sort of food in the right amount, and that otherwise behaves in seemly fashion, should not, as in the case of the animal, keep its mouth clean without other aid than the chemicals of the blood and the saliva. How otherwise does the animal manage its dental perfection?

The monetary side of this disease is something ap-

palling. The dental bills of the country must far exceed the doctor bills, or would, if all could afford to have needed filling of their faulty members, while the cost of medical services for disease caused indirectly by decayed teeth and pyorrhea adds greatly to the financial drain of the land.

Of all national needs, a thorough investigation of dental caries and its primary and real (not its secondary and incidental) cause is most urgent. If we can spend millions to study occasional diseases such as infantile paralysis and pellagra, why not more to check this most common disease which is daily sapping the health and wealth of the land, and which, moreover, is indicative of some hidden unhygienic condition which produces degenerate human bodies? Recent investigations, which seem to lay the blame on faulty feeding in childhood, i. e., administration of too much pap, at the expense of foods which require mastication, promise to lead to a real prophylaxis. This would be a notable achievement on the part of dietetics.

FOLLOWING OUR EXAMPLE.

The feeding of the sick is one of the most important factors in convalescence, and in many cases all that is necessary for recovery is the administration of proper diet suitably prepared. For this reason the better class of hospitals employ specially trained dietitians who have entire charge of the hospital kitchen and the food supplies and who are consulted in the make-up of dietaries. The NEW YORK MEDICAL JOURNAL feels that too much stress cannot be laid upon the subject of dietetics and alimentation, whether in private practice or in hospitals, and we have been devoting space to a special department with the hope of arousing more interest in diet among the medical profession at large.

It is therefore with a deep sense of satisfaction that we observe that our excellent contemporary, the *Modern Hospital*, in its April number, has followed our initiative in establishing a special Department of Dietetics, conducted by the dietitian of the Lakeside Hospital at Cleveland.

THE CAMP AND THE UNUSUAL CHILD.

More and more we realize that the proper care of growing boys and girls in cities involves transplantation into the country, for a time at least during the summer months—the longer the better. Days and weeks spent by lake and shore close to Nature, breathing the fresh air, eating simple and nourishing food, swimming and playing in the water, boating, canoeing, riding, bronzing in the sun, and learning to live and work and play cooperatively, all these the summer camp offers. In 1885 there were but two

organized camps for boys, in 1895 there were nearly a score. With the advent of the Y. M. C. A. camp the numbers grew rapidly, until in 1900 there were more than 100 camps for boys. The first girls' camps were started in 1904. At the present time there are several thousand camps for children scattered all over this broad land; their value and importance are attested by these figures of growth.

Camping is a valuable mode of preventive hygiene, and as such may well be prescribed in the difficult cases of neurotic children, and for boys and girls who need special care and attention because of some physical defect, therefore physicians should be well informed with regard to the available opportunities for camping. In order to supply this information, the NEW YORK MEDICAL JOURNAL has now listed 246 private camps in addition to the Y. M. C. A., Y. W. C. A., Y. M. H. A., Church, and institutional camps. Of the private camps, 147 are for boys and ninety-nine for girls. Seventy-two of these camps are in Maine, sixty in New Hampshire, forty-four in Vermont and southern New England, twenty-seven in New York State, and forty-three in Pennsylvania, the West, and Canada. We are receiving many inquiries every day regarding camps, and are glad to furnish to our readers and their friends such information as lies in our power.

CECUM ON THE LEFT SIDE.

Graham W. Christie, M. B., Ch. B. Edin., writes to the *Lancet* for March 25th on a case of left sided cecum which came under his observation. The patient, a married woman aged twenty-two years, was admitted to the infirmary with a view to having appendicectomy performed. The history was that six weeks previous to admission she had suddenly been taken ill with an attack of acute pain on the right side of the abdomen accompanied by vomiting. She had been confined to bed since, her appetite was still poor, with persistence of dyspeptic symptoms, and she had never been free from pain in the right side. Menstruation was normal and regular. On examination distinct tenderness in the right iliac region was elicited; per vaginam nothing abnormal was felt. The abdomen was opened by a median incision below the umbilicus. The cecum was sought for in the usual position, but could not be found. The descending and sigmoid colon occupied the right side of the abdomen and pelvis, while further exploration revealed the ascending colon on the left side, with the cecum and a long inflamed appendix occupying the left iliac fossa. The spleen could be felt on the right side. The right ovary, which was much enlarged and cystic, was removed and appendicectomy performed. The position of the heart was that of dextrocardia. It was therefore a case of general transposition of the abdominal and thoracic viscera with the appendix in the left iliac fossa.

News Items.

Medical Research at Sing Sing Prison.—Plans are being made so to reorganize the hospital department of Sing Sing prison as to permit the establishment of a clinic and a bureau for medical research.

Relation of Medical Diseases to Surgery.—A series of symposiums on this subject will be held by the Northern Medical Association of Philadelphia. Dr. John Chalmers Da Costa and Dr. Alfred Stengel will open the series on May 13th.

New York Geriatric Society.—The next meeting of the society will be held at the Sherman Square Hotel, New York, on Wednesday, April 10th, at 8:30 p. m. The subject chosen for discussion is Senile Neuroses and Senile Psychoses. The medical profession is cordially invited to attend.

A Dinner to Doctor Jacobi.—The board of directors of the Hospital for Deformities and Joint Diseases will give a dinner in honor of Dr. Abraham Jacobi, on Wednesday evening, May 3d, at the Ritz-Carlton Hotel. Mr. Lewis Straus is chairman of the dinner committee. Tickets are five dollars each.

Mosquito Week in New York.—Dr. Haven Emerson, health commissioner of New York, has officially designated the week beginning May 1st as mosquito week. The health department is making a special effort to enlist the cooperation of the people in the campaign for the extermination of the mosquito.

A Public Meeting on Alcoholism in Philadelphia.—On Tuesday evening, April 11th, a public meeting was held in Philadelphia, under the auspices of the Society for Organizing Charity, for the purpose of discussing the question of alcoholism. The principal speakers of the evening were Dr. James McIver and the Honorable Francis Fisher Kane, of Philadelphia, and Dr. Irwin H. Neff, superintendent of the Norfolk State Hospital, Mass.

American Aid for Belgian Physicians.—Dr. F. F. Simpson, of Pittsburgh, treasurer of the Committee of American Physicians for the Aid of the Belgian Profession, announces that, in view of the fact that contributions are not coming in very rapidly at the present time, the treasurer's reports will be issued monthly in the future. No contributions were received during the week ending April 8th. Previously reported receipts amount to \$7,941.86; total disbursements amount to \$7,310.04.

A Symposium on Infant Feeding.—The newer methods of feeding infants and the recent advances made in teaching this particular branch of pediatrics were discussed at a stated meeting of the Philadelphia Pediatric Society, held on Tuesday evening, April 11th. Papers were read by Dr. J. P. Crozer Griffith, of the University of Pennsylvania; Dr. Edward E. Graham, of Jefferson Medical College; and Dr. James H. McKee, of the Medico-Chirurgical College. The discussion was opened by Dr. Theodore LeBonfleur, of the Woman's Medical College.

Medical Association of the Greater City of New York.—A stated meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, on Monday, April 17th, at 8:30 p. m. Dr. George W. Cray will read a paper on *Eczema in Childhood*, which will be discussed by Dr. Rowland G. Freeman, Dr. Charles Gilmore Kerley, Dr. Charles Herrman, and Dr. Roger H. Dennett. Dr. James Pedersen will read a paper on *Syphilis of the Bladder*, and among those who will discuss it are Dr. Eugene Fuller, Dr. Charles H. Chetwood, Dr. Alfred T. Osgood, Dr. Joseph F. McCarthy, Dr. B. S. Barringer, and Dr. Henry G. Bugbee.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, April 12th. Philadelphia Clinical Society, Society of Normal and Pathological Physiology, Medical Society of the Woman's Hospital, Blockley Medical Society. Tuesday, April 13th. West Branch, County Medical Society; Wednesday, April 10th. County Medical Society (business meeting). Section in Otolaryngology and Laryngology of the College of Physicians. Thursday, April 14th. Section in Ophthalmology of the College of Physicians, Southeast and Northeast Branches of the County Medical Society; Friday, April 21st. Jefferson Hospital Clinical Society, Medical Club (reception).

New York City's Death Rate.—According to figures compiled by the Department of Health of the City of New York, the health of the city was better last week than during the corresponding period in 1915. During the week 1,674 deaths from all causes were reported to the department, which is equivalent to a rate of 15.63 in 1,000 of population, in contrast to a rate of 18.51 during the corresponding week in 1915. A decrease in the mortality from the following diseases was noted: Acute infectious diseases, diarrhical diseases, heart disease, Bright's disease, influenza, bronchitis, lobar pneumonia, bronchopneumonia, pulmonary tuberculosis, and diseases of the nervous system. The only disease that showed an increase in mortality was cancer, the number of deaths from that cause alone being 113, compared with 92 during the corresponding week last year. The death rate for the first fifteen weeks of 1916 was 15.64.

Personal.—Dr. William H. Park, director of the Bureau of Laboratories of the Department of Health of the City of New York, and professor of bacteriology and hygiene at the University and Bellevue Hospital Medical College, will deliver the annual address of the Pathological Society of Philadelphia on April 27th. The title of the address will be announced later.

Dr. Anthony Bassler, of New York, has been appointed consulting gastroenterologist to Christ Hospital, Jersey City, N. J.

Dr. William V. P. Garretson, of New York, has been appointed, by the board of trustees of Bellevue and Allied Hospitals, to the position of neurologist to the Harlem Hospital.

Dr. Charles G. Wagner, superintendent of the Binghamton, N. Y., State Hospital for the Insane, was elected president of the American Medico-Psychological Association, at the seventy-second annual meeting held in New Orleans, La., on April 5th.

Dr. James J. Walsh, of New York, has been awarded the Letaire medal for the year 1915 by the University of Notre Dame, South Bend, Ind. This medal is awarded annually by the university to a distinguished Roman Catholic layman for valuable contributions to art, science, religion, or public endeavor.

Dr. Wilmer Krusen, director of public health of Philadelphia, will be the guest of honor at the reception of the Medical Club of Philadelphia, to be held on Friday evening, April 21st, at the Bellevue-Stratford Hotel.

Dr. L. Webster Fox, of Philadelphia, has been chosen president of the Pennsylvania Home Teaching School and Free Circulating Library for the Blind.

Surgeon A. M. Fauntleroy, United States Navy, will deliver the ninth public lecture at the College of Physicians of Philadelphia, on Saturday evening, April 15th, at 8:30 o'clock, his subject being the Dangers and Duties of the Hour.

Dr. Lewis N. Robinson, of Philadelphia, was elected president of the Philadelphia branch of the American Institute of Criminology at the sixth annual meeting held on March 15th.

Dr. Joseph A. Blake, formerly professor of surgery at Columbia University, who was chief surgeon of the American Ambulance Hospital at Neuilly during the first year of the war, has been appointed chief of the surgical centre in the Department of Seine and Oise, which places him in charge of six military hospitals.

Dr. Powell P. Fenton, of Philadelphia, who has been serving with the ambulance corps of the French army, has been awarded the Cross of War by the French government for distinguished and meritorious service.

Dr. John P. Bethel has been appointed first assistant bacteriologist to the Philadelphia Bureau of Health.

Dr. Amos O. Squire, of Ossining, has been appointed physician to Sing Sing Prison, succeeding Dr. C. W. Farr, who resigned recently.

Dr. James V. May, head of the New York State Hospital Commission, was recently appointed superintendent of the Grafton, Mass., State Colony for the Insane, succeeding Dr. H. Louis Stick, whose resignation was accepted in March. Doctor May will assume his new duties in a few weeks.

Dr. Charles P. Caldwell, of Chicago, has been appointed by Mayor Thompson to succeed the late Dr. Theodore B. Sachs as one of the three directors of the Municipal Tuberculosis Sanatorium.

Protecting Children against Diphtheria Infection.—

Through the cooperation of the department of charities, 1,600 Schick tests were recently made upon the children of the Randall's Island Children's Hospital, disclosing the presence of 135 susceptibles. With the exception of four children afflicted with epilepsy or kindred disorders, all the susceptible children were actively immunized with diphtheria toxin. Inasmuch as each received only a single immunizing injection, it is probable that a few will still be susceptible. This will be determined when Schick re-tests are made this month.

The Broad Street Hospital.—Protests against founding a hospital in the financial district of New York, on the ground that it is unnecessary, were made by Bellevue and Allied Hospitals, the New York Hospital, St. Gregory's Hospital, the Ambulance Board, the Medical Economic League, and other organizations of physicians, when the board of directors of the proposed institution appeared before a committee of the State Board of Charities to ask for a certificate to establish a hospital at 109 Broad Street. The board, however, admitted the need of such an institution and approved the charter calling for a general emergency hospital and training school for nurses. Sufficient funds have been pledged for the establishment and maintenance of the hospital and for two thirds of the equipment. Dr. A. J. Barker will be superintendent.

Street Accidents in New York.—According to statistics prepared by the Police Department the total number of street accidents in New York city during 1915 was 22,540, of which 659 were fatal. Of the persons killed 510 were male and 149 female, i. e., about three and a half times as many males as females; 106 were children under six years of age, and 184 were between the ages of six and sixteen. In the nonfatal accidents the proportion of male and female was similar to that just noted and there were 2,301 children under six years and 5,085 between the ages of six and sixteen years. As to causes, the largest contributors were the following, in the order of importance. Passenger automobiles, 4,805; electric street cars, 3,026; falls, due to causes other than vehicular, 3,003; horse drawn vehicles, trucks, or wagons, 2,441; and collisions of all kinds, 2,428. The other causes of accidents were comparatively small. In order to discover what class of vehicle was responsible for the largest proportion of street accidents a special tabulation was made of all street accidents which occurred in February, 1916. During that month there were 1,407 accidents, of which 323 were caused by vehicles striking persons. Two of these accidents were caused by ambulances, one by a fire engine, three by omnibuses, and five by mail wagons. On the basis of the foregoing figures, Dr. E. H. Lewinski-Corwin has computed that there was only one ambulance accident to every 5,043 runs, and one fire engine accident to every 4,491 runs.

Supervision of Professions in New York State.—An act has been introduced into the Senate of the State of New York to amend the education law, relative to the practice of professions in New York State by persons licensed in other States and countries, and the licensing of such persons by the regents of the university under certain conditions. Section 51 of the law has been amended to read as follows:

Supervision of professions. Conformable to law, the regents may supervise the entrance regulations to and the licensing and practising of the professions of medicine, dentistry, veterinary medicine, pharmacy, and optometry, and also supervise the certification of nurses and public accountants.

The regents shall also have power to make rules and regulations to regulate the licensing to practise of any member of any such professions, or the certification of any nurses or public accountants who shall present satisfactory evidence to the regents showing the applicant for a license to be of good moral character, of sufficient preliminary and professional education, training, and skill, and to have lawfully and successfully practised such profession or calling for such a period of time as to evidence a sufficiently high standing as to learning, experience, skill, and character to warrant a license to practise in this State. The regents may dispense with all examinations in proper cases or require such examinations in other cases, as they shall deem necessary to test the professional attainments of the applicant.

This act shall take effect July 1, 1916.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE FACTOR OF ABSORPTION IN DRUG THERAPEUTICS.

By LEROY D. SWINGLE.

Department of Pharmacology, University of Utah.

In general, the intensity of action of a drug depends upon its concentration in the tissues; so the problem in therapeutics generally is to bring the concentration of the drug in the tissues up to the point of modifying to the desired degree the function of a given organ without unfavorably involving other organs. Theoretically, it appears that complete success in drug therapy would require efficiency in securing and maintaining such a concentration. This task would not be difficult were the factors of absorption and excretion constant in the same and uniform in every individual.

The ratio between the rate of absorption and the rate of excretion (or, in some cases, the rapidity with which the drug is rendered inactive) governs the administration of the drug. Since this ratio is neither constant in the same nor uniform in every individual, the physician cannot prescribe by rules, but must determine in each case the size and frequency of the dose, and, in some cases, the form of the drug and the proper method of administration. With these principles in mind there is no place for the same cut and dried prescription for all cases. Each case is treated individually and is carefully watched to see whether the desired therapeutic effect is being secured.

Before it had been proved by experiment that the action of many of the drugs that were being used was nil, the factors of absorption and excretion were of much less importance. Now that pharmacology has eliminated from rational therapeutics drugs of doubtful or no action, the ratio of absorption to excretion assumes commanding importance.

It is our purpose here to consider especially the factor of absorption as illustrated by the action of poisons on the sheep tick. While the matter to be presented is not along the line of human medicine, yet it serves to emphasize the importance of this factor in practical therapeutics.

The sheep tick is covered with an impervious chitinous membrane, perforated by four small openings into as many tracheal tubes, profusely branching to all the tissues. These tubes, of small calibre, are filled with air. Plainly, they are adapted to the absorption of gases rather than liquids. In fact, the air within them would prevent a ready entrance of liquids. Since these tubes are not adapted to the absorption of liquids, and the body of the tick being covered with a chitinous coat, quite impervious to fluids, it theoretically follows that volatile drugs are more readily absorbed than nonvolatile. To be sure, it is a recognized law that volatile substances penetrate tissues more readily than nonvolatile, but in the case of the sheep tick, to this cause for a greater absorption of volatile drugs is added a still

more effective cause, namely, the morphology above described. It happens, then, that certain volatile drugs with a comparatively low toxicity for protoplasm possess a comparatively high toxicity for the sheep tick, and vice versa, the cause being that the volatile drugs reach the living tissues in greater concentration than the nonvolatile ones.

While this appears theoretically correct, it ought to have its foundation in experiment. At first thought it appears to be a point which would readily yield to demonstration—simply compare the degree of action of volatile with nonvolatile drugs. However, we do not know the coefficients of absolute toxicity of the volatile and nonvolatile drugs applied under conditions which insure that both types of drugs come in actual contact with the living tissues in the same quantities. The problem involves the determination of such coefficients. These being known, it could be determined whether the comparatively high toxicity of some of the volatile drugs is due to the fact that they reach the living tissues in greater quantities, owing to their property of volatility. As it is, we cannot be certain that their comparatively high toxicity is not due to their possession of a high specific toxicity for sheep tick tissue.

It is not possible to compare the actions of the same drug in both the volatile and nonvolatile states, no drug being known to exist in both states at the same temperature. Nicotine, in the forms of the alkaloid and the sulphate, the former slightly volatile, the latter nonvolatile at ordinary temperature, might possibly be used, although the two forms are not chemically identical.

Consequently, a method was conceived for determining the comparative absolute toxicity of two drugs, chloral hydrate and chloroform, the one slightly, the other highly volatile at room temperature. Comparing the toxicity of a given quantity of air almost saturated with chloral hydrate vapor, with an equal weight of chloroform vapor in the same quantity of air, it was found that the chloral hydrate was as toxic as the chloroform. Under these conditions we compared equally concentrated vapors which would have equal chances of reaching, by way of the spiracles, the living tissues of the tick. But it was found that a strong solution of chloroform in water is a hundred times more toxic than an equal solution of chloral hydrate in water. Under these conditions more chloroform reached the tissues than chloral hydrate, as is shown by the greater action. It was shown that chloral hydrate is as toxic as chloroform when conditions are so arranged that no more chloroform than chloral hydrate could reach the tissues. When conditions were so arranged that a many times greater action was obtained from chloroform than from chloral hydrate, although they were applied in equal solutions, the different results must have been due to the greater volatility of the chloroform solution. In

other words, the more volatile drug was more readily absorbed because of the special structure of the sheep tick, making it especially adapted to the absorption of gases.

We see that the poisonous action of drugs on the sheep tick depends as much or more upon the physical property of the drug, which may determine how readily it will be absorbed as upon its absolute toxicity for the tissues after it has reached them. The question of absorption is, therefore, very important.

Likewise, absorption is equally important in human drug therapeutics. The drugs must reach the point where their action is desired, and it is the physician's task to see that the drug is reaching that tissue in the proper concentration.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Fifteenth Communication.

MORPHINE.

Although an extensive and welcome discrimination has of late years rapidly narrowed the therapeutic field of opium, still no other one drug holds so high a place in our list of *essentiales medicamentorum*. Despite the terrible evils it has wrought to individuals and to nations—evils due to ignorance and abuse—yet it remains the greatest of all hypnotic analgesics. The originator of the tincture expressed his thanks for the discovery by crying out *Laudamus*; and many a suffering person since has gratefully repeated the pæan of praise when laudanum has brought its blessed relief. To be sure, the drug is palliative only, except in its action on the alimentary tract; it depresses the perceptive faculty of the pain sense so that sensations of this order are but feebly apprehended or not at all. But relief from painful receipts is occasionally of prime importance, eradication of the underlying ill being for the nonce of secondary interest.

The use of morphine for alleviation of pain will be followed inevitably by results other than analgesia, and these other effects must be known and qualitatively estimated beforehand, the degree of action usually, though not always, depending on the dose. Normally all the cortex, both sensory and intellectual, is depressed by morphine. On the sensory side the pain sense is usually abolished early, the muscle sense later, and the sense of touch last and least. On the intellectual side, the centres of concentration, coordination, and summation are affected early, and in this sequence; later, the entire cortex becomes depressed. In some subjects possessing idiosyncrasies, there will be the same preliminary stage of heightened cortical irritability, occasionally approximating maniacal excitement; this is constant in cats. The primary augmentation in spinal activity seems normal in all cases, though naturally much more marked in some instances than in others.

Morphine gradually slows respiration by centric action, rendering it shallower and less efficient; later, it produces a progressive weakness of the

respiratory movements, with periodical irregularity.

Concerning the action of morphine on the heart and bloodvessels one authority states: "It increases the force, fullness, and frequency of the pulse," while another equally authoritative writer says, "Morphine has little direct action on the circulation." My experiments on both man and the lower animals seem to indicate very little action on the heart other than a late slowing following excessive doses.

The action of morphine on the stomach and bowels is very important to the therapist. Its main action seems to be on the intrinsic ganglia, which it depresses greatly, thereby inhibiting both circular and longitudinal muscle activity. This not only results in more complete absorption and consequent constipation, but is also the means whereby is inhibited the excessive peristalsis accompanying and producing the pain of colic; this result is produced much more effectively by the tincture than by the alkaloid. The nausea and vomiting that so frequently attend and follow the use of morphine is due to centric action rather than to any local irritation. A curious point is that the action of morphine differs with the kind of animal, large doses with dogs and cats producing violent peristalsis and diarrhea instead of the constipating action observed in man.

(To be continued.)

Cæsarean Section.—Three papers in the *Boston Medical and Surgical Journal* for March 30th are devoted to this subject. John T. Williams gives the modern indications for the operation, Foster S. Kellogg protests that it is much overdone, and Charles M. Green reports twenty cases with comments. The last named writer believes that every pregnant woman should receive painstaking ante partum study and adequate general care, to the end that the obstetrician may understand the conditions with which he has to deal, and that the mother may be in the best physical condition. Except under emergency conditions section should be deferred until the advent of labor, and until labor has progressed under observation for a reasonable number of hours, not only in border line cases, but when the indication for section is absolute. Vaginal examinations should be avoided and progress noted by external and rectal palpation. The vagina should be prepared as for any surgical procedure, and with gentleness. The supraumbilical incision is preferable, except when easy access to the pelvis is necessary. There is no reason for eversion of the undelivered uterus. The uterine wall should be painstakingly sponged clean of membranes and clot before closure; this can be done by inverting the uterus, half at a time, through the uterine incision. When the membranes have descended into the vagina it is safer to push the placenta and remaining membranes down and deliver them from below, than to remove them through the uterine incision.—Kellogg says the operation is overdone for many reasons, the principal one being the idea that it is perfectly safe. To disprove this he speaks of ten recent patients in private, well equipped hospitals in the hands of well trained obstetricians, seven died, three recovered after being so sick that whether they

lived or died seemed a matter of chance. He says that the indications on which it is being advised are "almost anything that keeps a baby from flopping into the world itself." Accepted reasons for doing Cæsarean section are absolute pelvic indication, relative pelvic and fetal head indication, impacted pelvic tumor, central placenta prævia with tight long cervix, atresia of the vagina, and certain cases of ablatio placentaë with tight os; with such indications if the patient dies after Cæsarean section it is on nobody's conscience, the best has been done. Other conditions that have been advised to be considered indications for the operation and are sharply criticised are: Women with unfit nervous systems and general make-up; primiparous breech; pelvic indication that is not absolute; after attempted high forceps, which may or may not be indicative; prolapsed cord in young primipara; prolapse of arm without attempted version; several conditions that made engagement questionable; toxemia of pregnancy; eclampsia; breaking or broken cardiac cases; insufficient progress. It is usually stated that the mortality among Cæsarean babies is zero, but it is not. The writer does not wish to belittle the honest value of the operation, but to point out that a good thing exploited is apt to go bad.

Acupuncture the Best Method of Vaccination against Smallpox.—H. W. Hill (*Canadian Medical Association Journal*, March) says that acupuncture bids fair to do away with the old scarifying, scraping, and scratching methods. The tip of a sterilized sewing needle is used, the punctures are one thousandth of an inch deep, not a shred of epidermis is removed, and the pain is so slight that the operation may be completed before the patient knows that it has begun. The arm is washed with soap and water, then with alcohol, and finally with ether. A small drop of vaccine is deposited on the clean surface. The vaccinator's hand is closed upon the arm from behind so as to draw the skin tight in front, and the point of the needle, held slantingly nearly parallel with the skin, is pressed against the skin through the drop of vaccine. Then it is that one one thousandth of an inch of the point enters the upper layer of the skin, carrying the vaccine with it. The needle is withdrawn, another similar puncture is made close beside the first, and then others until six have been made. As a rule it is best to make three sets of punctures, one at each angle of an equilateral triangle having sides two inches long. The remaining vaccine is wiped off with a bit of sterile gauze and the operation is finished.

If the vaccination does not take, nothing happens. If the patient has been vaccinated successfully before, or has had smallpox, the punctured surface will redden, swell slightly, and become itchy for a day or two; this is an anaphylactic reaction. In most cases in which the vaccination takes nothing will show for four or five days, then the spot will redden, swell, and a single smooth, pearly button arises about the size of a large green pea. In ten days or so this will shrink and become a dark, dry button, which will fall off in about ten days more, leaving a small, round scar. Ordinary areolæ develop, and there is some tenderness of the axillary glands. Over sixty students were vaccinated recently by this method. All who had been vaccinated

previously or had had smallpox showed the anaphylactic reaction. The vaccination took in all the others, giving 100 per cent. of success. There was not a bad arm among them, not an hour of work nor a meal lost. In two cases the anaphylactic reaction indicated that a previous attack of supposed chicken pox had really been smallpox.

Nitrous Oxide in Obstetrics.—Frederick C. Irving (*Boston Medical and Surgical Journal*, March 30th) says that nitrous oxide and oxygen is the most successful analgesic known for the relief of the labor pains. It is the safest anesthetic known. It has no untoward effects, immediate or remote, upon either mother or baby. It does not delay labor or in any way impair the efficacy of the uterine contractions. It is pleasant to take, recovery from it is rapid and usually featureless, it may be administered anywhere and may be employed by any physician with a capable assistant.

Anesthesia in Obstetrics.—Austin Brant (*Boston Medical and Surgical Journal*, March 30th) concludes that no method of anesthesia is safe through the whole of labor. The varying indications and contraindications must be followed carefully and closely, with the safety of both mother and child in mind. For long, primiparous labors the following sequence seems to be best: The proper use of bromides, chloral, or morphine-scopolamine in the first stage; the administration of these drugs to be stopped in time so that their effects shall have worn off by the time of expected delivery; nitrous oxide during pains, with or without change to ether for delivery; or, in the hands of the trained obstetrician, the substitution of forceps for the second stage, under sufficient ether anesthesia.

Anesthesia in Gynecological Operations.—R. R. Huggins, in the *American Journal of Obstetrics* for January, 1916, makes a plea for the use of spinal anesthesia in certain gynecological cases. He is convinced that the procedure will eventually acquire a high place, especially in the surgery of the lower abdomen and pelvic cavity. It is highly important, however, to know when not to use it, and accurate and careful technic is essential for satisfactory results. A blood pressure below 100 mm. is a strong contraindication. The method should not be used in profound shock with exhaustion of the spinal centres, nor in patients whose heart muscle is so damaged that it cannot stand a sudden, marked fall in blood pressure. It should not be given to extremely nervous patients, nor to those with habitual headaches. Shock is great in many gynecological operations, owing to the trauma incident to the removal of densely adherent structures. It is impossible to block all the nerves to these organs in the abdomen, and Crile's principles are applicable therefore only with difficulty. Spinal anesthesia, in which the entire nerve supply is blocked, is consequently of great value whenever there is danger from shock, the latter being infinitely less than under any other form of anesthesia. It is thus of special value in cases with pulmonary tuberculosis, in hysterectomy for uterine cancer, in the removal of fibroids with dense adhesions, in adherent chronically infected Fallopian tubes, etc. Complete muscular relaxation is obtained. Owing to the absence

of vomiting and restlessness, pain is much reduced. The vast majority of deaths from spinal anesthesia have occurred in cases in which it should not have been used. In Huggins's experience, the number of cases of headache has grown progressively less as he has become more familiar with the method. Babcock ascribes headaches to an impure solution, and when they appear has the solution at once changed. Albumin, casts, and acetone occurred less often than in a similar number of other cases. The drug used by Huggins is novocaine, in ten per cent. solution, the amount injected varying from one to two c. c.

Management of the Sexual Problem in War.—F. de Napoli (*Riforma medica*, March 6, 1916) advises both prophylactic and curative measures. Prophylaxis entails disciplining and the prevention of clandestine prostitution, the use of antiseptic solutions and applications, and the intensification of sanitary supervision of the soldiers. Curative treatment demands venereal clinics in the first line of the army, and no pains should be spared to give the best and most modern treatment, not only for the good of the military service itself, but also to prevent the spread of disease when these men return to their homes.

Treatment of Cholera infantum.—1. Empty the stomach and intestines, says the *Charlotte Med. Jour.* for March, 1916, by stomach washing and rectal irrigation, with a large dose of castor oil; 2, neutralize the effect of the poison upon the heart and the nervous system; morphine and atropine hypodermically, 1/50 of the former and 1/600 of the latter for a child one year old, repeated every hour until the desired effect is obtained; 3, supply fluid to the blood. This is done by hypodermoclysis; one half point of saline is given every twelve hours into the back or thighs; 4, reduce temperature. Cold baths every two or three hours, if necessary. Ice cap. Brandy, camphor, and ether as stimulants, if necessary.

Prophylaxis of Influenza.—In some notes on the recent epidemic of influenza, John A. Ceconi recommends the following precautions in the *Boston Medical and Surgical Journal* for March 23d. During epidemics overcrowded places, especially stuffy traffic vehicles, should be avoided. Households in which the infection is known to exist should be shunned. Breathing fresh air is an excellent measure against any infection. Overstudy and overwork weaken resistance. Therefore recreation of the body and mind together is commendable, as it tends to develop the constitution and fortify it against disease. Infected persons should be careful to protect others from bacilli-laden particles of nasal and buccal secretions by the judicious use of handkerchiefs. The family physician should be called immediately so that treatment may be instituted and proper isolation established.

The Fasting Treatment of Diabetes mellitus.—According to Edgar Stillman (*American Journal of the Medical Sciences*, April), the object of this treatment is to render the patient permanently free, not only from glycosuria, but also from acidosis.

The term acidosis signifies not an actual acid reaction, but an accumulation of acid bodies in the blood and tissues sufficient to neutralize enough of the bicarbonate to reduce the alkaline reserve below normal. Urinary tests for acidosis are often misleading in that they are indicative merely of the excretion of acid bodies and are not a true index of their accumulation. An analysis of the blood bicarbonate as determined by the power of the plasma to combine with carbonic acid, on the other hand, offers an accurate measure of the accumulation of fixed acids and gives a true index of the degree of acidosis. When acidosis is determined daily, all cases of diabetes may be treated by the fasting method safely and with benefit.

Glycerin Substitutes.—Continuing his discussion of the preparation of formulæ for external use without employing glycerin, P. G. Unna (*Berliner klinische Wochenschrift*, October 11, 1915) states that a satisfactory preparation for application to ulcers and wounds can be made as follows:

R Tincture iodii, 30.0;
Syrupi, 20.0.

M.

The oxidizing property of iodine is diminished by the reducing property of the syrup and the action of the iodine is therefore milder. The preparation is especially valuable in the treatment of atonic wounds, since the iodine disinfects the granulations and the syrup hastens epithelialization. A thoroughly satisfactory zinc plaster may be prepared by the formula:

R Gelatini, ..
Zinci oxidi, } 50.0;
Syrupi, 25.0;
Aque destillatæ, 45.0.

M. et fiat emplastrum.

Or two parts of the water may be replaced by two of ichthylol if the actions of this drug are sought.

Ringworm of the Scalp.—B. Barker Beeson (*Journal of Cutaneous Diseases*, November, 1915) studied ringworm of the scalp, with the idea of classifying and determining the relative frequency of the different types of fungi. The author reviews the celebrated study of Sabouraud and uses that as a comparison for his own research. The culture medium is the French proof agar, consisting of maltose, peptone, agar, and water. 1. The scalp of the patient need not be cleansed. 2. The epilating forceps should be passed through the flame of a Bunsen burner or an alcohol lamp. 3. The hairs are placed on a glass slide, which had previously been sterilized in the same manner as the forceps had been. 4. The hairs were cut into small bits with a flame sterilized scalpel, and then placed on the slanted agar by means of a thick platinum loop. 5. The tubes are stopped with nonabsorbent cotton and the fungi are grown at room temperature. If there is any doubt as to whether the area from which the hair has been removed contains ringworm fungus, several hairs can be placed on the slide and a drop of forty per cent. solution of potassium hydrate is added and covered with a cover glass. The one sixth objective is best used for examination. When a grease has been used on the scalp, the hair should be first soaked in chloroform to remove the

fat. For a permanent stain the writer prefers Sahli's borate blue.

The conclusion at which the author arrives as a result of his study is as follows: 1. The microspored group, eighty-nine per cent.; 2, large spored (a) endothrix, seven per cent.; (b) ectothrix, four per cent. It will be seen that these results correspond closely with those obtained by other American observers.

Treatment of Pneumonia from the Circulatory Standpoint.—Selian Neuhoﬀ (*Medical Adviser*, February, 1916) states that the extremely toxic group of cases with sharp onset, early delirium, subsultus, dry tongue, no pain, rapid pulse, and respiration are not benefited by any drug therapy and they end fatally through toxemia. Cases with extensive lung involvement, dyspnea, and cyanosis are relieved by venesection and stimulation. Atropine is of service in heart block with slow ventricular action, but the ordinary arrhythmias need no special treatment.

Ten Years' Work in Surgical Tuberculosis.—B. H. Whitbeck (*American Jour. Orthoped. Surg.*, March, 1916) during most of this period used plaster of Paris casts, except in the acute cases where recumbency in bed was resorted to. In sinuses bismuth paste was found to be useful. Sea bathing and exposure to the sun's rays was of great benefit. In the treatment of abscesses, incision, evacuation of contents, and closure of the wound was the most satisfactory procedure. In the past few years, operation has been performed for fixation in spinal cases; at first a spine breaking operation, later the Albee operation.

Treatment of Septic Wounds with the Simpson Light.—According to J. A. Menzies (*Lancet*, March 4, 1916), the chief virtues of the light are: The relief of pain, which is often evident on the day following the first treatment. Increase in the motility of the wounded part due to diminution of stiffness. This does not apply to cases with joint wounds. The relief of swelling and induration about the wounds, which probably explains the relief of pain and stiffness. Absorption of scar tissue, well shown in the cornea, in which the scar tissue is easily visible. Improvement in the condition of granulation tissue with increase in the growth of epithelium; and finally, a marked diminution in the secretion from the wounds.

Milk Requirement of the Child and the Treatment of Rhachitis.—Long experience has taught F. Feer (*Medizinische Klinik*, Feb. 20, 1916) that the amount of cow's milk given to healthy infants should be restricted. A maximum of 600 c. c. a day should not be exceeded by the end of the first year; with this reduction, there should be early resort to carbohydrates, vegetables, and fruits. The addition of sugar should begin at once after birth, or with the inception of artificial feeding, and the amount used should be rapidly increased to twenty or thirty grams daily. At the end of the first month cereal should be added, giving about five grams daily for each month of age. From the sixth month on gruel and finely minced green vegetables, such as spinach, cauliflower, carrots, and potatoes should

be added. Fresh fruit juices should be given from the fourth month. During the second year the carbohydrates, green vegetables, and fruits should be increased and the milk reduced in amount. Eggs and meat are not necessary. This plan of feeding has given better results than larger quantities of milk and with less tendency to gastrointestinal disorders. In connection with rhachitis, aside from certain ill defined and little known causes, a one sided diet with excess of milk plays an important role. His best results were obtained by restricting the milk and giving freely of green vegetables, fruit, and carbohydrates. He cites Schloss as recommending the administration of two teaspoonfuls of the following mixture daily:

R	Calcii carbonatis præcip.	10.0;
	Olei morrhue, q. s. ad	100.0.
	M. Shake well before using.	

Treatment of Dysentery.—S. Kartulis (*Journal of Tropical Medicine and Hygiene*, January 15, 1916), at a recent discussion of the treatment of acute dysentery, held by order of the Director of the Medical Services of the British Mediterranean Expeditionary Force at Alexandria, Egypt, laid stress on the fact that emetine is not able alone to cure all cases, sometimes not acting at all on the living ameba in the intestine, even if used repeatedly. Some time ago, Kartulis found that tannic acid, injected subcutaneously in a dose of two c. c. of a twenty per cent. solution, was capable of killing the ameba in the walls of amebic liver abscesses. Applying this measure later to amebic dysentery, he found that, in the absence of all internal treatment, it caused disappearance of the symptoms and of the ameba from the stools, the results being the same as from emetine injections. Treatment of dysentery by combined emetine injections and tannic acid enemata was then taken up, with excellent results. Kartulis, in an acute case, at once injects one half grain of emetine intramuscularly, if possible twice a day. Two enemata of the following composition are ordered taken daily, to be retained fifteen to twenty minutes:

R	Acidi tannici	.5i (4 grams);
	Iodoformi	gr. xlv (3 grams);
	Sodii chloridi	.5i (6 grams);
	Arrowroot	.5vi (25 grams);
	Aque distillatæ	.5xxxiv (1000 c. c.).

M. ft. enema.

These enemata are usually well borne. The emetine and enemata are continued for three or four days. In most cases the severe symptoms disappear altogether on the fourth day, and ameba is not to be found. After this the emetine and enemata are given only once daily for a week, and thereafter two or three injections of emetine a week for two or more weeks. As to the diet, on the first three days only small amounts of milk diluted with weak tea, or greasy soups prepared with fresh butter, are allowed, together with two to four lemon drinks in the twenty-four hours. On and after the fourth day, macaroni, rice, or arrowroot well boiled in water with fresh butter, once or twice a day, is added, and after a week, light solid food, e. g., chicken or fish. Among some 3,000 cases of amebic dysentery only four were fatal, and these had received treatment by the old method.

Pith of Current Literature.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

February 1, 1916.

Direct Laryngoscopy, Tracheoscopy, and Esophagoscopy in Military Practice, by Guisez.—In the course of eleven months twenty-six wounds of the larynx and six of the trachea were treated. Direct laryngoscopy, permitting examination of the entire laryngeal cavity without the aid of a mirror, proved of great service in precise diagnosis and in the application of treatment. In two cases a portion of vocal cord had been cut away as by a punch; in one the lesion was hidden from view by ordinary indirect laryngoscopy by a markedly swollen epiglottis. In five cases a palmar cicatricial formation was found uniting or distorting the vocal cords, producing aphonia and dyspnea. In another, severe dyspnea was due to a fungoid tumor in the right subglottic region, from fracture of the left half of the cricoid cartilage by a shell fragment. Similarly, in another instance a large, discharging intralaryngeal abscess, due to bursting of the thyroid cartilage, was observed just below the left vocal cord and was cured by laryngostomy. Direct laryngoscopy alone was found of value in the differentiation of paralysis due to injury of the terminal expansions of the recurrent or superior laryngeal nerves from traumatic ankylosis of the arytenoids. Tracheoscopy led to discovery of the exact site of cicatricial stenoses in three cases of injured trachea, and permitted of their dilatation by circular electrolysis or radical treatment by tracheotomy or laryngo-tracheostomy. Esophagoscopy was of like utility in three cases of cicatricial stenosis of the esophagus. In three others esophageal spasm due to irritation of the vagus by an imbedded missile was found. The procedure was also useful as an adjunct to the x rays for the exact localization of foreign bodies that had lodged immediately beneath the wall of the esophagus.

PRESSE MÉDICALE.

February 14, 1916.

The Syndrome of Air Sickness, by G. Ferry.—The symptoms and objective manifestations met with in about sixty aeroplane ascensions (as passenger) to altitudes ranging up to 2,500 metres are reported. Subjective symptoms experienced above altitudes of 1,500 to 2,000 metres were headache, tinnitus, and increasing difficulty of inspiration. During the descent, headache passed off at an altitude less than that of its appearance, and respiration also became easier, but tinnitus failed to disappear, persisting even one half to four hours after landing, according to whether the motor was situated anteriorly or posteriorly in the aeroplane. A distinct nervous excitation also followed the landing, manifested in tremor of the extremities and muscular twitchings, slight incoordination of movements, brief periods of palpitation, local congestions of the face, an intense desire to urinate (often unjustified by bladder distention), and increased appetite. All these manifestations soon disappear and are replaced by fatigue and an imperative need of sleep. Records of the pulse rate showed an in-

crease of nineteen beats in the Blériot monoplane and of twenty-one beats in the Farman biplane at an altitude of 1,500 metres. During the descent the pulse rate diminished less than it had increased during the ascent, the final therefore exceeding the initial rate by eight to fourteen beats.

BRITISH JOURNAL OF CHILDREN'S DISEASES.

March, 1916.

Splenomegaly with Anemia and Hemorrhages, by James Galloway.—The case reported showed a large spleen, a moderately enlarged liver, and a blood count of about 2,750,000 red blood cells and about 850 leucocytes. Of the latter, the small lymphocytes made up about thirty-five per cent. The family history was negative. There were two pyrexial attacks, but the patient showed little signs of illness. The question of operation had been considered, but, as the amount of fluid in the abdomen had been increased, the diagnosis became obvious and no operation was performed. On leaving the hospital he lost strength very rapidly and the abdomen distended rather quickly with fluid. In about two and a half weeks he died. No post mortem examination was obtained. The symptoms—splenomegaly and anemia—were associated with portal thrombosis, the primary cause of the whole condition. The spread of the thrombosis probably gave rise to pyrexia.

Single Pelvic Condition, by J. D. Rolleston.—The patient died of septic scarlet fever on the eleventh day. At the post mortem examination, on the right side, within the brim of the pelvis, was a single kidney lying in apposition with the posterior wall of the bladder. No trace of the left kidney or ureter could be found. There was no malformation of the genital organs. The specimen combined the following rare conditions: Unilateral renal defect; congenital renal displacement; dilatation and hypertrophy of the ureter, with congenital stricture at its vesical extremity.

JOURNAL OF TROPICAL MEDICINE AND HYGIENE.

January 15, 1916.

Observations of Pellagra, by W. M. McDonald.—In an experience with forty-four cases of pellagra, chiefly from the islands of Antigua, Dominica, and St. Kitts, the author found evidence against the validity of each of the three prevailing theories of pellagra causation, the maize theory, the Simulium fly theory of Sambon, and the drinking water theory of Scala and Alessandrini. A maize diet did not prove to be an etiological factor, except when associated with poverty. McDonald believes that pellagra occurs only among those who, by reason of poverty or confinement in an institution, or eccentricity of taste or constitution, as in some condition such as dyspepsia, are debarred from exercising a natural selection in regard to articles of diet. Stress is laid on the following symptomatic observations: The intensity of the skin manifestations accurately coincided with or forecast the progress of the disease as a whole. The most noticeable feature of the eruption was its absolute symmetry. Stomatitis occurred in every case, and is a symptom of great diagnostic value. Any symmetrical skin eruption accompanied by stomatitis with a very red tongue is pellagra. Salivation was often observed.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

March 15, 1916.

Early Recognition of General Paresis, by Joseph Collins.—This is a disease of the cerebrum and central nervous system due to the growth in them of the spirochete, and once it has become established it is not subject to amelioration or to interruption, but progresses invariably to a fatal ending. There is no evidence that other factors than the spirochete can cause the disease, although they may possibly act as contributing causes. Heredity seems also to play no important part. In a series of cases the cerebrospinal fluid gave a positive Wassermann reaction in eighty-five per cent. and a positive colloidal gold test in ninety-seven per cent. Forty per cent. of the patients admitted having syphilis. An investigation was made by inquiry from the family to determine the first evidences of the disease. Only rarely was a single symptom present, there being usually two or more. In over one third of the cases the first symptoms were those usually classed as neurasthenia including, nervousness, various pains, and an altered outlook. Insomnia, fatigue, and mental irritability were frequent. In half of the cases the earliest symptoms were indefinite and mainly subjective and founded on apprehension. Loss of memory was a very common early symptom of great importance. When taken in conjunction with nervousness and an altered personality it was the most important early feature. Some form of motor disturbance, such as dysarthria or ataxia, was the next commonest early evidence. Loss of insight was also an important early symptom. In view of the ineffectiveness of treatment after the disease has fully developed, every effort should be made to make the diagnosis at the earliest possible moment. When a patient is encountered with any of the symptoms, evidences of syphilis should be sought in his history and in examinations of the blood serum and spinal fluid. Paresis should always be suspected in a case developing epilepsy for the first time after the twenty-fifth year of age. The course of the disease is variable. In about ten per cent. of the cases there is steady progress downward week by week; about an equal proportion of cases manifest temporary periods of recovery with ability to return to work; and about half of the cases decline steadily but very slowly, usually reaching a fatal ending in about five years. The only outlook for the favorable treatment of paresis lies in the early and intensive treatment of syphilis, and this can hardly be accomplished in any number of cases by the physician acting as an individual. It properly belongs to the State.

Practical Application of Blood Pressure Findings, by J. J. Rowan.—Rowan emphasizes the relative worthlessness of systolic readings taken by themselves. The most important information is given by the pressure pulse, or the difference between the systolic and diastolic readings. A falling pressure pulse is measurable and gives the earliest indication that a patient is not doing well; a rising pressure pulse points to favorable progress. The value of the frequent determination of the pressure pulse in guiding therapeutics is very great, both in

establishing indications and contraindications and in giving evidence of the effects of treatment. Blood pressure readings made but once in a given case are of slight value, as there may be marked changes from day to day, hence the pressures should be read frequently. The auscultatory method only should be employed.

Variations in the Wassermann in Untreated Syphilis, by David A. Haller.—Variations may occur in the strength of the antigen, in the complement titre of normal guinea pig's blood serum, and in the resistance of sheep's cells to hemolysis. The first factor can be eliminated by the use of a single antigen of known activity, and the second and third by preliminary titrations with the known antigen. Following this plan a series of cases of untreated syphilis was studied, with the result that very slight variations from month to month were discovered. No appreciable daily variation was found. Contrary to recent statements, mercury was found to have a pronounced effect on the Wassermann reaction. There was a prompt decline in its intensity until it became negative, and this was followed in a variable period of time by a return to complete fixation.

March 25, 1916.

The Systolic Blood Pressure in Pregnancy, by Frederick C. Irving.—The results here reported are based on observations made in 5,000 consecutive cases. The lowest systolic pressure recorded was 80, the highest 225 mm. Hg., and in four fifths of the patients never fell below 100 or rose above 130, which, therefore, may be regarded as the normal limits for such cases. Contrary to the general statement, shock unaccompanied with hemorrhage was not frequent among the cases with abnormally low blood pressures. An elevated pressure—above the normal high limit—was found to be a sign of toxemia, which was earlier and more common than albuminuria, and a particularly frequent sign in patients under thirty years of age. There was some seasonal variation in toxemia; it was commoner in cold than in warm weather. Toxemia was much commoner in cases with pressures above 150 than in those below. Most cases of eclampsia had pressure above 160, although the condition sometimes occurred with moderate pressure. Albuminuria and elevated blood pressure developed in all cases of toxemia.

LANCET-CLINIC.

March 11, 1916.

Relation of the Teeth to Tuberculosis, by H. Freudenberg.—An examination of oral conditions in 207 cases of tuberculosis in a sanatorium showed: Bad condition of the mouth in fifty-one per cent.; bad condition of the teeth in forty per cent.; bad condition of the gums in fifty-one per cent., and pyorrhea in thirty-five per cent. It is a question whether the tuberculous disease and mixed infection in these patients arose through the condition of their teeth and gums or whether their tuberculous condition affected the teeth and gums secondarily. It is assumed, at any rate, that a bad condition of the teeth and gums affords a good medium for the growth of the tubercle bacillus, which has often been found in teeth containing cavities. Sore teeth

and tender gums may, moreover, be the cause of insufficient and ineffectual mastication. The author establishes a contrast between the general results obtained in the female and male patients in the sanatorium, the former being much more careful and obedient in the care of their teeth and gums than the latter. The male patients, placed under the same solarium treatment as the female, have not shown the same percentage of good results. Freudenberger is convinced that the care and time spent by female patients in keeping their mouths clean has assisted materially in bringing about a marked improvement in their general condition. The tuberculous patient with clean teeth and good gums has a better chance of quiescence or arrest of the disease than one in whom conditions in these respects are bad.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY

February, 1916.

Radiography of Normal Parts, by Archibald McKendrick.—The knee joint can be taken anteroposteriorly, posteroanteriorly, and laterally, from within or without. Laterally it can be x rayed in any degree of flexion. The patella is better defined in the posteroanterior position. The normal focus point of the knee joint is directly above a point just below the lower border of the patella. Two spines show at the upper end of the tibia. The inner of these is the true tibial spine. The false spine is the inner extremity of the external articular facet. At times there is a third but smaller spine showing internally to these two. This is a spur on the outer edge of the internal articular facet. If it is desired to show the upper portion of the fibula clearly in the anteroposterior position, the limb must be placed in a position of internal rotation. The ankle joint and tarsus can be conveniently taken together as the same focus point and the same positions do in both cases. The normal focus point is over the centre of the joint.

Radiography in Gunshot Wounds of the Skull, by George Vilvandre.—Head wounds may be divided into two classes—those in which the foreign body penetrates the skull and lodges within the brain and those in which the foreign body damages only the outer or inner table. The prognosis is worse in the former because of the sepsis entailed, because of the presence of the irritating missile, and because of the trauma necessarily caused by the surgeon in his search for its removal. Before trephining, radiographs should be made to ascertain the presence of a foreign body and its careful localization. As a general rule, a patient with a bullet or a piece of shrapnel in his brain will die within six months of cerebral abscess. A small, depressed fracture, especially at the base of the skull, may not be detected by the x ray. The same is true of a simple linear crack or fissure. As a rule the damage to the skull is more extensive than is shown on the radiograph. Where localization is necessary, two plates, one giving an anteroposterior view and the other a lateral view, are always satisfactory.

How to Measure the Thickness of the Wall of an X Ray Tube, by J. K. A. Wertheim-Salomons.—The best methods for this purpose are the fol-

lowing: 1. With the microscope, one fitted with a 0.25 inch objective is used. It is first focused on the outer surface of the glass bulb and immediately afterward on the inside surface of the glass bulb. The difference in position of the microscope tube as measured with the micrometer screw for the fine adjustment, represents the apparent thickness of the glass. The real thickness is found approximately by multiplication into 1.5, the refraction index of the glass. 2. Measurement with the theodolite. This involves many difficulties. The principle is simple enough, but it takes much time. 3. The photographic measurement. The virtual images of a remote light spot formed by the outer and inner surface of the glass can be used in another and far more simple way than by the method of Christen. A suitable light spot is provided by the straight filament of a Nernst lamp placed at a distance of about five metres. Care should be taken that the incident and the reflected rays make as nearly as possible an angle of 90°. The virtual images are photographed and measured on the negative, their distance apart being l . In this case (viz., 90° between incident and reflected rays) we get the simple relation between the thickness of the glass, d , and the distance, l , between the virtual images, $d = 1.355 l$ (4) radiographic measurement. This is done by making a radiograph of the tube wall. Of the four methods the last two are the best.

JOURNAL OF CUTANEOUS DISEASES

October, 1915.

Pemphigoid Eruptions Following Vaccination.

—W. H. Mook records six cases of pemphigoid dermatitis following vaccination. He comes to the following conclusions: The cases may be divided into three groups: 1. Those which end in rapid recovery with or without constitutional disturbance. 2. The chronic recurrent cases with or without constitutional symptoms, in which the local lesions are vesicles or blebs. 3. Those which terminate rapidly in death. The period of incubation may vary from three to four days up to four months. As a rule, the period extends over three to five weeks. In patients who get well the lesions are small. Mouth lesions may or may not be present and the temperature disturbance may be slight or severe. They may get completely well in a few weeks, or the lesions may recur over a period of months or years. The vaccination may or may not have been successful. In the several types we see vegetating and scar forming lesions. In these latter cases, there is a marked elevation of temperature at the onset, or during the course of the disease. The lesions showed a predilection for certain areas, namely, around the mouth, neck extremities and especially the joints; they appeared either as small vesicles resembling smallpox or chicken pox, as papulovesicles or pustular. The blebs were clear and tense and varied in size and shape. Hemorrhages in the blebs were common. In some cases there was a tendency toward the production of large, irregular shaped patches, resembling the lesions of eczematoid dermatitis. Inoculation experiments on monkeys, guinea pigs, and rabbits were negative. Blood cultures and other cultural experiments yielded nothing that was significant.

Proceedings of Societies.

MEDICAL ASSOCIATION OF THE SOUTHWEST.

Tenth Annual Meeting, Held at Oklahoma City,

October 12 and 13, 1915.

The President, Dr. J. D. GRIFFITH, Kansas City, Missouri, in the Chair.

Psychic and Somatic Palsies Complicating Pregnancy.—Dr. S. GROVER BURNETT, of Kansas City, Missouri, said the intent of his paper was to show: 1. The seriousness of a toxic palsy state in the pregnant woman, endangering her life, her mind, her physical well being. 2. That the brief repetition of the symptoms pictured in the cases reported would make it easy for the observer to remember. 3. That primiparae were seldom affected, although multiparae were. 4. That an early abortion would prevent a complete paralytic, or mental attack; that numb and tingling or weak hands or feet or pain symptoms; that mental symptoms of the confused type with memory defect and perhaps irritability or delirious tendencies; that diaphragmatic disturbances of respiration or symptoms of pneumogastric implication such as a pulse beat of 100 or more—all these presented the question of an immediate abortion if the physical and mental status and the life of the mother were to be considered. 5. That the pregnant state might modify somewhat the chemistry of metabolism, causing a toxic neural inflammation symptom syndrome resembling that of Korsakoff's disease, but differing in the acuteness of the toxemia, more often causing death by attacking the phrenics and pneumogastrics, and by the alcoholic etiology of Korsakoff's disease, more chronic in character, leaving a cytological pathology, namely, an unrepaired central chromatolysis, a dissolution of the chromatic bodies around the cell nucleus, which, without axonal degeneration and the atrophic tendencies, would account for the remaining sub-memory state or a badly damaged memory in a Korsakoff convalescent. 6. That the neural inflammation complicating pregnancy might be confined to a single nerve trunk, to one limb, to all the limbs including the trunk, the diaphragm, one or more of the cranial nerves, or the pneumogastric alone, causing death, or to the intercerebral structures, namely, the brain cells and their association nerves, causing only mental symptoms with or without delirium, minus fever. 7. That severe and uncontrolled vomiting usually preceded a general paralysis; that the vomiting was milder or absent in the mild or restricted palsies, indicating a severe or mild underlying toxemia, respectively. 8. That they were derelict in duty if they failed to advise against a subsequent pregnancy when a previous hyperemesis gravidarum had occurred; that the serious toxemia was dangerously apt to recur in intensified form.

Dr. G. W. ROBINSON, of Kansas City, Missouri, stated that the essayist mentioned Korsakoff's disease. He had had a patient under his care for ten days following pregnancy due to convulsions. If he had had no history and examined the patient, he would say she had not Korsakoff's disease, but she

had multiple neuritis. She had hallucinations, both auditory and visual, with a confusional state. They had all the time psychoses following pregnancy. He believed that psychoses resembling dementia praecox were not unusual. He had two such cases under his observation at the present time. All these cases were due to toxemia, and he found on examination that there was reduced alkalinity of the blood, if not an acid condition, and in his experience the best method of treatment was to increase the alkalies and stimulate elimination by giving large quantities of fluid; put them on a milk diet, and give sodium bicarbonate in doses of 120 grains or more, two or three times a day. By means of this treatment he usually got good results.

Dr. G. W. MOODY, of San Antonio, Texas, said it was difficult to determine the nature of the toxemia. If it was a toxemia or disturbance during the lactation period, it must be the same kind of toxemia attending the pregnant state. It was not the ordinary toxemia which gave symptoms in other persons quite similar to some of the cases with lactation psychoses and neuroses. It could not be the cause because these patients did not eat much and frequently vomited what they did eat. It was in cases attended with the vomiting of pregnancy that complications were more likely to occur; nevertheless it was a toxemic condition. He would ask Doctor Burnett whether those patients in whom neuroses or psychoses developed were not naturally neuropathic? His experience had been that those were the cases generally of pregnant women who developed some of the psychoses and neuroses.

Doctor BURNETT stated it had been his misfortune to see some of these cases passed over with a diagnosis of insanity. It was not insanity, but an organic disease. The condition he had described was a crippling of the memory state and of so called delusions and hallucinations. They were stopped in perceptions. They were not able to get impressions into the centres where they could be interpreted into facts. For instance, one woman had night visits with her mother, although her mother had been dead for ten years.

The Early Pathological Changes and Their Relationship to the Clinical Symptoms and Physical Signs in Pulmonary Tuberculosis.—Dr. FRANCIS M. POTTENGER, of Monrovia, California, wanted to make it clear that pulmonary tuberculosis, as they found it affecting the apex of the lung, was believed by the best students of the subject not to be a primary infection, but a metastatic infection coming from a focus which might be far distant in other parts of the body. This primary infection was commonly found in the peribronchial glands, but might be in other glands, such as the cervical and mesenteric. He often found that pulmonary lesion was a renewed activity in an old focus. Under those circumstances he had different conditions present. They had, at first, as a result of the old chronic process, a degeneration of the muscles, skin, and subcutaneous tissue. They had, on the other hand, as a result of renewed activity, an increased tone (spasm) in the muscles. If the wasting of the muscles had not been marked, the increased tone might still be greater than normal, but

if it was marked, the increased tone might not be detectable. Consequently, if he found upon inspection and palpation that the muscles were wasted and smaller than usual, and that they had an increased tone, and, especially, if he found that not only the muscles but the subcutaneous tissue had degenerated and was not as marked as on the other side of the chest, then he was led to believe that he was not dealing entirely with a new lesion in the lung, but with renewed activity in an old process.

One source of error in the examination of the muscles was the confusion which arose from occupational influences, but, fortunately, he could rule that out fairly accurately. The muscles which were most likely to be affected by occupation were the trapezius, levator anguli scapulae, and pectoralis. During use these muscles hypertrophied and the latter, if unused, or used less vigorously, degenerated to a certain extent. Sometimes he was called upon to determine whether an increased tone was due to hypertrophy from overwork or from a motor reflex. This could be determined in the following way. If the increased tone was due to overwork, it was most apt to affect the trapezius, levator anguli scapulae, and pectoralis, sometimes the rhomboids. If it was due to motor reflex from the lung, the sternocleidomastoids, as well as these other muscles, would be involved. In fact, the increased tone would show best if the lesion was near the apex, in the sternocleidomastoideus, trapezius, and levator anguli scapulae. When there was sufficient irritation to affect the apical muscles, the spasm showed in the diaphragm also in the form of deficient motility. An increased tone of the apical muscles, particularly when the sternocleidomastoideus was involved, plus a lagging of the side, practically meant a motor reflex from the inflammation in the lung.

Too much emphasis could not be placed upon the importance of a carefully taken clinical history and a segregation of the symptoms according to the groups which he had mentioned. If any one of the more important symptoms was present, it was usually accompanied by some of lesser importance. Under such circumstances, if he found a spasm on the part of the respiratory muscles, increased tone as noted in the muscles of the neck and upper chest, deficient excursion as noted in the diaphragm, he could, with a minimum percentage of error, make a diagnosis of active inflammation in the lung, most probably of a tuberculous nature.

Dr. L. G. MOORMAN, of Oklahoma City, stated that the time had come when they must learn to diagnose pulmonary tuberculosis early. It was only in the last twenty or thirty years that incipient tuberculosis had become a clinical entity. Years ago the physician made a diagnosis of tuberculosis very largely from the general appearance of the patient, but today the early diagnosis of pulmonary tuberculosis was expected of members of the medical profession. Headache was a great aid in making an early diagnosis. They should remember the symptoms that arose from toxins produced by the tuberculous infection, such as malaise, lack of endurance, indigestion, loss of weight, increased pulse rate, night sweats, elevation of temperature, and apparent

anemia. He believed there was such a thing as an apparent anemia in tuberculosis.

Dr. F. W. FROEHLING, of Kansas City, Missouri, had seen real cases of apparent anemia where he was compelled to assume that the patients in question had really too little blood. The quantity was too little, but the constancy of that quantity was all right. A great deal of reflex action was the cause of these apparent anemias.

Caudal Anesthesia (Analgesia) in Genito-urinary Surgery.—Dr. BRANSFORD LEWIS and Dr. LEO BARTELS, of St. Louis, said the chief advantages of caudal anesthesia were: Extreme safety and absence of unpleasant or dangerous aftereffects, such as nausea, vomiting, pneumonia, etc. It had enabled them to operate with comparative safety on a class of patients in whom the risk of using general anesthesia would have been too great. Caudal analgesia was also convenient to use in the office for painful cystoscopies, vaginal examinations, etc., and patients were able to go to their homes immediately afterward. They had been so favorably impressed with the success of the method, during six months' use of it, that they believed it was destined to revolutionize largely the surgery of the pelvis, especially for the aged, the feeble, and the decrepit. Prostatectomy was at once relieved of one of its greatest objections. The patient went through the operation without shock, without nausea or vomiting, without menace to heart or lungs; and was as comfortable after its performance as he had been before. The term, analgesia, as applied in this procedure had been used in preference to anesthesia. In many cases tactile sensation was not completely lost, though pain in the same area was entirely abolished.

Dr. JULIUS FRISCHER, of Kansas City, Missouri, in his experience with spinal analgesia, had noticed that his patients would have headaches following it, and he had tried to relieve this pain by placing three or four pillows underneath the patient's head, and bolstering him up in bed in a half sitting posture. The danger from spinal analgesia would be respiratory or heart failure.

Dr. WILLIAM J. WALLACE, of Oklahoma City, said his experience with spinal analgesia had been limited to one case, and in this it was a success. He used one third of a grain of novocaine, which was dissolved in the spinal fluid. He got a satisfactory anesthesia from that and did a perineal prostatectomy successfully.

Dr. JOHN M. COOPER, of Enid, Oklahoma, stated that it was his privilege to be with Doctor Bartels last June about three weeks. During that time he saw several operations performed under this method of analgesia. In resorting to this method he did not want to reach the spinal fluid. It differed from spinal anesthesia. He remembered distinctly one patient who in being treated for a papilloma of the bladder by the fulguration method, complained of a great deal of pain during the use of the cystoscope, but the next day the doctor used the caudal method of analgesia, using at the time novocaine, and it was a surprise to him to see the patient lie on the table and laugh and joke during the operation, whereas on the preceding day he had been complaining bitterly and even begged for morphine to control pain.

Dr. J. D. GRIFFITH, of Kansas City, Missouri, several years ago, used spinal anesthesia, not caudal, in seventy-two cases without loss of life. This method of anesthesia was employed in patients whose pathological conditions were below the umbilicus. He had tried to use it in dealing with pathological conditions above the umbilicus, but had failed. After using the method in these seventy-two cases of laparotomy, the last patient manifested disturbances of the nervous systems she had not shown before. The operation was done for the removal of pus tubes, and he did not see any reason why this woman should have such disturbance after she recovered from the operation. However, she did have these disturbances, and he made up his mind he would give up spinal anesthesia.

Dr. CLIFFORD C. NESSELRODE, of Kansas City, Kansas, would like to emphasize what Doctor Griffith had said. A few years ago, spinal anesthesia was quite popular in the Kansas City General Hospital. Spinal anesthesia was resorted to in the case of a woman for the removal of an ingrowing toenail, and she had complete paralysis of both the bowels and the rectum following its administration, and so far as could be determined at the time, it was likely to be permanent. Those who were going to attempt spinal anesthesia ought to be familiar with the bad results as well as the good ones.

Doctor BARTELS said they were using caudal analgesia now for prostatectomy universally. At first, they used it only for cases which seemed to be bad surgical risks. As far as the danger of caudal analgesia was concerned, there was no more danger than from ordinary infiltration anesthesia. There was no connection between spinal anesthesia and caudal analgesia. They did not enter the spinal canal; they fought shy of it. If they should accidentally enter the spinal canal, they could withdraw the needle and change its direction, and wait three or four minutes before they made the other injection, giving the opening time to close of its own accord. Spinal anesthesia was the most dangerous of all methods of producing anesthesia, including chloroform.

Progress of Prostatic Surgery.—Dr. CLARENCE CAPELL, of Kansas City, Missouri, stated that in prostatic surgery the mortality had been reduced from around fifteen per cent. to around seven per cent. This progress had been along several lines. In the first place, they had a better knowledge of the anatomy and mechanics of the condition. They knew that now in only about ninety per cent. of the cases was there present a true hypertrophy of the prostate. In the other ten per cent., with the same line of symptoms, there was no enlargement of the prostate. There might be a fibrous bar across the floor of the bladder near its outlet, called a median bar, or there might be a fibrous infiltration entirely surrounding the internal meatus. So he thought the word prostatism was the better word to designate the condition. Another advancement was the more thorough preliminary examination and investigation of these cases. He had always made physical and rectal examinations. The information thus acquired had been invaluable. He wanted to emphasize the value of the use of the cystoscope, also the value of the functional kidney tests. There were

several of these. Phenolsulphonephthalein was considered the best. It had been demonstrated that when the kidney function was low, the mortality was high, and where the kidney function was high, the mortality was low. It had been further demonstrated that where the function test was low, the proper therapeutic measures were used, and the kidney function was raised, the mortality was lowered. Another advancement was in the improvement in the operative technic. There had been improvement until the time of operation was now only about ten minutes. The suprapubic route was fast becoming the more popular one and justly so he believed. It was easier to do. There was less likelihood of doing injury to the rectum and other structures. There was less likelihood of its resulting in lack of urinary control or of there being a permanent urinary fistula. It was true that the mortality was a little higher, but the results were so much better that if there were no special indications for the perineal operation the suprapubic should be the route of choice.

In conclusion, he reviewed the advancement in prostatic surgery along these lines. 1. A better knowledge of the anatomy and mechanics of the condition. 2. More thorough preliminary examination of the patient and where necessary the use of the proper treatment. 3. Improvement in the operative technic and after treatment. 4. Selection and administration of anesthetics. 5. The realization of the value of an early operation.

Dr. A. B. SMALL, of Dallas, Texas, felt that some of his cases of prostatectomy were very easy, while others were so difficult as to make him feel that he never wanted to do another. His experience in prostatectomy was that the suprapubic route was preferable to the perineal, and if he were doing this work now he would do it under caudal anesthesia.

Dr. JOHN A. WALKER, of Shawnee, Oklahoma, stated that it was essential to get patients on whom they were to do a prostatectomy in the best possible condition before the operation. In the old men with enlarged prostates, where the catheter had been used from three to ten years, the walls of the bladder were enormously enlarged, thickened, congested, and stretched out of shape and out of the normal relations that they ought to have. The operation should be done in two stages, first opening the bladder suprapubically, and inserting a large drainage tube, and then later enucleating the gland.

Dr. J. M. COOPER, of Enid, Oklahoma, said it had been his observation that where a patient had been accustomed to the use of the catheter for a number of years, the suprapubic route was preferable unless there were some other contraindicating conditions. Where the patient had used a catheter for any length of time, the urethra was more or less infected always, there was a large amount of congestion, and in some cases the walls of the urethra would be hardened, and in such cases they would not get the urethra to heal readily after the operation had been performed.

Dr. F. H. CLARK, of El Reno, Oklahoma, personally, had always resorted to the perineal route in removing the prostate, and had not had any difficulty in doing so. He thought they obviated the two-stage operation by so doing.

Dr. J. E. GILCREEST, of Gainesville, Texas, had many of these old men to deal with. The essayist had brought out an important point in saying that they should get these patients in readiness for operation and try to get the bladder thoroughly drained suprapubically before removing the prostate. He did suprapubic prostatectomy in one case, but in the last twelve years he had done nothing but the perineal operation.

Dr. T. M. SANGER, of Oklahoma City, stated that while he did not object to what the other gentlemen had said, he believed nine tenths of these bladder cases should be operated in at one sitting. He had learned from experience that if they kept up free drainage of the bladder, they would not have trouble from infection. In one case he had, before the operation the patient was passing calcareous stones because there was so much sediment in the urine, but as long as he kept the drainage tract open there was no further infection, no fever, and no trouble.

(To be continued.)

Letters to the Editors.

AN APPRECIATIVE NOTE.

KILMICHAEL, MISS., April 4, 1916.

To the Editors:

Find enclosed a personal check, subscription for the remainder of this year, beginning in April.

I was a subscriber to the NEW YORK MEDICAL JOURNAL for several years until the beginning of this year, but advised you to discontinue as I thought I had enough medical literature for this year. I find I miss your JOURNAL very much; it has an individuality and an up to the present originality that I do not get elsewhere.

Let me confess something; it may not mean so much to you, indeed, it may rather disclose the fact that I do not or have not thought very systematically, but nevertheless here it is. In the last year or so I read so much of Freud's psychanalysis of dreams, etc., and what appealed to me the extreme application of same, also the fierce attacks on the vitality of the tubercle bacillus as the cause of consumption and holding up to ridicule the propaganda of hygienic fight that is now being made upon the disease—these things I constantly read in the NEW YORK MEDICAL JOURNAL—until I began to wonder if there was any censorship to the articles or papers that appeared for publication. But when I consider the fact that such men as Dr. Adolphus Knopf championed the other side of these questions, I see that it is up to me to do the censorship or culling.

Pardon this lengthy letter. It was written in the hope that perhaps an insight into the opinions of the least learned of your subscribers might not be held worthless by your great and competent editorial staff.

F. MICHAEL SMITH, M. D.

[It is the function of a liberal minded medical journal to present to its readers all sides of every medical problem and subject conflicting opinions to the censorship of the reader rather than to assume to dictate to him what he shall think.—Eus.]

INTRAARTERIAL INJECTIONS.

MERIDIAN, MISS., March 30, 1916.

To the Editors:

Intraarterial injections, provided that they have no disadvantages, might be in some cases the best and most direct. In cerebral syphilis it seems a difficult problem to get the medicine into the diseased brain. The intravenous route does not get it there, and the intraspinal route seems unsatisfactory, because if the injected fluid is lighter than the spinal fluid it may go to the ventricles, or, if it is heavier or of the same specific gravity as the cerebrospinal fluid, it will remain in the subdural space of the spine. It

does not seem possible to make the injection fluid of lighter specific gravity, therefore why not try the direct method when it is desired to medicate the cerebral ventricles? Intraarterial injections afford one of the most direct routes to the brain ventricles.

I have read that the skull bones have been trephined and the medicine injected direct into the lateral ventricles. This method may have some advantages, yet it is almost a capital operation. The method of intraarterial injection into the internal carotid arteries one or both is more simple, the skin and fascia being incised directly over the arteries; they are exposed and the serum is injected into them; or the two common carotids might be exposed and the serum injected therein.

A recent writer says that syphilis is still incurable. He argues that all syphilites have cerebral syphilis. Perhaps by injecting the mercury into the carotids in small doses and giving prolonged treatments, the disease may be cured. The serum should be injected by gravity and some of the fluid should remain in the bulb to preclude the entrance of air into the artery.

If the fluid is injected into one common carotid artery, that may be satisfactory. What is wanted is a direct route to the ventricles with the blood current and blood pressure going that way, then even if the mercury or salvarsan is heavier than the blood, it will be propelled by the force of the blood current and pressure into the ventricles of the brain. If necessary, anticoagulants might be used.

J. M. WHITE, M. D.

ORTHODOX ORIENTALS AND THEIR FREEDOM FROM PYORRHOEA ALVEOLARIS.

BOMBAY, INDIA, February 10, 1916.

To the Editors:

In your most valuable JOURNAL, dated August 7, 1915, there are some good correspondences about pyorrhoea alveolaris by expert medical men. I particularly take interest in their advice about the responsibility of both the physician and the dentist. But let me say that this disease is not very common on this side of the land, except perhaps among the Europeans and the Parsees, who presume to pass themselves as the most educated people.

But why should such a dire disease be peculiar to the civilized people only? And why other communities are immune from it, is not perhaps clearly explained by your worthy correspondents. In finding out the reason we have to examine the manners and habits of several nations. I, therefore, on my behalf, draw a superficial sketch of the Oriental people in the observances of their daily life.

When an orthodox Oriental rises in the early morning from his bed, he does not drink any cup of hot coffee without washing his mouth and cleansing his teeth. He first goes to answer Nature's call. After that he washes his mouth, hands, and feet. Then thoroughly drying the washed parts with a clean towel, he sits with a large pail of fresh water by his side to cleanse his teeth. Frequently he uses a twig of Babul or Acacia tree or even a Nimb tree's tender twig for a tooth brush.

First he chews one of the ends of the twig and forms it into a brush. With this improvised brush he cleanses each and every tooth and washes out the dirty sediment with gargles of clean water. This done, he then washes thoroughly the same brush and again employs it to scrape his tongue. It takes him about five to ten minutes to cleanse. Then again he gargles the whole mouth together with the tongue. But his final task is to gargle his throat. In order to carry out this end, he thrusts his fore and middle fingers right into pharynx, and thus tries to throw out all the phlegm.

This done he goes straight to his bath, there he again cleanses his mouth, nose, and eyes with frequent draughts of warm water. That being over, many persons usually take a cup of hot tea or coffee. But those who do not make use of such drinks, enjoy themselves by chewing Betel nut, Betel leaves, cardamoms, cloves, etc. At the same time they make particular use of catechu, lime paste, and sometimes of tobacco.

Now what is the significance of this daily practice of chewing *Pan-Supari* (Betel leaf and nut)? How and why this simple daily practice gets superiority over antiseptic tooth powders and brushes of the civilized nations, ought to be made clear. And for such a task I want to try my

humble pen and in so doing if I have not proved myself equal to it, I beg to be excused.

Now, coming to the point, we shall refer to the Babul or the Nimb twig. A Babul tree is the producer of the gum acacia. Its bark is extensively used for tanning purposes. To brush the teeth early in the morning with its twig means, then, to make the mouth and gums astringent. Again, to use a Nimb twig means to disinfect the whole mouth, because Nimb tree leaves, bark, root, seeds, etc., are extensively used as disinfectants and germicides. (In malaria fever this tree is very useful because its bark, leaves, and oil are used as febrifuges.) As disinfectants its bark, leaves, root, etc., are burned and the smoke is allowed to spread in the surrounding atmosphere, and thus purification of air is aimed at. Thus the act of washing the mouth, throat, and the nose with copious amount of water means to thoroughly cleanse those organs from the decaying particles and sediment accumulated there during the night. This washing process refreshes those organs and prepares them afresh to undertake the whole day's function.

Leaving those adjuncts, we come to the Betel nut and leaf, etc.; such delicacies are used sometimes before breakfast, but mostly after taking food. Now the Betel nut is again an astringent, which encourages the flow of saliva, so a quantity of water accumulates in the mouth. This nut also thoroughly cleanses the gums and the teeth. Then we come to the Betel leaf. It is a fibrous substance which cleanses the sediment accumulated on the tongue generally. It is also a strong carminative and digestive.

Leaving that, we come to the other ingredients, namely, lime paste, cloves, cardamoms, tobacco, etc. Now the catechu gum is always a first class astringent. It acts on the swollen throat and furred tongue, and inflamed gums. In conjunction with lime paste, it acts as an astringent and an antiseptic, stops bleeding gums, and disinfects the whole mouth (gums, teeth, saliva, tongue, throat, etc.).

Then cardamoms and cloves come into requisition; these act as carminatives, deodorants (or purifiers of foul breath) and disinfectants. And over and above these characteristics, the latter (cloves) acts as a powerful antiseptic. It soothes pains of inflamed gums and decayed teeth. It is really a powerful and at the same time aromatic germicide.

Then comes the turn of tobacco. Those who cannot take alcoholic drinks, opium, etc., require some stimulant. In tobacco such people find a suitable agent to appease their cravings. Those who chew tobacco with the Betel leaf assert that it helps not only the digestion, but it prevents gum boils and acts as a powerful germicide.

Some native physicians recommend a tooth powder consisting of the common salt, seeds of *Mucuna pruriens*, cummin seeds, and tobacco in suitable proportions. This is a fine recipe, except perhaps it blackens the teeth. It kills the germs of the teeth and fixes the loose teeth.

A very common tooth powder is prepared by burning almond shells and Betel nuts together.

But the one thing always to be remembered is that they wash their mouth, teeth, tongue, and nose as well as eyes several times a day and especially after their calls to Nature, and before and after meals.

No wonder then, that the people on the whole are free from pyorrhoea.

I trust that this will help you in finding out the true cause of the disease.

DINSHAH DADABHAI DORDI.

Book Reviews.

[It is a public full list of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Journal of the Bodily Dwelling. By Mrs. MARY WOOD-ALLEN, M.D. Introduction by SYDNEY C. STANT, D.D. Philadelphia: The Van Nostrand Company, 1911. Pp. 328. (Price, \$1.20.)

The presentation of a thorough understanding of our bodily dwelling, and a knowledge of those factors which by the application of which we may keep them in repair is more and

more recognized as one of the most important factors in the instruction of every school boy and girl. Mrs. Mary Wood-Allen has written a book on anatomy and physiology, including hygiene, which should hold a place in every public school and in every home. Wrapped in the cloak of allegory, always a fascinating style of narrative to children, it is charmingly and cleverly written.

The first part of the volume is devoted to a description of our "house," each part of which receives its full quota of explanation in a manner readily intelligible to a child. Part II tells of the good and bad guests man entertains. Among the latter are tobacco and alcohol, the harmfulness of which foes to mankind Mrs. Wood-Allen makes unmistakably clear by relating actual incidents as examples. Hygiene is stressed throughout the book, the author interpolating it wherever possible.

The questions on each chapter, forming the conclusion of the manual, are valuable aids to both teachers and scholars. This is also true of the many and excellent illustrations.

The adult, too, would find *Marvels of Our Bodily Dwelling*, which has now reached its fourth edition, a valuable and interesting addition to his library.

Starvation (Allen) Treatment of Diabetes. With a Series of Graduated Diets Used at the Massachusetts General Hospital. By LEWIS WEBB HILL, M.D., Children's Hospital, Boston, and RENA S. ECKMAN, Dietitian, Massachusetts General Hospital, Boston. With an Introduction by RICHARD C. CABOT, M.D. Second Edition. Boston, Mass.: W. M. Leonard, 1916. Pp. 131.

This little volume is the latest contribution to the treatment of diabetes. It gives the details of the "starvation" method, and supplies the physician with various diet lists for use in his diabetic cases. Many physicians find it difficult to think in terms of calories and of grams of proteins and carbohydrates, and to these the book should prove of service. Diet and hygiene are the two main factors in any treatment of diabetes; and the starvation modification of the usual plan seems likely to mark a distinct advance in the therapeutics of this disease.

Veneral Diseases. A manual for Students and Practitioners. By JAMES R. HAYDEN, M.D., F.A.C.S., Professor of Urology at the College of Physicians and Surgeons, Columbia University, New York; Visiting Genitourinary Surgeon to Bellevue Hospital; etc. Fourth Edition, Thoroughly Revised. Illustrated with 133 Engravings. Philadelphia and New York: Lea & Febiger, 1916. Pp. vii-365.

In reading this book we must not forget that it is a manual, in other words a much abbreviated compendium, although it is seventy-five pages longer than the preceding edition. This plan of the work is final in limiting its service to readers who desire no more than brief and clear, suggested, rather than fully explained data in the clinical history or treatment. While the work is excellent, it is doubtful whether this or any other epitome of so variable and wide a subject as venereal disease can possibly give the student adequate ideas on which to base future work. The subject matter is brief, clear, and pointed, and divides gonorrhea into the regions of the urinary system attacked and into periods of course and complications. This plan is carried consistently throughout the book, which is the mark of its logical arrangement. Treatment is presented with numerous conservative and recognized formulæ and accepted safe measures. Irrigation is given much more definite discussion than in previous editions, which marks the author as converted to the good points of this treatment and away from its rather unwarranted rejection in his earlier teachings. Hydrotherapy is given its rights, and so is electrotherapy, but the author is wrong in the kind of current he says he is using. Serum diagnosis and serum therapy are rather neglected and the gonococcal complement fixation test receives only mention in the paragraphs on verifying the cure of the disease. The author also is not converted to the use of the Kollmann dilator, which he describes only as a divulsor. This is not a fair viewpoint because division of stricture is discarded no matter what the means employed may be. The Kollmann dilator in skilled hands is a most useful instrument, because dilata-

tion with it may be graduated to simple fractions of the number of the French scale.

In the section on syphilis, the Wassermann reaction and treatment with salvarsan and neosalvarsan are briefly handled. In the treatment, the author does not appear to recognize that frequent Wassermann tests are a guide as to whether or not the treatment is sufficient to produce and maintain a negative reaction, and that in the earlier periods of syphilis, whether the blood test is negative or not, the treatment should be regularly continued. These facts are slowly gaining the conviction of the profession and mark the blood as an organ whose symptoms in terms of the blood test will relapse if treatment is inefficient or continue positive if insufficient. A book for students should contain these teachings. Extragenital chancres and lesions of other organs are carefully treated, and the author seems to have awakened to the value of intramuscular injections, which he previously decried and well nigh forbade in his teachings. Arsenical treatment of syphilis when neosalvarsan and salvarsan are not available is not discussed. On the whole this is an excellent work within its limits which are too largely those of individual opinion and not of the profession at large. We might wish that the head of an important department in a leading university had produced a classic and not a handbook.

Many of the illustrations are new, original, and extremely clear.

Obstetrics. A Practical Textbook for Students and Practitioners. By EDWIN BRADFORD CRAGIN, A.B., A.M. (Hon.), M.D., F.A.C.S., Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University, New York; Attending Obstetrician and Gynecologist to the Sloane Hospital for Women; Consulting Obstetrician to the City Maternity Hospital, the Italian Hospital, and the New York Nursery and Child's Hospital; etc. Assisted by GEORGE H. RYDER, A.B., M.D., Instructor in Gynecology, College of Physicians and Surgeons, Columbia University, New York; Assistant Attending Obstetrician, Sloane Hospital for Women; etc. Illustrated with 499 Engravings and 13 Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. x-858.

There is no lack of good books on obstetrics, and therefore we may well ask the *raison d'être* of a new work on the subject. The following extract from the preface explains the author's purpose in writing the present volume: "During a protracted service as medical head of the Sloane Hospital for Women, where over 1,800 deliveries annually occur, the author has enjoyed exceptional opportunities for observation and experience in obstetrics; and for several years he has felt a growing sense of the duty of placing before the profession and students of medicine the methods of this institution and the results obtained. The present textbook of obstetrics has seemed to him the most rational and perhaps the most useful way in which to meet this obligation. The work, in the methods advocated, is based upon the statistical results of the Sloane Hospital and upon the experience gained by the author in the hospital and in private practice. Another object of the work has been to present American statistics in obstetrics."

A careful examination of this volume enables us to state that it will hold its own with the very best works on the subject. The general plan of the book, the arrangement of the chapters, and the treatment of the various themes, are all excellent. In addition to its other merits, which are obvious, Cragin's book has the added virtue of being of a moderate and convenient size. It makes no pretence to an encyclopedic completeness, but it contains all that any physician is likely to need. In his description of the various methods of handling the complications that may arise during pregnancy, labor, and the puerperium, the author does not give every plan that has been suggested, but he wisely selects what his own experience commends. Hence the reader is not bewildered by a consideration of conflicting methods, but feels safe in following the advice of a recognized expert. The present work is almost an ideal textbook, which cannot but place the teaching and practice of obstetrics on a higher plane than before. It is authoritative, concise, complete, pleasantly written, well illustrated, and an adequate and well prepared index renders the contents of the volume readily accessible.

Interclinical Notes.

Dr. James J. Walsh plays an elaborate little joke on the editor of the *Medical Review of Reviews* for April, and the editor, by his solemn reflections on page 251, shows how completely he fell into the trap. In a letter to the magazine Doctor Walsh scouts the idea that the Roman Catholic Church is opposed to birth control, and the editor concluded that Doctor Walsh meant that the church authorized the use of the ordinary contraceptive measures. Far from it! The kind of birth control allowed, even commended by the church, depends exclusively on self control; married couples of the Roman Catholic faith may refrain from sexual intercourse, and therein lies the sole means of limiting offspring permitted them. Other methods are characterized delightfully by Doctor Walsh as "dirty" methods.

* * *

Dr. Louis Faugères Bishop, in the *Nurse* for April, gives three diagnostic points which infallibly characterize heart disease. Dr. James Frederick Rogers, a good friend of this JOURNAL, writes on anesthesia. Dr. William Brady, another good friend and a kindly humorist, tries to straighten out in the nurse's mind exactly what infection is. Dr. Louis Neuwelt describes hypodermoclysis. Dr. George F. Campbell discusses the psychology of the sick-room. That is a pretty rich program for a nurses' journal, yet there remain numerous capital articles by the editor, by nurses, and by other writers, original and selected. The pictures are excellent, as usual.

* * *

Thomas F. Millard, in the March *Century*, insists that we are in danger of an attack from Japan. J. Nilsen Laurvik offers a handsomely illustrated paper on Hungarian and Norwegian Art. Mr. Flagg has a gorgeous Ethel Barrymore for frontispiece. J. Russell Smith has a thoughtful essay on The Island and the Continent at War, an essay that should be of special interest to physicians. In Black Jitney, Lawton Mackall has an amusing travesty on that work of extraordinary popularity, *Black Beauty*. As usual the striking appearance of the *Century* engages the eye at once; it must have done much in its long career to sharpen the artistic perceptions of the reading public.

* * *

Rabies from coyotes has become a serious problem in some of the western States, where it is no longer considered safe to allow children to run about unattended. The *Survey* for March 11th discusses the matter editorially and quotes an opinion that dog mange may be inoculated into the coyotes with fatal results when the infected animals are turned loose into the herds. The same paper reports that the death of an employee from typhoid incurred while performing services growing out of his employment is an accident within the meaning of the Wisconsin compensation law according to the supreme court of that State.

* * *

"It is, therefore, . . . particularly gratuitous and reckless for American observers to advance, at this stage, the theory that the war was not only inevitable, but that it is the certain forerunner of other wars." Thus Victor S. Yarros in the *Survey* for March 11th. One thing that strikes us as remarkable is the positiveness with which writers on the war in this country make their assertions. They state in the most dogmatic way that we are or are not in danger of being dragged into the conflict, although obviously there are no premises whatever upon which to base conclusions.

* * *

The latest of the special monthly issues of the *Outlook* saw the light on March 22d, and a most fascinating issue it was, containing A Star of Hope for Mexico, by Charles W. Dabney, The Alaskan Forests, Automobile Rights and Wrongs, Refrigeration and Artificial Ice, by Theodore H. Price, editor of *Commerce and Finance*, and a short story, Road Menders, by Ruth Sawyer. There was a plea for the establishment in every town of moderate size in the United States of an association similar to the New York Chamber Music Society. This organization is made up of a piano, two violins, a viola, 'cello, and double bass, a clarinet, an oboe, a bassoon, and a French horn, and has a wide range of beautiful music at its disposal.

Meetings of Local Medical Societies.

MONDAY, April 17th.—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Medical Society of the County of Erie; Elmira Clinical Society; Psychiatric Society of Ward's Island.

TUESDAY, April 18th.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburgh Medical Association; Oswego Academy of Medicine.

WEDNESDAY, April 19th.—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City (New York Academy of Medicine); Medico-Legal Society, New York; Buffalo Medical Club; Northwestern Medical and Surgical Society of New York; Bronx County Medical Society.

THURSDAY, April 20th.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, April 21st.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society; Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society.

SATURDAY, April 22d.—New York Medical and Surgical Society; West End Medical Society; Harvard Medical Society; Lenox Medical and Surgical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the Medical Corps of the United States Public Health Service for the seven days ending April 5, 1916:

Cody, H. C., Assistant Surgeon. Relieved at St. Louis, Mo., and ordered to proceed to New Orleans, La., for duty in plague eradication measures. **Cumming, H. S.**, Surgeon. Directed to proceed to such places on the Atlantic Coast Watershed as may be necessary in connection with the investigations of the pollution of tidal waters. **Freeman, A. W.**, Epidemiologist. Detailed to attend a public health conference at the University of Missouri, Columbia, Mo., April 18, 1916, and present an address on typhoid fever. **Holt, John M.**, Surgeon. Granted two days' leave of absence en route to Cleveland, Ohio. **Lavinder, C. H.**, Surgeon. Granted four days' leave of absence on account of sickness, from March 20, 1916. **Leake, J. P.**, Passed Assistant Surgeon. Granted seven days' leave of absence en route to inspect laboratories in California. **Lombard, M. S.**, Assistant Surgeon. Relieved from duty in plague eradication measures, New Orleans, and ordered to proceed to Navy Yard, Brooklyn, N. Y., for duty on Coast Guard Cutter *Tampa*. **McMullen, John**, Surgeon. Directed to proceed to Nashville and other places in Tennessee in connection with the establishment of a trachoma hospital. **Preble, Paul**, Passed Assistant Surgeon. Granted two days' additional leave of absence from March 31, 1916. **Safford, M. Victor**, Assistant Surgeon. Ordered to proceed to Newburyport, Mass., for diagnosis of suspected cases of smallpox at Coast Guard station. **Schereschewsky, J. W.**, Surgeon. Ordered to proceed to Milwaukee, Wis., for the purpose of supervising the investigations of industrial sanitation now being conducted in that State. **Waller, C. E.**, Assistant Surgeon. Ordered to proceed to such places in the States of New York, Connecticut, Rhode Island, and Massachusetts as may be necessary in the investigation of the pollution

of tidal waters. **Williams, R. C.**, Field Investigator. Directed to proceed to Rome, Ga., for duty in studies of rural sanitation.

United States Army Intelligence:

Official list of changes and duties of officers serving in the Medical Corps of the United States Army for the week ending April 8, 1916:

Each of the following named officers of the Medical Corps, now on temporary duty in the Southern Department, is relieved from station at the Army Medical School, in Washington, D. C., to take effect April 1, 1916, is assigned to station at the post designed after his name, and upon the completion of his temporary duty in the Southern Department, will proceed to join the station to which he is assigned: Captain Lucius L. Hopwood, Fort Des Moines, Iowa; Captain William S. Shields, Fort Omaha, Nebraska; Captain Charles L. Foster, Fort McPherson, Georgia; Captain Craig R. Snyder, Fort Oglethorpe, Georgia.

Births, Marriages, and Deaths.

Died.

Austin.—In New Bedford, Mass., on Wednesday, March 29th, Dr. J. Edward Austin. **Baker.**—In Cleveland, Ohio, on Tuesday, March 28th, Dr. DeForrest Baker, aged sixty-four years. **Baker.**—In Huntingdon, W. Va., on Friday, March 31st, Dr. Morgan Baker, aged sixty-four years. **Berlin.**—In Chattanooga, Tenn., on Saturday, April 1st, Dr. Henry Berlin, aged sixty-five years. **Brock.**—In Carthage, Mo., on Tuesday, March 28th, Dr. J. W. Brock, aged eighty-eight years. **Casselberry.**—In Hazleton, Pa., on Wednesday, March 29th, Dr. Henry B. Casselberry, aged fifty-two years. **DeRoss.**—In Wichita, Kansas, on Thursday, March 30th, Dr. David E. DeRoss, aged seventy-two years. **Doherty.**—In Rexton, N. B., on Sunday, March 19th, Dr. William W. Doherty, aged fifty-eight years. **Duffield.**—In Highland Park, Mich., on Saturday, March 25th, Dr. Samuel P. Duffield, aged eighty-two years. **Fagan.**—In Troy, N. Y., on Saturday, April 1st, Dr. George A. Fagan, of North Adams, Mass., aged forty-five years. **Findley.**—In Des Moines, Iowa, on Monday, March 27th, Dr. John Findley, aged sixty-six years. **Gallagher.**—In Newport, Oregon, on Saturday, March 25th, Dr. Frank Gallagher, of New Haven, Conn. **Hanscom.**—In Minneapolis, Minn., on Thursday, March 23d, Dr. Walter C. Hanscom, aged sixty-one years. **Hatton.**—In Camden, N. J., on Monday, March 27th, Dr. Louis Hatton, aged eighty-two years. **Hazard.**—In Jeffersonville, Ind., on Monday, March 27th, Dr. Samuel D. Hazard, aged fifty-four years. **High.**—In Pittsburgh, Pa., on Monday, March 27th, Dr. Frank G. High, aged forty-six years. **Holmes.**—In Arlington, Mass., on Saturday, April 1st, Dr. Lydia Maria Holmes, aged eighty-eight years. **Irvin.**—In Wallis, Texas, on Thursday, March 23d, Dr. Alexander Irvin, aged eighty years. **Jessup.**—In St. Louis, Mo., on Wednesday, March 29th, Dr. Charles A. Jessup, aged sixty-five years. **Lynch.**—In Washington, D. C., on Sunday, March 26th, Dr. Robert L. Lynch, aged fifty-two years. **Marden.**—In Claremont, N. H., on Sunday, April 2d, Dr. Albert Marden, aged sixty-six years. **Merriam.**—In Cleveland, Ohio, on Tuesday, March 28th, Dr. Walter H. Merriam, aged forty-nine years. **Mulnix.**—In Cedar Rapids, Iowa, on Tuesday, March 28th, Dr. James A. Mulnix, aged sixty-three years. **Muncaster.**—In Washington, D. C., on Saturday, April 1st, Dr. Otto Magruder Muncaster, aged seventy-three years. **O'Connor.**—In Roxbury, Mass., on Thursday, March 30th, Dr. Thomas H. O'Connor, aged sixty years. **Oppenheim.**—In New York, on Wednesday, April 5th, Dr. Nathan Oppenheim, aged fifty years. **Renfro.**—In Pleasureville, Ky., on Monday, March 27th, Dr. C. J. Renfro, aged seventy-three years. **Rennie.**—In New York, on Friday, March 31st, Dr. John G. Rennie, of Petersburg, Va., aged forty-two years. **Richardson.**—In New York, on Wednesday, April 5th, Dr. Charles H. Richardson, aged fifty-six years. **Sanderson.**—In Milton, Vermont, on Friday, March 31st, Dr. Corbin L. Sanderson, aged sixty-five years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal ^{and} The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 17.

NEW YORK, APRIL 22, 1916.

WHOLE No. 1951.

Original Communications.

ORTHODONTIA AND THE GENERAL PHYSICAL HEALTH.

BY BERNHARD WOLF WEINBERGER, D. D. S.,
New York.

The mental effect of a marked facial deformity has considerable influence in shaping a child's whole life. How often we form our opinions of people before we hear them speak. Their strength of character is frequently judged by the expression about the mouth. It is then of the greatest importance to allow every child an opportunity to develop normally and under the most favorable conditions.

"All parts of the anatomy are liable to abnormalities in development, and there is no one part that is more frequently at variance with the normal (in its development) than the dental arches. This is evidenced by the fact that malocclusion of the teeth in some form is almost the rule rather than the exception" (Angle). Orthodontia deals primarily with the normal development of the dental arches and the teeth. It is directly associated with the internal and external face, and indirectly with the functions of nutrition, digestion, and respiration; hence to the series of related structures and functions, with the development and health of the whole bodily system.

The arrest of the growth and the disturbances of the function of the internal and external face, associated with many cases of malocclusion, are but symptomatic expressions of the disturbances of balance in nutrition and respiration, or of other vital functions; therefore, in general, malocclusion of the teeth may be considered the objective symptom of abnormal development of the dental arches, and the consequent arrest or deficiency of growth.

Wonderful advance has been made in both the science and the art of orthodontia. A generation ago there was little of science and nothing of art known in the correction of malocclusion of the teeth. Not until the compilation of the knowledge of the etiology and the classification of malocclusion; the improvement in designs of orthodontial appliances; the study of the peridental membrane and surrounding tissues and the changes incidental to tooth movement; and last, but not least, the specialization of this branch of medical science, did orthodontia become the exact and splendid science that it is today.

The advancement of orthodontia as a science has been so rapid in the last decade that few practition-

ers know how to treat malocclusion by scientific methods. Until the importance of normal occlusion was thoroughly understood, there was some justification for the use of empirical methods, both in diagnosis and treatment. Extraction of teeth to correct the deformity was then permitted, but not today. There are certain obscure principles to be observed in order to produce the desired results. These principles concern the physiological reproduction of bone induced by a given pressure.

Beside the knowledge of normal occlusion, a clear and certain conception of living bone tissue and its responsiveness to mechanical stimulation is just as important to the practice of orthodontia, as the physiological effect of the use of drugs is to the practice of medicine. The orthodontist who confines his treatment wholly to mechanical appliances is as unsuccessful as a surgeon who depends entirely on the knife.

Let us consider first a normal mouth; unfortunately it is rarely met with today. An important factor in the study of oral hygiene is the fact that a perfect denture in normal use is practically self cleansing, it presents the least opportunity for the lodgment of food, and the action of the lips, cheeks, and tongue in brushing the surfaces of the teeth, together with the action of the saliva, comes nearest to making them self cleansing. In mouths where malocclusion exists, cleanliness is impossible. The crowding and overlapping of the teeth create triangular spaces in which food will accumulate, thus supplying a fertile field for the development, not only of bacteria which attack the surrounding tissues and produce pyorrhea and the decay of teeth, but also of those of infectious diseases.

Scarcely second in importance comes the matter of mastication. As a nation, we have acquired the habit of bolting our food and consequently the lack of the full use of our teeth. Too little mastication has a very injurious effect upon the development of the dental arches. Proper nourishment, as well as plenty of oxygen, are as essential to the normal development of the child as exercise. If we would insure immunity from dental ills, we must guard the general health from infectious diseases and give the child its full opportunity for complete and harmonious development. To maintain this condition of cleanliness and health, the dental arches must have the "full complement of teeth"; the arches must be nearly symmetrical, occlusion perfect, and mastication normal.

The arches of the temporary teeth. In order to have a clear conception of what constitutes "occlusion," it is necessary to study the dental arches at

the time when the deciduous teeth are all in their proper positions, and certain physiological processes are to take place, subsequent to the shedding of the temporary and their replacement by the permanent teeth. In a great percentage of cases, malocclusion

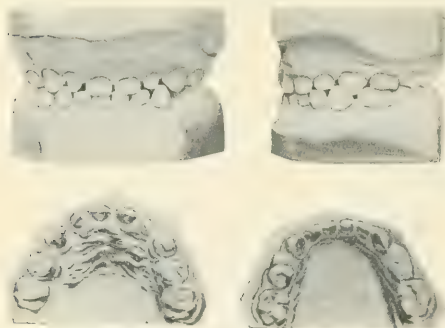


FIG. 2.—Normal occlusion in child four years old; occlusal surfaces, maxilla, and mandible.

begins at the time when these processes are taking place. Fig. 1 shows at the age of four years, a perfect development of the deciduous arch in normal occlusion, at which time all of the deciduous teeth are in position and accomplishing the proper functions of mastication. Note the regular spacing between the teeth to make room for the permanent teeth which are a third larger than the deciduous, and the general roundness of the arch. Were this spacing present in every deciduous arch orthodontia would be unknown.

To have a normal permanent arch retaining the deciduous teeth is of the greatest importance. These teeth are to serve until their permanent successors erupt; their presence aids development and their premature loss insures almost certain irregularities of the permanent set and invariably causes a retardation of development of the maxillary arch. The sockets will fill with new osseous tissues, hard enough in many cases to turn the permanent tooth from the proper position, or through the forward movement of the teeth the spaces will close up, so that the permanent tooth will be compelled to erupt either inside or outside the arch (Fig. 2). The time

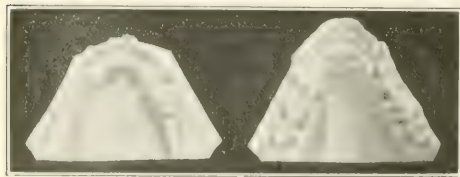


FIG. 3.—Premolars, intended to erupt within the dental arch (see Fig. 2), showing upper right canine erupting outside and above the dental arch.

to extract is when the permanent successor is about to erupt, when abscessed, or when periodontal necrosis contraindicates further retention.

As the deciduous dental arch increases in size, the growth takes place in three dimensions—length,

breadth, and height. Fig. 3 illustrates the upper arch of the same child, at four years, at six and a half, and at eight years of age. In the four years the alveolar process has grown downward in the upper arch, and upward in the lower, the first permanent molars (sixth year molars) have come into occlusion, holding the arches in their proper relations. Fig. 4 shows the extent of development in length and breadth of the same cases placed side by side. Fig. 5 shows the skull with normal occlusion



FIG. 4.—Occlusal surfaces of upper arch, same child, four, six and a half, and eight years old, showing growth and development.

in a child of five years of age. Note the occlusion on the lingual surface.

Occlusion. As occlusion is the basis of the science of orthodontia, we must know what it means. According to Angle, "Occlusion is the normal relations of the occlusal inclined planes of the teeth when the jaws are closed." By referring to Fig. 6, which represents the teeth in normal occlusion, it will be seen that the external curve of the lower jaw is slightly smaller than the upper, so that in occlusion the labial and buccal surfaces of the teeth of the upper arch extend slightly over the lower. Normally each tooth of the upper jaw occludes with two in the opposite jaw, with the exception of the lower centrals and third molar. The incisors and canines occlude so that the incisal edges of the lower incisors and canines come in contact with the lingual surfaces of the corresponding teeth of the upper jaw near the incisal edges. The mesiobuccal cusp of the upper first molar is received into the buccal groove of the lower first molar. The teeth posterior to the molars engage with their antagonists in a precisely similar manner; those anterior interlock with one another in the interspaces, until the incisors are reached; of these the upper teeth usually overhang the lowers for about one third the length of the crowns. The length of the overbite of the anterior teeth is the

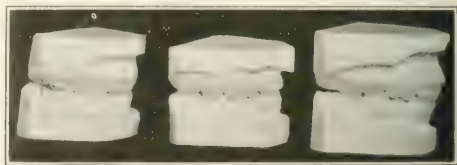


FIG. 5.—Side view of case shown in Fig. 3.

same as the length of the cusps of the molars, premolars, and canines. Fig. 7 shows the linguo-occlusal relations, except that the lingual cusps of the lower buccal teeth project beyond those of the upper into the oral cavity. In the transverse arrangement, the buccal cusps of the lower molar and premolar occlude with the buccal cusps of the upper;

and the lingual cusps of the upper molars and premolars occlude with the buccal and lingual of the lowers (Fig. 8). By this arrangement, one half of one tooth is always in occlusion with one half of the opposite tooth. Nature has taken care to assure the retention of corresponding teeth through loss by extraction or otherwise, and thus prevent rotation and elongation and the *collapse of the entire arch*.

Malocclusion. Malocclusion of the teeth is simply a variation of these normal relations. It is a dis-

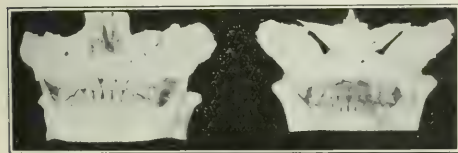


FIG. 5.—Skull; normal occlusion in a child five years old.

turbance in the development of the dental arches that later interferes with the functions of respiration, mastication, and speech, thereby altering the dental apparatus as well as the facial expression.

Etiology of malocclusion. Before discussing the causes of malocclusion, we must call attention to the impossibility of treating adequately this subject here. Were this to be gone into thoroughly, it would require a paper of great length, hence it is our purpose to interpret only certain common conditions produced by definite causes. The etiological factors of malocclusion may be divided into two groups, general or constitutional, and local.

General or constitutional causes include those that affect the general functions of metabolism to such an extent as to interfere with the development of the teeth or the surrounding structures; e. g., diseases of childhood, such as rickets, measles, scarlet fever, and similar diseases affecting the epithelial struc-

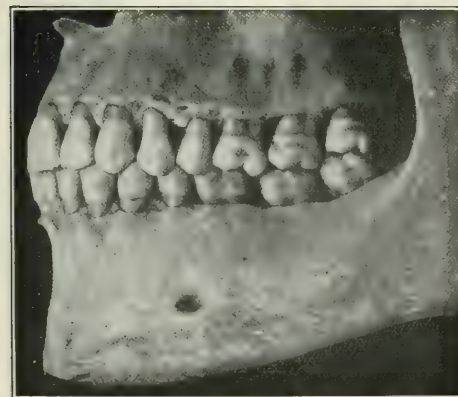


FIG. 6.—Jaws in normal occlusion (Turner).

tures; syphilis; faulty development caused through improper foods; bottle feeding; and lack of use of the teeth through improper mastication.

Among the local causes are the early loss of de-

ciduous teeth; prolonged retention of deciduous teeth; tardy eruption of permanent teeth; abnormal mastication; loss of permanent teeth; bad dentistry; supernumerary teeth; bad habits, such as lip biting



FIG. 7.—Normal occlusion; lingual relation (Turner).

and lip sucking; tongue habits; mouth breathing; adenoids and tonsils; abnormal frenum linguae.

Early loss of deciduous teeth. The value of the deciduous molars in mastication is universally recognized by the profession, and an urgent appeal should be made to the parents for their preservation. The early loss of the deciduous incisors causes a lack of development in the anterior region of the arch. The early loss of the canines permits the incisors to drift toward the side from which the tooth is missing, often allowing the incisors to come in contact with the deciduous molars, thus preventing the permanent canines from coming into their proper position (Fig. 9). The loss of the deciduous molars permits the first permanent molar to drift forward, resulting in an abnormal mesiodistal relation of the first permanent molar, and often in an impaction of the premolar when it attempts to erupt. The loss of the

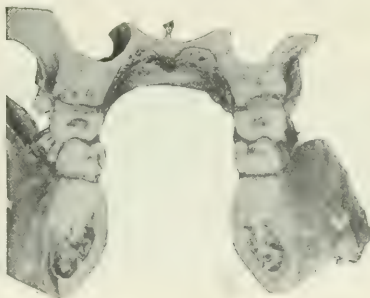


FIG. 8.—Normal occlusion of molars; transverse section (Cryer).

approximal surfaces of the deciduous teeth through caries, results in a lack of arch development, and such carious conditions should be observed in their earliest stages, and fillings inserted so that the approximal contact points may be restored.

Loss of permanent teeth. A large proportion of

malocclusion found in adults is the result of the loss of the permanent teeth. The tooth most frequently lost and the one that produces the malocclusion most difficult to treat, is the permanent first molar. Through the loss of these molars, the masticating

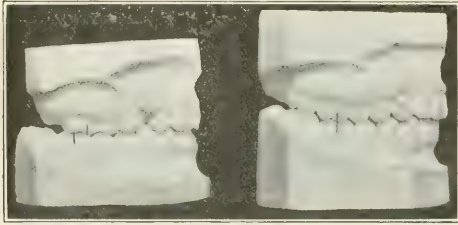


FIG. 9.—Result of early loss of the deciduous incisors; the incisors in contact with the premolars. Same case corrected, canine brought back into its proper place through expansion of the arches.

apparatus is destroyed, the occlusion of the teeth ruined, and one of the greatest factors in pyorrhea is established (Fig. 10). To the student of occlusion, the changes in occlusal relations after the first permanent molar has been lost, are more or less well known, and it is comparatively easy to foretell what will occur, and to follow the stages whereby the ruin of the whole dental arches has been accomplished. Loss of the first permanent molar allows the second molar to tip forward, and this is followed by the drifting distally (posteriorly) of the teeth mesially (anterior) to it (Fig. 11), destroying the occlusion of that side or both sides of the mouth, and contracting the arches, both upper and lower. The effect of this can be seen in the overlapping of the anterior teeth. In addition, the incisors will be found to occlude against the gum margin of the upper teeth as in Fig. 12, instead of the upper third of the upper teeth as in Fig. 6. A frequent question asked of the specialist by parents and practitioners is as to the advisability of extraction of one or more of the deciduous, as well as of the permanent teeth, in order to "make room" for other teeth. That is a false theory, and one that has caused no end of trouble. Instead of the arch being made larger, the

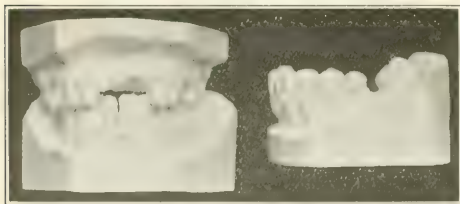


FIG. 10.—Upper teeth, six-year girl, fourteen years of age, teeth lost through indiscriminate extraction; lower right central and lateral loose; pyorrhea; both upper and lower anterior teeth elongated.

FIG. 11.—Mandible, lower second molar drifted forward, due to the extraction of the first molar; in drifting forward the second tips anteriorly close the space.

reverse is true, and the arch already contracted becomes so much more so. The result is the shortening of the arches, producing a facial deformity in

which the chin is too close to the nose, and there is a sunken appearance about the mouth.

Mouth breathing. Mouth breathing has long been recognized as a cause of malocclusion, and is generally the result of adenoids. It is an accepted fact by both rhinologists and orthodontists, that a hyper-

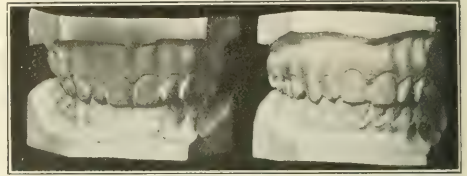


FIG. 12.—Showing the upper teeth elongated and entirely over the lower teeth; b, corrected, the lower teeth no longer in contact with the palate.

trophy of the pharyngeal tonsils, commonly known as adenoids, will produce a malformation of the superior and inferior maxillæ and adjacent parts. Nasal obstruction is the indirect cause of this maldevelopment. The direct cause is the constant prevalent muscular action, causing mouth breathing. The growth of the nasal cavity affects the growth of the maxillary bones, and likewise anything that affects the growth of the maxillary bones will have an influence on the nasal cavity. Muscular pressure plays an important part in development. Normal respiration during the developmental period exerts the greatest influence upon the growth of bone. With the mouth closed, the lips are pressed against the labial surfaces of the incisors, the lower lip covering about one third of the upper incisors. The tongue fills the vault of the palate and presses against the lingual surfaces of the teeth and bone. The air being partially exhausted by the soft palate lying against the base of the tongue, causes a downward pressure against the nose. In mouth breathing the tongue does not exert force on the upper teeth, and therefore allows the maxillæ to remain undeveloped. As a result of atmospheric pressure, the mandible drops down, the depressor muscles preventing it from developing forward. The function of deglutition is quite as important as that of breathing, and is seldom if ever normal in abnormal breathers. With each act of deglutition the teeth



FIG. 13.—a, Open bite, a deciduous set; upper left lateral in lingual occlusion; b, retrusion, narrow lower mandible; c, protrusion of the mandible; all in deciduous dentition.

are pressed firmly together by the contraction of the elevators of the mandible, exerting pressure upon the lingual surfaces of the upper teeth and the buccal surfaces of the lower. This causes a mechanical stimulus, for the growth of bone carries the apices of roots buccally and lowers the roof of the mouth, consequently increasing the depth of the nasal

cavity from above downward. Expanding the arch of a young patient, while it may not actually lower the floor of the nose and straighten a deflected septum, has the effect of relieving the upward pressure and preventing the further development of a de-

the time to correct it, in order that development may not progress abnormally, thereby destroying the hope of overcoming prolonged conditions caused by improper occlusion, facial expression, and structural changes in osseous and muscular tissues which cannot be benefited by treatment.

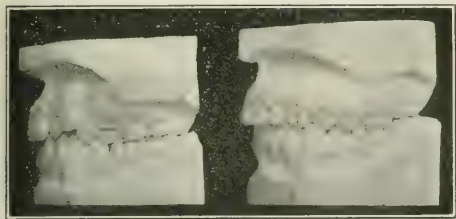


FIG. 14.—Class I. a, Lower first premolar in contact with the lower first molar, second lower premolar impacted; b, showing case corrected, mandible developed, space created for second premolar, and premolar allowed to erupt and take its place.

flected septum. It is useless to correct a deflected septum and remove adenoids and tonsils, and yet allow mouth breathing to continue, and not try to establish normal occlusion and render normal breathing possible. It is just as useless to try to establish normal occlusion of the teeth without first removing the primary cause of the mouth breathing. The rhinologist for the success of his work is, in many cases, dependent upon the orthodontist.

Early disturbances. Disturbances in development occur in early life. Both pronounced protrusion and retrusion have been observed by the author, in children three years old or younger, even at birth, indicating defects in development perhaps congenital in origin. These disturbances occurring in early life, if not corrected before the seventh year, in some cases earlier, lessen the possibility of permanent benefit, especially in the establishment of normal respiration (Fig. 13).

One of the most beneficial results—perhaps the greatest result—of the study of occlusion has been the change in the time for beginning treatment. Under the old idea it was necessary to wait until the patient was thirteen or fourteen years old, until the second molars and all the permanent teeth had erupted before treatment was begun. Now cases

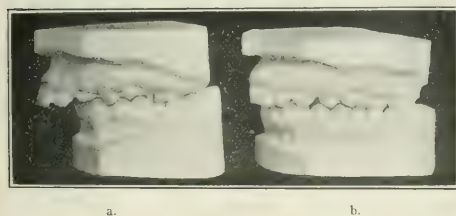


FIG. 15.—Class II. a, Retrusion of the mandible; b, corrected. Note pencil marks on molars.

should be completed by the time the second molars are in full occlusion and all the cusps normally locked (twelfth year). Early treatment *should be* and is advised. As soon as a definite defect in the mechanism of development is discovered, then is



FIG. 16.—Upper arch of Fig. 15, showing change in outline and development; before and after.

Angle's classification of malocclusion. Among the old school writers and practitioners an endless variety of types of malocclusion was recognized, which led to confusion in diagnosis and treatment. Credit belongs to Dr. Edward Angle for formulating a plan which simplified classification and by reducing the unwieldy number to three main classes, also simplified treatment.

These classes are based on the mesiodistal (anterior and posterior) relations of the lower teeth to the upper dental arches. The relation of the jaws depends primarily upon the positions the first permanent molars assume in erupting and occluding. Hence in diagnosing cases of malocclusion, the mesiodistal relation of the jaws and dental arches is first to be considered, as indicated by the positions of the lower first molar with the upper, and then the positions of the individual teeth. We have shown that under normal occlusion the mesiobuccal cusps of the upper first molar occlude in the buccal groove of the lower first molar.

Class I (Fig. 14). To this class belong those cases of malocclusion where the mesiodistal (anterior-posterior) relations of the arches are normal. The arches may be contracted and undeveloped, especially in the anterior region, and the teeth may assume varied forms of individual malocclusion.

Class II (Fig. 15 and 16). Cases of malocclusion

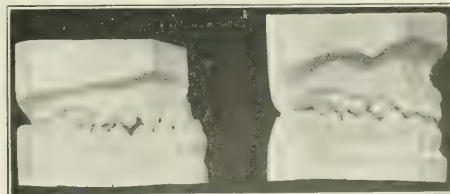


FIG. 17.—Class III; protrusion of the mandible, before and after.

which are characterized by a distal (posterior) relation of the lower arch. The cases of this class are divided into two divisions: 1. Bilaterally distal, *protruding* upper incisors, primarily associated with mouth breathing; narrow upper arch, an undeveloped or reeded chin, abnormal muscular pres-

sure, and a short upper lip (Fig. 18); subdivision unilateral. 2. Bilaterally distal, *retruding* upper incisors that are bunched; normal breathers. The upper lip is normal, mandible and chin of normal size, with normal muscular pressure, but the features are disfigured by the receding chin; subdivision unilateral.

Class III (Fig. 17). Lower arch mesial (anterior) to normal in its relation to upper arch, the width of one premolar. The teeth of each arch may present an even alignment with practically no torsiooclusion in either arch. The facial profile is deformed, the chin being prominent. The lip pressure is normal, mouth breathing frequently being present.

TREATMENT.

A word or two in regard to "regulating appliances" and "systems" used in treating malocclusion of the teeth. Regulating appliances are but mere mechanical devices for the purpose of bringing malposed teeth into their proper positions and occlu-

limit of use and lack of control. A greater amount of pain is caused owing to the constant putting in and taking out of the appliance, which causes undue pressure in the wrong direction, and while it is out, the teeth return to their original position, thus creating unnecessary inflammation. The appliance being constructed, if worn constantly, so as to rest directly upon the lingual surfaces of the teeth and on the adjoining tissues, creates a stimulus where none is needed, and an unnecessary pressure on the surfaces. Such an appliance is bulkier, and is less permanent in results.

Fixed appliances have the advantage of firm attachment, both to the anchor teeth and to those that are being moved. Thus appliances can be smaller, and when the force is rightly applied the operator is assured that it will continue in the right direction and the result is bound to be more lasting.

CONCLUSIONS.

Modern orthodontia requires a thorough knowledge of the physiological development of the dental



FIG. 18.—Marked facial changes, Class II, Figs. 15 and 16; before and after.

sion, by creating cell activity. The appliance must be mechanically perfect, otherwise pressure is exerted in the wrong direction and the work will result in failure. The mere exertion of force is not sufficient to allow the teeth to assume a proper position in the "line of occlusion"; the movement must be physiological, and cell activity must be created.

Teeth can be moved anywhere, but where improper force has been used they cannot be held in their new position, and considerable suffering is caused. Time is the one great factor in orthodontic work; old bone must be destroyed, cell activity must be created, and new bone formed.

Regulating appliances are of two types, fixed and removable. Fixed appliances are those that are placed or cemented on the teeth in such a manner as to be handled or removed only at the will of the operator. Removable appliances are those placed on the teeth in such a manner as to be removed at the will of the patient. They are recommended, because they may be removed by the patient and the teeth cleaned after each meal. They are not as conspicuous as the fixed appliances, nor are they as efficient. The great disadvantage of them not being firmly attached to the teeth is the

arches and associated structures, the remote as well as the local etiological factors; proper diagnosis, classification, and treatment, based not only upon mechanical principles but physiological as well.

Normal occlusion as the basis of orthodontia, has taught that the full complement of teeth is absolutely necessary in order that the teeth may perform their proper function; that extraction of teeth to accomplish the result is unnecessary, yes even criminal.

Where the dental arches are arrested in their development, the associated structures are hindered in theirs. The orthodontist is dependent upon the rhinologist, and the rhinologist needs the assistance of the orthodontist.

The disturbances occur early in life, consequently orthodontic treatment should be begun early, in order that the cure may be completed by the time the second molars are in their proper position.

Marked facial deformities can be corrected, allowing every child an opportunity to develop normally, permitting normal functions of nutrition, digestion, and respiration, in order that the whole bodily system may not be interfered with, thus leading to serious results.

10 EAST FORTY-FIRST STREET.

OBSTRUCTION OF THE PYLORUS IN INFANTS,*

By E. MATHER SILL, M. D.,
New York.

During the last few years discussions have been most frequent upon pyloric obstruction in infants, numerous cases having been reported by surgeons and physicians. It is probable that the large amount of data from different sources now at hand is due rather to the more careful and painstaking methods of diagnosis than to the more frequent occurrence of this affection.

A fact worthy of mention is, that this condition occurs almost always in breast fed, male babies. Thus in fifty-five cases of pyloric obstruction seen by Holt¹, forty-nine were in males, and fifty-two were breast fed, forty of these having had nothing else, while twelve had part breast and part bottle. Thus we cannot attribute this condition to faulty feeding or improperly modified cow's milk. Moreover, in the great majority of cases the symptoms are sudden in their onset; a gradual onset being the exception. This tends to show that in the beginning the spasmodic element in all cases predominates.

An exhaustive study of a large number of cases of so called pyloric spasm and pyloric stenosis by competent observers, shows that this difference is one of degree, not of kind. Practically every case that has come to autopsy has shown hypertrophy of the pylorus. In twenty-six necropsies at the Babies' Hospital there was hypertrophy of the pylorus in every case.

Those who have had many cases of pyloric obstruction have seen the three different grades of severity, namely, cases with pyloric spasm predominating, cases of the combined type of pyloric spasm and some hypertrophy, and cases with spasm and marked hypertrophy and stenosis of the pylorus.

It has been my experience that in cases of pyloric spasm, a tumor of the pylorus can rarely be felt. According to the observations of Koplik in pyloric spasm, peristalsis is present to a marked degree, and in some of the more severe cases the pylorus

healthy. Mother had always had abundance of milk, which examination showed to be of normal quality. Mother stated baby had vomited almost since time of birth. Weight at birth, eight pounds, weight now seven and a half pounds. When three and a half weeks old, baby had an attack of diarrhea, which lasted ten days; for past two and a half weeks had been constipated, and mother gave her milk

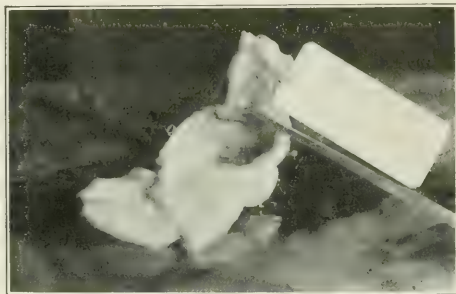


FIG. 2.—Pyloric stenosis, showing hypertrophy of the pylorus.

of magnesia and enemas. Mother described the vomiting as "explosive," shooting from the mouth to a distance of ten inches. Child first vomited milk and then mucus.

Examination of child showed slight jaundice of conjunctiva, tense abdominal muscles, but no distinct wave, stomach washed. April 7th, mother stated child vomited less, stomach washed, breast given for six minutes, when baby vomited a large amount. April 8th, weight seven pounds, eleven ounces; stomach washed, put to breast ten minutes. Weight then seven pounds fifteen ounces. Mother's milk showed specific gravity 1.035, fat 3.6, proteid approximately normal, child nursed for seven minutes every three hours April 9th, stomach washed, mother advised to nurse child for seven and fifteen minutes alternately every three hours, vomiting much less. Stomach was washed once a day up to April 14th, but vomiting continued, although less. April 16th, weight seven pounds nine ounces, child nursed for ten minutes. April 18th, weight seven pounds thirteen ounces, stomach washings much clearer, but still vomited after each feeding. April 21st, weight seven pounds eleven ounces. April 24th, weight seven pounds ten ounces, vomited between feedings, stomach washings clear, ordered breast for twenty minutes every two and a half hours (four feedings and one bottle feeding), stomach washed twice a day. June 24th, child much better, stomach washed once a day. September 18th, weight seventeen pounds twelve ounces. Vomiting stopped, three breast feedings, four bottle feedings. October 13th, weight twenty-one pounds four ounces, perfect specimen of healthy child in every respect.

CASE II (November 20, 1914). Female child, aged ten weeks, breast fed for eight weeks, breast and bottle two weeks. Weight at birth seven pounds, present weight seven pounds three ounces. The baby began vomiting when four or five weeks old, and notwithstanding that the mother had an abundance of good breast milk, failed to gain, so that when I was called by the family physician, the child was in a state of marasmus, and vomited after every feeding, first milk then mucus. Very little fecal matter passed through the bowel. The vomiting was projectile in character; no pyloric tumor was felt, but a peristaltic wave was sometimes seen, and the abdominal muscles were tense. The child was given daily stomach washings for ten days and was taken off the breast. After ten days, the stomach was washed every two days for a month, then twice a week, since then once a week.

The vomiting diminished and the baby began slowly to gain, so that, December 26th, its weight was seven pounds fourteen ounces. January 2d, vomiting less, keeping food down fairly well, weight eight pounds two ounces. January 6th, vomiting much less, weight eight pounds seven ounces. January 11th, weight eight pounds thirteen ounces, vomited less. January 23d, vomited after some feedings. Weight nine pounds nine ounces. February 5th, weight ten pounds two ounces. February 9th, weight ten pounds,

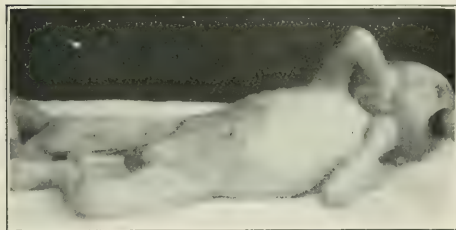


FIG. 1. Pyloric stenosis, showing characteristic wave.

can be felt to relax and then harden at the time of contraction, its size varying from that of a bean to that of the phalanx of the finger.

CASE I (April 6, 1914). Female child aged six weeks, breast fed since birth, second child, labor normal, first child died of convulsions. Father and mother both large and

*Read before the City Hospital Alumni Society, May 10, 1915, and before the Pan-American Medical Congress, June 10, 1915.

¹L. Holt, *Journal A. M. A.*, June 29, 1914.

six ounces. February 22d, weight eleven pounds three ounces, child vomited scarcely any, and stomach washings came nearly clear. March 3d, weight eleven pounds six ounces, vomiting stopped, baby taking six ounces at a feeding. There was steady increase in weight and improvement in symptoms, so that on March 14th the weight was twelve pounds. Child had gained five pounds in three months.

CASE III (March 19, 1915). Male child, aged nine months, breast fed for three and a half months. Began to vomit during first week after birth for three weeks, slight vomiting after each feeding, when vomiting became more frequent and abundant and was "explosive" in character, being projected for eight or ten inches. When three weeks of age, the child weighed nine and a half pounds; from that time it began to lose weight steadily, until, when three and a half months of age, the mother described it as a "living skeleton." During this time child was constipated and passed only very small stools. Up to this time the mother had consulted her private physician, but since the child was three and a half months old, it had lived in hospitals, being an inmate of four different institutions for varying periods until three weeks ago. Since then it had been fed at home with modified cow's milk and had vomited a great deal, during and sometimes after feeding. Aspiration of stomach contents three hours after nursing showed residual milk to the amount of half an ounce. Stomach was washed with a normal saline solution at 110° F.

March 20th, vomiting less, vomited after four feedings. Weight thirteen pounds three ounces. Stomach washings clearer. This case was undoubtedly one of pyloric spasm with probably a moderate amount of hypertrophy of the pylorus and a dilated stomach. April 1st, weight thirteen pounds seven ounces, vomiting less.

CASE IV (pyloric stenosis). Male child, aged thirteen weeks; parents healthy. This was the tenth child, eight living. Weight five pounds five ounces. Breast was given for five weeks, modified cow's milk two weeks, since then condensed milk. Would take only one to one and a half ounce at a feeding, and on that account was fed every hour and a half. Vomiting began two weeks after birth and was as frequent as ten times in twenty-four hours, occurring either immediately or an hour after feeding. Child much emaciated, stomach contents showed hyperacidity and absence of bile. There was a marked peristaltic wave, resembling two balls passing from left to right. Child was sent to the hospital where he died in three days.

CASE V (pyloric stenosis). Male child, aged three months, weight at birth six pounds four ounces. Present weight five pounds fifteen ounces. When two weeks old began to vomit; was breast fed for first six weeks, then given modified cow's milk.

Seen first, May 15, 1913, again on the 17th, then weight was five pounds fourteen ounces. On examination, a tumor the size of a small olive could be felt at the pyloric end of the stomach, and a characteristic double wave could be seen passing from left to right shortly after taking food. The child was greatly emaciated and was sent to the hospital, where it died two hours after admission. Autopsy revealed considerable dilatation of stomach and a small degree of hypertrophy of the pylorus.

CASE VI (pyloric stenosis, June 10, 1913). Female child, aged two months, breast fed up to two days ago, when barley water was substituted. Vomiting very little until one month of age, then vomiting became frequent and persistent, occurring at time of nursing and one half to one hour after. Weight at birth eight pounds, present weight six pounds nine ounces. For twenty-four hours, while taking barley water, child did not vomit. Peristaltic wave was present, also constipation, emaciation marked.

June 12, 1913, the child was sent to Babies' Hospital, where a gastrojejunostomy was done by Doctor Downes. The stomach was found to be much dilated and the pylorus hypertrophied, being one inch in length, and one half inch in diameter, and very fibrous. The child died three or four days after operation (a poor risk as she went into collapse shortly before operation).

From my own observations and those of others, we are forced to admit that pyloric spasm plays a most important part in each group of these cases because the symptoms in the great majority of cases

are abrupt in their onset. Then again in a number of cases all symptoms will subside and the child will recover.

The usual history is that a breast fed child, after several weeks of apparently good health, begins suddenly to have persistent projectile vomiting with no apparent cause. This vomiting occurs soon after feeding or one half to one hour after, and the amount vomited is often much greater than that taken into the stomach. Frequent regurgitation of food rarely occurs in these cases, and fever or pain is never present. There is usually marked constipation, and only very small stools are passed. There is progressive loss of weight.

This sudden onset can be accounted for only by a spasmodic condition of the pylorus. No doubt in many cases this goes on to a definite hypertrophy of the pyloric muscle and a gradual or rapid closure of the pyloric orifice, unless early treatment is begun. It is frequently difficult to say in a given case which element, spasm or hypertrophy, predominates, but no doubt both are present to a greater or less degree at some time.

Diagnosis. Several days of close watching are necessary in some cases before a peristaltic wave is seen, and even then in the mild types, it may not be observed. A palpable tumor is not necessary for a diagnosis and is not always felt, but usually, especially in severe cases, a distinct tumor from the size of a bean to that of the phalanx of the ring finger can be felt to the right of the median line below the border of the ribs.

At the time or just after vomiting, this movable tumor is most distinctly and easily felt. In cases where a tumor is not felt, it does not necessarily follow that only spasm exists, since operation has frequently shown a typical tumor. Examination of stomach contents shows absence of bile in stenosis cases.

The cardinal points, then, to be noted in making a diagnosis are sudden onset, usually in a breast fed child, persistent projectile vomiting, constipation with small stools, or in the worst cases obstipation, steady loss in weight (one to two ounces a day). Aspiration of stomach, several hours after feeding, will often show that little or none of the milk given has passed through the pylorus, usually from one half ounce to four ounces being retained, even though vomiting may have occurred. The peristaltic wave, when seen, is diagnostic. It has the appearance of a small ball rolling just underneath the abdominal muscles. Often there will be a double wave, a second having started before the first disappears. Tumor of the pylorus may or may not be felt. In these cases there is a decided reduction in the amount of urine passed and in some it is almost absent.

The etiology of this condition is obscure. Necropsy in fatal cases has shown no change in the fibrous condition of the tumor of the pylorus (Downes). Disturbances of digestion or disease of the mucous membrane of the stomach may play a part in the causation of pyloric spasm.

Prognosis. The prognosis in each case depends largely upon the severity and duration of the symptoms and the physical condition of the child. The

question arises as to the advisability of surgical or medical treatment. Statistics from various physicians indicate that surgery offers the greatest hope, yet we must weigh the risks of either treatment since each case is individual. All spasmodic cases should get well under medical treatment. If under medical treatment, symptoms gradually abate and the child improves, recovery is a matter of a few weeks. If, on the other hand, the symptoms continue, the child is bound to succumb to starvation unless given surgical relief. In treating a case medically, we must bear in mind the danger of acute starvation, marasmus or chronic starvation, sudden death without apparent cause, and intercurrent disease while the child is still feeble. Moreover, from the surgical standpoint, we have certain dangers, any one of which may happen, such as shock, nonunion of the wound, hemorrhage, infection, leakage, or obstruction. The amount of shock, considering the operation, is small, and is less the younger the patient. Medical treatment offers much better hopes for cases in private practice than for dispensary or hospital cases. If a distinct tumor of the pylorus is felt, surgery probably offers the best chance of recovery.

Treatment. The diet should be breast milk from the mother or wet nurse, dilution of which may be necessary. When breast milk is not obtainable, suitably modified cow's milk may be given every half hour in very small amounts at first, and the amount increased at lengthened intervals of feeding as symptoms improve, to one to three ounces every three hours. A milk formula, low in fat and low in sugar, should be given in the beginning. The unsweetened evaporated milk diluted with barley gruel, is best suited for this purpose.

A good formula for feeding vomiting infants is a mixture of barley flour or imperial grannum, skimmed milk, and water in suitable proportions for the age. This should be cooked in a double boiler for thirty minutes. The food thus thickened by means of a cereal is more readily retained.

The stomach should be washed twice daily with normal saline solution, of a weak solution (five per cent.) of sodium bicarbonate, the temperature of the water being 110° F.

Small doses of opium and atropine often act favorably in allaying the spasm. The tincture of opium may be given in one half to one drop doses three times a day, or paregoric five drops three times a day. Atropine may be found useful in doses of grain $1/800$ to $1/500$, three times a day. On the whole it is better not to rely too much on drugs, and many cases get along well without them.

Posture is important in these cases. The head of the bed should be raised or a pillow placed under the child so that it lies on a marked incline. This decreases the vomiting and aids in the expulsion of gas. After feeding the child must be kept very quiet for at least an hour.

The postoperative treatment, according to Holt and Downes, consists in giving breast milk alternately with boiled water. Three hours after operation, two teaspoonfuls of breast milk are given, followed in one hour by two teaspoonfuls of water. The next day one half ounce is administered every

three hours. In forty-eight hours one ounce is allowed, and at the end of a week the child is taking two to three ounces at a feeding. On the twelfth day after operation, the child is put to the breast. If after twenty-four to forty-eight hours there has been no stool, one to two teaspoonfuls of castor oil is given. Colon irrigations of a normal saline solution are given after twenty-four hours, but sooner if there is distention with gas. It is well to allow as much as possible of the saline to be retained and absorbed from the bowel.

Since writing the foregoing I have had the opportunity of listening to an article on pyloric stenosis, dealing with the operative treatment, by Dr. William A. Downes. He has now records of over eighty cases operated in with a mortality of thirty-two per cent. In the last fifty-two cases he has done the Ramstead operation, which consists in simply opening the abdomen and making an incision through the muscular fibres of the pylorus down to the mucous membrane, and then closing up the abdominal wound. This operation can be done in twelve or fifteen minutes, and there is little or no shock to the patient. The mortality has been only twenty per cent. The old operation of gastroenterostomy took forty-five minutes or longer, and the mortality was much higher.

104 WEST SEVENTY-SIXTH STREET.

INTRAVENOUS SEROBACTERIN THERAPEUTICS.*

A Preliminary Report,

BY WILLIAM EGBERT ROBERTSON, M. D.,
Philadelphia.

Bacterin treatment is an outgrowth of studies in immunity and should therefore be approached from that angle. It is not necessary, however, to review in extenso the subject of immunity, in a general way, well understood by all practising physicians who make any pretense at an effort to keep abreast of the times in medicine. It will suffice to outline in a sketchy way the chief features.

Immunity from certain infectious diseases in those who have already suffered an attack has been known for nearly 3,000 years. For instance, Thucydides, who was born about 471 B. C., noted immunity in relation to the plague at Athens. Practical use of this fact seems to have been made use of first by the Chinese, who are said to have inoculated against smallpox by placing in the noses of healthy individuals, crusts taken from those with active smallpox. In Europe it seems to have been recommended first by Lady Mary Wortley Montagu, wife of the British Ambassador to the Court of Turkey, who submitted her daughters to inoculation. She it was who said, that the natives of the Orient submitted as readily to inoculation as the British did to the Bath waters. Of course, the dangers of this plan were, the occasional severe and even fatal form of the malady in those inoculated, and the ever present danger of such individuals as foci of infection to others. Thus it soon fell into

*Read before the South Branch of the County Medical Society, February 25, 1916.

disrepute in more enlightened countries, and in the eighteenth century was contravened by law in the early American colonies. Jenner's work and nearly a century later, that of Pasteur, are the essential bases upon which our present superstructure has been reared; notably on the work of Pasteur, who appreciated the importance both of attenuation and passage through more or less resistant animals, as factors in the production of immunity, and their application in a therapeutic sense. The shortening of the incubation period in experimental rabies enabled him successfully to combat the disease in man. This he first accomplished in 1885. Haffkine, in 1892, using attenuated cholera vibrios and injecting them parenterally, gave us a means of lessening the morbidity and mortality of cholera. Salmon and Smith, in 1886, were first to show that for the production of immunity, living microorganisms were not necessary, but that equally good results followed when bacteria killed by heat were injected, or even the products of bacteria from which the organisms had been removed by filtration. Prophylaxis against infections by means of cultures killed by heat or antiseptics we owe to Kolle, who, in 1896, suggested the plan as preferable to Haffkine's attenuated culture. It was in 1896 also that Sir Almroth Wright introduced the method of employing killed typhoid organisms for the purpose of immunization against typhoid fever, and, in 1898, Shiga used the same method with dysentery bacilli against bacillary dysentery.

Thus far all the measures cited were prophylactic; methods for active immunization. The first attempt at specific therapy was that of Koch, in 1890, with his tuberculin. This was a failure, however, at least as originally employed, and, in 1897, he introduced, rather as an immunizing agent, a suspension of finely ground bacilli. To Wright we owe the present use of bacterins. He originally suggested the employment of killed microorganisms as a therapeutic measure, especially in chronic affections. This was in 1904. He further suggested the advisability of employing autogenous strains. With the exception of organisms producing soluble toxins, however, notably diphtheria and tetanus, all the others, in which the toxin is endogenous—an integral part of the cell—their employment therapeutically has been more or less a disappointment. Even when used for active immunization, with the exception of typhoid, the results have been indifferent, as was the case with the work of Wright with the pneumococcus, in his attempts to protect against pneumonia among the natives in India. As a therapeutic measure, however, in certain conditions, a fair measure of unanimity has come to exist among the profession. This is by no means general, for it is quite possible to recognize two camps, viz., those who are willing to admit the possible value of bacterins in local and chronic infections, but cannot see the rationale of employing them in acute infections, which for the most part are septicemias, and in which the host is already laboring against an accumulation of toxin. Let us consider this latter phase first.

What happens when an individual falls ill with an acute illness of germ origin? The microorgan-

ism, acting as an antigen, provokes the formation of reactive substances called antibodies, and whenever recovery occurs, it is because these bodies exist in sufficient amount to adsorb or neutralize the toxins. In some instances the infection is so overwhelming that reaction is paralyzed, so to speak. The organisms multiply too rapidly, and pour out too large an amount of toxin to be successfully dealt with. The basic fact, however, is that the same organism which begets the infection, brings about the cure when recovery occurs. As has been seen, all the early work in immunity dating from the time of Jenner, had for its object the attenuation of the infective material and shortening of the period of incubation. We seem to have lost sight of these facts in large measure in our therapeutic applications. To be sure, when we kill the organisms, we more than attenuate them, but we cannot carry the analogy further by attempting to shorten an incubation period in one already actively infected. What we aim to do is to cause an outpouring of antibodies which will overwhelm the toxin. But are we likely to do this when we inject bacterins subcutaneously? Apparently not, judging from the usual results in acute infectious diseases. Studies in anaphylaxis have shown the vastly greater susceptibility of an animal to intravenous injections than to those given subcutaneously or intramuscularly. This is true of all foreign proteins, and as bacteria are proteins and foreign, this is equally true of them. It seems possible that the variability of clinical results may be due to the fact, that when we inject subcutaneously, or especially intramuscularly, prompt reactions and beneficent results follow only in cases in which by chance we happen to enter a vein.

Naturally, the ideal bacterin seems to be one robbed of its toxicogenic properties, but still retaining its antigenic properties. This has never been attained. In fact, as stated earlier, the same toxin which causes the infection, serves to awake in those who recover, reactive substances which bring about the recovery. The sole question raised by dissenters is, Are we justified in acute infectious diseases in introducing in any manner into a host more of the same toxin from which he is already suffering the effects manifested by that particular disease entity? It must be borne in mind that immunity is probably brought about by adsorption of the antibodies by the antigen, and when this is well balanced, the body cells are left free to produce antibodies in excess. The incubation period of a disease is one in which the foreign protein in the shape of the infecting organism is adapting itself to its environment, gradually awakening in the tissue cells that property of reaction, with the production of antibodies. This requires a variable period of time according to each particular disease. In acquired infectious diseases, the living active agent multiplies more or less rapidly, and in proportion to the rapidity of increase, must require material for sustenance, and production and adsorption of antibodies may suffer in consequence. In our therapeutic efforts in the use of bacterins, therefore, we should have in mind the elimination of the incubative stage of germs, obligatory in acquired disease, and by employing killed organ-

isms we avoid the necessities and dangers of living microorganisms, leaving them the function of adsorption of antibodies, and the tissue cells freer to produce more.

To effect the first part of this last proposition, viz., to elide the incubation stage, thereby introducing organisms already in a state capable of reacting favorably and at once upon the defensive mechanism, we employ the so called serobacterins. These are prepared by sensitizing microorganisms with serum from an animal which has been immunized against that particular germ. It must be apparent, therefore, that the generally accepted plan of injecting dead, nonsensitized germs beneath the skin or into the muscle, and even this latter is rarely done, must fall far short of the results attainable by employing serobacterins intravenously. Several years before I became familiar with Besredka's work on sensitized bacterins, the possible advantages of such a plan occurred to me, and I had my interns in the Episcopal Hospital prepare them for me. In other instances I employed an immune serum taken from a patient who had recovered, and injected it with an ordinary or nonsensitized bacterin. Despite the employment of large doses, the results were indifferent until I gave them intravenously. Two diseases were studied with special care from the laboratory standpoint, viz., typhoid fever and pneumonia. In these, as a rule, the blood picture is fairly definite. In typhoid there is a leucopenia with a diminution of polynuclear neutrophils and a relative increase in lymphocytes, while in pneumonia there is a leucocytosis with an absolute increase in polynuclear neutrophils. It seemed to me that these should become more pronounced after the use of bacterins. This is not the case, however, when ordinary, nonsensitized bacterins are given. When serobacterins are injected subcutaneously, however, in most instances the expected happens, but when they are given intravenously, the results are very striking and leave no room for doubt. Whether this is constant I am as yet unable to say, as my opportunities for observation have not been sufficiently numerous.

When I was in the habit of giving bacterins subcutaneously I never felt satisfied that any definite result followed, whatever the dose and whether sensitized or nonsensitized bacterins were employed. When I gave them deeply into the muscle, however, I would occasionally get a sharp reaction, but the inconsistency of this result seemed to indicate something peculiar to the individual. In the light of my intravenous work, however, I now believe that reactions were obtained only when by chance I penetrated a vessel. As an instance of the possibilities resulting from the deliberate introduction of sensitized bacterins into the circulation, I may cite a case of typhoid fever in a lad of fifteen years at about the end of the second week of a typical attack. Five hundred millions each of sensitized typhoid and paratyphoid organisms were introduced intravenously. In seven minutes he had a chill which lasted twenty-three minutes, after which his temperature rapidly rose to 106° F. Twenty-four hours later, it registered between 99° and 100° , and on the following day was down to 97° to hover between 97° and 98° for approximately a week, when

a relapse developed. After allowing the relapse to proceed for four days, during which time the spleen became materially enlarged, he again received an intravenous injection, only one half the dose previously employed being given, again followed by a sharp reaction with chill, hyperpyrexia, and rapid fall.

It is of special interest, too, to note that in one case of unresolved pneumonia treated by sensitized pneumobacterins comprising Groups 1 and 2, the mucus and several strains of heterogenous type, a prompt change in the blood picture took place, the leucocytes rising, with a polynuclear increase from seventy-four to ninety per cent., manifested clinically by a very prompt impress on the consolidated lung, which quickly underwent resolution. Our results also with lobar pneumonia in its active phases have been equally good, but in the acute phase there is often a tremendous increase in the total leucocyte count.

In another paper, which I hope to publish in the near future in collaboration with my associate, Doctor Beckley, we present several infections treated intravenously by serobacterins, with a full exposition both of the clinical and laboratory manifestations.

We now turn to the other phase of the proposition previously stated, that is, the value of bacterin therapy in local and chronic diseases of infectious origin. More unanimity of opinion exists in dealing with this class of cases, than prevails with respect to the acute, general infections. Wright argued that in the class of conditions now under consideration, time was given for limitation and circumscription of the morbid process. In consequence we do not begot an active immunity, but rather the more strict limitation of the focus and prevention of new foci. He said that we merely attempted to mimic Nature's protective measures. He cited as an instance the local and systematic disturbance which results when a tuberculous joint is too actively manipulated, or when a case of focal tuberculosis is allowed to exercise too much, fever, malaise, sweats, and prostration may result from an excessive antituberculinization. This he termed a negative phase, based upon the opsonic index. So, too, when a focal, purulent infection is massaged, a negative phase may result. A knowledge of these facts, properly utilized, however, may be turned to therapeutic advantage, as when we strictly limit the amount of effort made in a tuberculous case, being guided by the subjective phenomena and the pulse rate and temperature. So, too, in the employment of bacterins in focal and chronic infections, such as furunculosis, acne, syphilis, impetigo, pyorrhea alveolaris when emetine fails, or in conjunction with emetine and antiseptic mouth washes, in otitis media, sinus disease, gonorrheal arthritis, prostatitis, epididymitis, mastoid disease due to common pus organisms or pneumococci, and in infections due to colon bacilli.

For the general practising physician, stock cultures have been prepared from many strains. Autogenous bacterins are available only when well equipped laboratories and trained assistants are at hand. The dose also has been determined by the conjoint observations of clinicians and laboratory

workers, and the stock product is supplied in proper proportions. The question concerning the greater validity of serobacterins enters also into the treatment of focal infections, but is of less importance than in acute, general infections, as the time element is a minor factor. As to whether their intravenous employment will yield more uniform and more satisfactory results, I am at this time not qualified to express an opinion.

327 SOUTH SEVENTEENTH STREET.

DIPHTHERITIC PARALYSIS.*

An Unusual Case, Complicated by Pneumococcic Meningitis; Recovery,

By H. BROOKER MILLS, M. D.,

Philadelphia,

Professor of Pediatrics, Medical Department, Temple University;
Pediatrist, Samaritan, Garrettsan, and American
Stomach Hospitals;

AND JOSEPH A. MENDELSON, M. D.,

Philadelphia,

Resident Pediatrist, Samaritan Hospital.

The unusual clinical manifestations and the remarkable recovery of the case which is the subject of this paper are our reasons for bringing it to attention at this time. The patient, a boy aged seven years, is one of three children of healthy parents, all living and well. The only important points in his previous history are that he was bottle fed, condensed milk being used; was always weak and delicate; had chickenpox at the age of two years; suffered frequently with attacks of tonsillitis, and had always coughed more or less, especially during the winter months.

Six weeks before entering the hospital he had an attack of what was believed to be diphtheria, although a culture from the throat at that time was negative. An injection of antitoxin was given, however, and the throat symptoms cleared up, but eight days later paralysis of the throat and neck muscles ensued, so that the child could not masticate, swallow, or hold his head erect. The muscles of the arms and legs were also involved, so that he could not use any of his limbs. Six days later he was taken ill with pneumonia, which was accompanied by marked cerebral involvement, of which convulsions were a prominent symptom. The Argyll Robertson pupil, the Babinski sign, and the Kernig sign were all markedly positive. Obviously, the questions to determine were: 1. The cause of the paralysis; and, 2, the cause of the meningitis.

We realized that the paralysis was not caused by the pneumonia because it was present six days before the pneumonia developed, and therefore of necessity it must be due either to the diphtheria, if that is what the child had, or to the antitoxin injection. Knowing that paralysis does follow diphtheria and does not follow antitoxin injections, we felt compelled to assume that the child had really had an attack of diphtheria. In this view we were supported by the family physician's report of the clinical symptoms which accompanied the sore throat, and also by the fact that, two weeks after our patient suffered with the sore throat, his brother had

a severe attack of diphtheria, for which he is still a patient at the Municipal Hospital.

The only way in which the meningeal symptoms could be traced to the diphtheria was the possibility that the attack of pneumonia was due to the Klebs-Loeffler bacillus instead of the pneumococcus. In this way, the paralysis, the pneumonia, and the meningitis could all be traced to the one primary infection by the Klebs-Loeffler bacillus. We feel that it is perfectly possible for the foregoing to be true in spite of the culture from the throat being negative, because the child could have had the toxin circulating in his blood without the Klebs-Loeffler bacillus being demonstrable at the time that particular culture was taken. In this statement we are supported by that of Doctor Guthrie, of the Johns Hopkins Hospital. In an address before the Philadelphia Pediatric Society, some time since, he stated that the bacillus may be present at one time and not at another, having a free interval, so to speak, during which the cultures would be negative.

It is maintained that paralysis occurs as a complication of diphtheria in from fifteen to twenty per cent. of all cases, and, while not common until after the second week, may occur at any time. The parts of the body most commonly involved in the paralytic process are exactly those which were affected in our case, and the child has since acquired a gait which Wilson describes as an ataxia resembling that of tabes, which he (Wilson) has observed in these cases and attributes to the action of the toxins on the columns and nerve roots, analogous to the condition experimentally produced by injecting the Klebs-Loeffler bacillus or its toxins.

It is well known that the bacillus may be found in the throats of healthy people, without suspicion of diphtheria, just as its detection may be impossible in a case which is clinically diphtheria. Anaphylaxis may be suggested, following the injection of antitoxin, but we feel we can dismiss this point without further consideration, as paralysis would not be likely to occur after anaphylaxis.

It is true that the spinal fluid might have been studied and the Shick test done, but laboratory facilities were not available at the time. Had they been, however, we should hardly have considered them in view of the child's desperate condition, as it seemed to us impossible for him to live more than a few hours or a day or two at the most.

At the present time, the child is able to walk and talk fairly well, to masticate and swallow as naturally as before the attack, and is daily improving. His treatment during the acute stage of his illness consisted of strychnine, grain 1/100, and hexamethylenamine, five grains every three hours. Since he has been out of bed he has been receiving three massage treatments weekly in the orthopedic department, with marked benefit.

Since writing the foregoing our attention has been called to another case of paralysis occurring eight days after the onset of an attack of diphtheria, the child in the meantime having received three injections of antitoxin. The condition of paralysis is still so marked that the child cannot roll over in bed.

*From a paper before the Samaritan Hospital Medical Society, Philadelphia, M. C.

IMMOBILITY OF THE DIAPHRAGM FOLLOWING PLEURAL EXUDATES.

A Preliminary Report,

By JOHN H. PRYOR, M. D.,
Buffalo.

About two years ago, a conviction was formed that a crippling of one half of the diaphragm frequently occurred as a result of the accumulation of fluid in the pleural cavity, and that so called recoveries were to an unknown extent deceptive. This belief led to an investigation which has been prolonged until the present time. In an article entitled, *Some Puzzling Features of Empyema*, presented to the Buffalo Academy of Medicine, November 10, 1915, and published in the *NEW YORK MEDICAL JOURNAL*, January 1, 1916, attention was directed to this conclusion, and the great importance of fluoroscopic examination as a means of detecting the effects then mentioned was emphasized. The purpose of this contribution is confined to the consideration of the material collected with reference only to the condition of the diaphragm as exhibited by mobility after the disappearance or removal of fluid exudates from the pleural cavity. The interesting inquiry could not have been pursued without the cordial and enthusiastic assistance of Dr. Leonard Reu and Dr. Edward C. Koenig, both expert roentgenologists with wide experience and technical knowledge. They have records of the fluoroscopic search and stereoscopic radiographs and will present in detail the results of observation at some future time. A number of my colleagues have kindly given much aid in locating patients and securing their co-operation. Doctor Lo Grasso, Doctor Miller, and Dr. Harry Mead have proved a great source of help by allowing me to examine and secure records of many patients from the Municipal Hospital and the Adam Hospital for Tuberculosis.

Particular attention was directed to the mobility of the diaphragm on the affected and normal side, the position of the pericardium, the movement of the heart, and the condition and movement of the lungs. The leaflets of the diaphragm were inspected during normal breathing, forced inspiration, and expiration, to note the comparative excursion and evidence of restriction and change in the shape, or absence of the dome. The phrenicopericardial angle and the phrenicocostal sinus were also regarded as indicative of the extent of morbid inaction. Allowance was made for the normal modifications in the sweep of the diaphragm due to position in standing, sitting, and lying down, as described by Holzknecht. The amount of fluid aspirated or evacuated in the vast proportion of cases varied from one to two quarts. In only six instances was the amount withdrawn estimated at one pint or less. Examination was made from one month to nineteen years after operation. In five patients moderate collections of serum apparently recovered by absorption without aspiration. The fluid was present for days or weeks before removal, but obviously the exact period of pressure cannot be determined.

RESULTS OF EXAMINATION.

Thus far eighty-three patients have been examined. Of these, sixty-five were over fifteen years

of age at the time of attack and on the date of examination. Eighteen were children whose age varied from two and one half to eleven years. Of the whole number, forty-seven gave a history of having suffered from empyema, sixteen from pleurisy with effusion, and twenty from pleurisy with effusion associated with pulmonary tuberculosis. The results of careful observation in the entire group were as follows: In fifteen instances the comparative movement of the diaphragm on the affected side was normal, in seventeen the excursion was more or less restricted, and in fifty-three one half of the diaphragm was completely immobile. About one out of five recovered with function unimpaired, approximately the same proportion revealed disordered or limited action, and in one of each 1.6 instance, or about sixty-three per cent., all motion was lost.

EMPHYEMA.

When the aggregate is divided into special groups for further analysis and explanation, we find that an attack of empyema is a very serious matter so far as the attendant and subsequent damage is concerned. The accepted opinion that empyema in the adult and in the child is characterized by marked differences in the course, duration, and subsidence of the disease has led to separate consideration of its effects in the two classes. Of the thirty-one cases of empyema which occurred after the fifteenth year, twenty-four had apparently ended favorably and four were open cases with drainage. The surprising total of twenty-six revealed complete unilateral immobility. The leaflet of the diaphragm was found, with the exception of several instances, in the low position or below the middle position as seen in quiet breathing. The phrenicocostal sinus was abolished in thirty-four and the phrenicopericardial angle in thirty-one. The half of the diaphragm was flat, except in four instances in which it was notched near the costal surface. In three cases slight movement upward during inspiration seemed to occur, but this was found to be due to the costal and abdominal effort and a twisting of the lower part of the chest, which I have called from the lack of a name *teeter tower*. The ribs of the affected side are pulled down and inward, while the spine is curved and the ribs of the normal side are drawn apart and outward. This attempt at compensation may give the appearance of paradoxical movement first described by Kienböck, in 1907. The dome or any curve was always absent. Of the remaining five cases, one showed limited motion with a flattened dome and two much restricted motion with lost dome and obscuration of the costal space. Only two presented evidence of full excursion equal to the opposite side.

Naturally the two patients who escaped perceptible damage were of much interest and fortunately came under my observation after operation. Both had originally a two rib resection and in each about two quarts of pus was removed. As far as could be ascertained, the accumulation was present for about one week prior to evacuation. Both had decided thickening of the costal pleura with adhesions and apparently little lasting collapse of the lung. The diaphragm seemed to move as perceived through the opening. I have learned to doubt the

accuracy of that observation since. One was a girl aged eighteen and the other a boy aged sixteen years. Three years later, the boy developed a sacculated empyema on the same side, and this rarity was reported nine years ago as a case of recurrent empyema. At the time of the second operation, the pleura was found thickened in honeycomb form and massive adhesions were exposed to view. These two patients had very severe attacks. Experience led to predictions which proved quite unjustified and increased the doubt that adhesions were alone responsible for the injury to the diaphragm.

THE CHILD.

Only eighteen children have been examined at the present time. Their ages ranged from two and a half to eleven years. Sixteen gave a history of an attack of empyema and two of a pleurisy with effusion. I will dismiss the latter by stating that one had free mobility and one none. All sixteen cases of empyema had apparently ended in recovery, except one in which the fluoroscope revealed an additional collection of pus. In eight the segment of the diaphragm was absolutely immobile, in five motion was restricted with imperfect dome and signs of adhesion, and in five the movement of the diaphragm appeared to be normal. These children were examined from one month to two years after operation. Renewed scrutiny later may exhibit a more hopeful picture wrought by restitution and compensation. It is realized that the number included at this time is too small to warrant deductions of a general character, but two tentative opinions may be allowed. The child does not escape the crippling effects found in the adult, but the frequency of permanent injury is not so great.

PLEURISY WITH EFFUSION.

The results in pleurisy with effusion as observed in sixteen adults are as follows: Nine displayed complete immobility on the affected side, one with slight movement of a part and loss of dome, two slightly restricted with depressed cap of dome, and three normal mobility. In ten the costal space was obliterated and in eight the phrenicopericardial angle was not visible. Compared with the results of empyema, the outcome is more favorable. The forms of restriction probably due to adhesions are more easy to detect and correspond with the types described by Arnspurger and others.

PLEURISY WITH EFFUSION AND TUBERCULOSIS.

Of the cases of pleurisy with effusion associated with tuberculosis, twenty-one are included to discern proof of different manifestations in the course and termination of this affection. In fifteen cases the pulmonary tuberculosis was in the incipient stage, and in five the disease was of the moderately advanced type. In twelve there was entire immobility of the diaphragm on the affected side, two had greatly restricted motion with flatness and no dome, two limited motion with slight appearance of dome, and four comparatively natural movement. The altered configuration ascribed to adhesions was found as previously described.

One case belonging in this series is worthy of special consideration. A man aged thirty years, with chronic fibroid tuberculosis of two and one half

years' duration, had a history of an attack of pleurisy with a large effusion on the left side, and later another attack with a small amount of effusion on the right side. He complained repeatedly of loss of breath on slight exertion. The involvement of the lungs did not seem to account for the dyspnea, and the fluoroscopic screen was employed to explore his diaphragm. Complete bilateral immobility was detected with pure costal breathing. The diaphragm was in the lowest possible position, with perfect view of the costal spaces, and the heart was elongated and pulled down by a stretching of the pericardial attachments. The effects from pleural exudates associated with pulmonary tuberculosis show no marked dissimilarity from those of the simple variety. Moderate or small effusions which disappear by absorption may be followed by an immobile diaphragm. Possibly the appearance of tuberculosis of the lung following sometime after the presence of pleurisy may be traced to the inefficient and disordered work of an adherent lung no longer aided in its work by a helpless half of the diaphragm.

PNEUMOTHORAX.

A full report on conditions arising after attacks of pneumothorax will be postponed for future consideration. Mention is confined to five cases and only in a suggestive way. One patient had a pneumothorax with small amount of effusion and recovered without aspiration. The leaflet of the diaphragm was found to have greatly restricted motion, with loss of dome and evidence of adhesions. Another had a sudden attack with no effusion. The air was aspirated twice in forty-eight hours, and one year later the diaphragm revealed full motion and the lungs showed no evidence of tuberculosis. An examination of three cases in which artificial pneumothorax had been produced and continued for some time, revealed entire loss of motion on one side. It seems probable that one more untoward effect of this procedure may be added to those already discovered—particularly when the high percentage of consequent complicating attacks of pleurisy with effusion is considered.

DIAPHRAGM ON NORMAL SIDE.

Careful attention was devoted to the unaffected side in all cases to observe the extent of play of the opposite side. Extra effort with greater excursion was noted only three times. In one with marked collapse of the lung and dyspnea, the other leaflet descended to the lowest level and rose to the upper border of the third rib anteriorly. The respiration in many cases was largely costal and increased in frequency. In fifty-one cases of the eighty-three, the excursion of the unaffected leaflet was apparently below normal, and in twenty-four the movement was decidedly diminished.

CONDITION OF THE LUNGS AND HEART.

Evidence of collapse or atelectasis of the lung as the result of pressure was surprisingly meagre. Only six exhibited the appearance of an airless area confined to a part of the lower lobe, and three of these were observed from one to two months after operation. Of the open cases with drainage, four were marked by extensive collapse with a connecting

band of adhesions attached to the costal pleura at the site of resection. Otherwise the lung was permeable, but incapacitated for its full expansion by the absence of diaphragmatic help and the unknown extent of restricting adhesions.

Displacement of the heart in various forms and evidence of pericardial adhesion have been exhaustively described in the literature of röntgenology. Three interesting cases of malposition may be worthy of mention. All followed right sided exudates. In one child observed two years after an effusion the heart was displaced entirely to the right of the sternum, and in two the heart, pushed to the left, was twisted during expiration so that its full length auricle and ventricle on one side rested upon the diaphragm with the apex pointed upward directly toward the axillary line.

CAUSES AND PREVENTION.

Obviously the important clinical problem for consideration is, Can these destructive consequences be avoided or repaired? That perplexing question leads to a discussion of the obscure causes. Any reference to the probable or possible pathological conditions which may induce an immovable diaphragm will be brief at this time, as I hope to consider that matter later after further research. The pathologists offer very little aid. They are almost mute concerning the diaphragm. That very important and complex structure receives scant or no attention at the autopsy. Much stress has been laid upon adhesions as the responsible agency. The frequent occurrence of adhesions in certain localities and their fettering influence is well known, but there is room for the contention that they may not be the chief factor in the production of immobility and may be formed after the diaphragm has become disabled. The common sites of origin are in the phrenicocostal space and between the pericardium and the diaphragm, but it is difficult to understand how they occur while fluid is present in the pleural cavity. Their appearance after evacuation does not explain a fixed diaphragm, because the leaflet is found to be immobile immediately or soon after operation. Nor will adhesions between the lung and diaphragm take place for an indefinite time because the diaphragm does not ascend and the compressed atelectatic lung does not descend to provide contact. The opinion is advanced that adhesions play a secondary role to a still unknown extent and attack a part of the diaphragm already entirely or partially paralyzed. Furthermore, it is highly essential that adhesions between the diaphragm and the abdominal organs, particularly the liver, should be thoroughly considered and searched for, as their presence would elucidate several phases of a problem now in a conjectural stage. It has been shown that great thickening of the pleura and massive adhesions may be visible through the pleural opening, and yet the motion of the diaphragm be undisturbed. Repeated observations at frequent intervals should be made at hospitals after the removal of fluid. In the case of bilateral immobility the costal sinuses and the phrenicopericardial angles were remarkably increased in extent and apparently free from exudate.

Much importance has been attached to the high

expiratory position of the diaphragm in uncomplicated phrenic paralysis. Obviously that pathognomonic sign bears relation to entirely different conditions and causes. When paralysis is associated with collections of pus or serum in the pleural cavity, the half of the diaphragm is mechanically depressed and held in low position by weighty pressure. Its function is abolished for days or weeks. The factors of nonuse and inflammatory changes in its structure must be considered. Inflammation of its one or two serous coats, or a diaphragmitis, form a part of the pathological process. The diaphragm becomes thickened from exudative infiltration, and later atrophy occurs to promote stiffening and loss of elasticity, especially in the dome. This is not merely an acute, but frequently a chronic involvement. Negative pressure is altered, the aspirating power of the lung is diminished, and the abdominal movements are curtailed. Any free exudate in the pleural cavity presses upon and bathes the diaphragmatic surface. The collection forms there and remains until the last in that region, particularly in the costal sinus. The costal sinus provides an ideal pocket for retention and infection and later for organized exudate and degenerative changes in the region of the muscular attachment of the diaphragm. Paralysis may be caused by incompetence of the muscle or changes in or about the nerve filaments along their distribution where pressure is exerted both above and below the diaphragm. Hilton describes the wise provision of Nature in placing the nerve distribution in the diaphragm along its under surface to obviate pressure from the lung. That element of pressure seems very slight compared with the dual force exerted by fluid above and the liver, for instance, below. There is a possibility, submitted now in a hypothetical way that gradual paralysis of the phrenic nerve might be induced in its course through the mediastinum along the pericardium and phrenicopericardial ligament to the diaphragm. This region constitutes the point of greatest lateral pressure accompanied by displacement of the heart. The pericardium is held in position below by the diaphragmatic attachment and above by the cervical fascia. The arrangement is much like that of a punching bag. As the heart is pushed and twisted to the opposite side, the drag and the stretch is applied mostly to the diaphragmatic ligament.

TREATMENT.

It is plain that a search must be made for the causes to supply methods of prevention and possible remedial measures. So far as empyema is concerned, early recognition and drainage are imperative. There seems to be no excuse for delay until there is a large accumulation of pus in the chest. Thorough drainage with a sufficient opening and as complete evacuation during the period of discharge as possible by change of decubitus, cough, deep breathing, and employment of the reversed Fowler position to prevent collections in the neighborhood of the diaphragm and especially the costal sinus, are apparently the only means we possess. As to the very low opening, there are some objectionable features. It is sometimes dangerous if too near the insertion of the diaphragm, and much thickening of

the pleura and large bands of adhesions may result. A determination to secure drainage at the most dependent regions in the back adds an element of great discomfort to the patient. The long tried experiment of irrigation evidently did not prove successful. The chief question open for dispute in the treatment of a serous effusion is, When should we aspirate? No time need be wasted as to the advisability of action before difficult breathing and displacement of the heart are concerned. Have our views and established practice of late been too conservative? More experience along a definite line of observation, particularly in hospitals, should lead to more accurate and scientific clinical deductions. Waiting with the prospect of absorption beyond a certain limit and acceptance of the view that a moderate amount of exudate is a natural effort in conservation, may be a mistake. How long fluid should be allowed to remain undisturbed, is a matter worthy of investigation.

If the results of disease of the pleura contained in this report are strengthened or verified by further and more comprehensive study, then the clinician, röntgenologist, pathologist, and experimental pathologist have an incentive to create a new field for research. To the best of my knowledge, there is no direct literature obtainable upon the subject. Careful search in Buffalo, Washington, and elsewhere has thus far proved unsuccessful.

26 LINWOOD AVENUE.

ISCHIORECTAL ABSCESS FROM A FISH BONE.*

Followed by Fistula ani, Operation, and Recovery of Fish Bone Four Months after Swallowing,

By J. F. SAPHIR, M. D.,
New York,

Visiting Proctologist, People's Hospital; Chief of Clinic, Diseases of the Rectum, German Poliklinik; Associate Physician, Home of the Daughters of Jacob.

In presenting the following case, I wish to call especial attention to one of the many and varied pranks of Nature, in her efforts to confound and to put to the test the diagnostic acumen of the surgeon.

CASE. A. J., aged thirty-four years, lawyer, referred by Dr. William Grossman, November 3, 1915, felt well until four years ago, when he was operated upon at the Eastern District Hospital, Brooklyn, for appendicitis. He left the hospital in six days. The wound healed by primary union, but he complained of abdominal pains about the umbilical region from the time of operation. Four months later, owing to these continuous abdominal pains, he went back to the hospital, and was operated on for adhesions, and during the operation, a tumor at the cecum was discovered. A section of this tumor was taken, which upon examination proved to be a giant celled sarcoma. The cecum including this sarcomatous mass was resected. The patient remained in the hospital for six weeks, and then felt well, gained in weight, and showed signs of general improvement until four months ago (July 18, 1915), when he went to see Dr. William Grossman, complaining of pain in the anus, accompanied with chills and some fever, as well as aching of all parts of the body, headache, and general malaise. At that time he attributed his pain in the rectum to a fish bone which he had swallowed a few days previously. He had

been overworked and constitutionally run down, and his doctor advised him to get away to the country for a rest. He left for the mountains, and a few days later he noticed continued pain at the anus, accompanied with chills, fever, and swelling. Doctor Patterson, of Liberty, N. Y., was called in, and diagnosed ischioirectal abscess. On July 31, 1915, he incised and drained the abscess. The patient was kept in bed for two weeks and thereafter felt well, with the exception of a discharge from the wound, which continued for five weeks. He continued with his daily routine of business until three days ago, when he noticed a small blister at the site of the scar left by the previous operation. This bleb was opened and contents evacuated November 2, 1915, and since then he had noticed a discharge of pus and blood. On examination, a fistulous opening on the right buttock, about two inches from the anal opening, in line with the scar resulting from the previous incision, was noticed. On inserting a probe into the sinus, the peculiar grating sensation distinctive of dead bone was felt; and owing to the fact that the probe led in the direction of the coccyx, I thought that we were dealing with a necrotic condition of that bone.

I advised operation, and sent him to the People's Hospital, where on November 9, 1915, under a general anesthetic, and with the usual antiseptic precautions, he was operated upon. On probing, the internal opening of the fistula was discovered to be about one and a half inch above the internal sphincter, which necessitated the cutting of both the external and internal sphincters for the purpose of getting proper drainage after laying the tract open. On curetting the fistulous tract, a fish bone, about two and a half inches in length and triply bent upon itself by two greenstick fractures, was removed. This bone evidently had been swallowed four months ago, when the patient originally complained of chills and fever. This bone in its sojourn through the tortuous turnings and twistings of the small and large gut, probably was fractured twice, owing to efforts on the part of nature to accommodate it and in attempts to encapsulate it within the compass of the fecal mass, in its downward descent to be expelled in defecation. The bone evidently punctured the mucous membrane of the gut about one and a half inch above the anal opening, and owing to the strong peristaltic movements of the lower bowel during defecation, was forced into and then became imbedded in the ischioirectal tissues, with resulting infection and abscess formation.

The base and walls of the tract were then swabbed with carbolic acid, ninety-five per cent., followed by alcohol, ninety-five per cent.; the edges of the wound were trimmed to prevent turning in and bridging over while healing; sterile moist gauze was inserted to the bottom of the wound for proper drainage, and then the usual sterile dressing and T binder were applied. The patient was out of bed the next day, and the day after that he had a comfortable movement, and was on a full diet from the day after the operation. He was not kept under opiates, nor did he have inserted within his rectum that relic of barbarism and prehistoric times, the rubber hose surrounded with iodoform gauze. He left the hospital on the fifth day, and returned to his work at the end of the week. He called at the office for dressings every other day, when through with business, and was discharged, cured, December 28, 1915. The aftertreatment consisted of bathing the parts in hot water for ten or fifteen minutes two or three times a day, especially after defecation, followed by the application of sterile absorbent cotton to absorb discharge or moisture, and thus protect the skin surrounding the area operated on. Every second or third day, a strip of moist sterile gauze was inserted to the bottom of the wound for drainage, and to help healing of the wound by granulation. Occasionally it was necessary to stimulate granulations with balsam of Peru or ichthylol in glycerin ten per cent., or to destroy excessive granulations with silver nitrate ten per cent. He had no inconvenience on account of having had his external and internal sphincters cut, and instead of incontinence, he suffered with constipation, necessitating the administration of Carabana water daily for the first two or three weeks. Another feature of interest about this case was the fact that he had a giant celled sarcoma of the cecum, and there was a possibility of a metastatic deposit in the ischioirectal tissues, with a later breaking down of the tissues, and the formation of a similar ischioirectal abscess and fistula.

*Presented at the Seventy-Sixth Session of the People's Hospital, January 12, 1916.

The points of importance that stand out in the care and treatment of fistula cases are as follows:

1. The necessity for early diagnosis.
 2. The necessity for more frequent rectal examinations on the part of the family physician.
 3. The necessity for complete and more thorough laying open of the canal, and probing of the affected area for branch canals, pockets, and foreign bodies.
 4. The necessity for trimming off the edges of the wound, to prevent bridging and too hasty healing.
 5. The necessity for keeping the wound clean and properly drained, to prevent infection.
 6. The sphincter can be cut without causing incontinence, if cut at right angles to the muscular fibres.
 7. The ability to get along without locking up the bowels for a week, without the use of opiates, and without the use of that barbarous rubber hose.
- 237 WEST SEVENTY-FOURTH STREET.

CARCINOMA.*

Further Studies in Metastasis,

By GUTHRIE MC CONNELL, M. D.,
Waterloo, Iowa.

Although it may sound commonplace, there are not many subjects of more importance or actually of more interest than that of tumor metastasis. Most of us are inclined to dismiss the topic with a brief thought of what was taught in our college days concerning the methods by which primary growths gave rise to secondary nodules in different parts of the body. If cancer were under discussion, the lymphatic system was held responsible; if sarcoma, we then held up the vascular system as the chief offender. Yet even then we had doubts as to the absolute accuracy of the statements.

In discussing metastasis in cancer, it is convenient to think of the tumor as consisting merely of epithelial cells as they are the elements that are actually concerned. The connective tissue is derived from the preexisting mesoblastic cells of the part attacked and does not enter into consideration, it having been shown quite conclusively that the active agent is the epithelial cell that has lost its power of specialization in the development of its power of growth.

A few statements in regard to the bearing that the parasitic theory has upon the question of metastasis may not be out of place. There are still a number of adherents to the foregoing theory, but it seems that there is no stronger argument against it than that offered by a study of metastasis. In order to show analogy to the secondary lesions of infectious processes, we should expect to find the secondary tumors conforming to the structure of the tissue in which they grow. When micro-organisms lodge they give rise to formations in which the attacked tissue plays the main part. As a rule they destroy tissue instead of forming new. As a result of the irritation there may be a forma-

tion of new fibrous tissue, but it does not conform to the type of organ in which the lesion occurs. A secondary growth in the liver does not reproduce liver tissue, but it does reproduce the structure of the tissue primarily involved.

A very important question in connection with metastasis formation is one that is equally applicable to the cancer problem in general. That is, Why do we have metastasis? Unfortunately this is even more difficult to answer than to say why we have the primary growth. For many years there has been a strong belief that a chronic irritation of an epithelial tissue is largely responsible for tumor formation. Recent investigation, by Levin and others, seems to indicate clearly that there is such a thing as a precancerous condition, one that renders the soil suitable for malignant growth. What changes occur we do not know, but something very evidently happens.

This, however, not only does not help us in considering secondary tumors, but possibly renders the solution more difficult. If a precancerous condition is essential, why is it that a metastatic tumor forms where there has been no irritation? It is evident that, although from a surgical standpoint we consider cancer as a local disease at the start, it is really something more. Either at the start or a short time afterward there has taken place some general change throughout the body. It may be called general, although later on that statement may need qualification.

That there is a general disturbance is readily seen when we view the matter from an experimental point of view. One of the most striking bits of evidence was that resulting from an act of the celebrated surgeon after whom this hospital was named. He took a piece of cancer from the patient upon whom he was operating and implanted it in his forearm, but no growth took place. The result would probably have been different if the piece had been transplanted similarly on the patient. Although no deliberate attempts to cause secondary tumors in human beings have ever been undertaken, there is much accidental evidence to show its possibility. There have been many instances in which secondary tumors have occurred along the line of the operation wound. Particles of the cancer have been implanted and a tumor similar to the primary one has developed. It seems logical, therefore, to assume that after the development of the local lesions there is a change within the body that so alters its condition as to render it susceptible to secondary manifestations.

Experimentation on white mice gives us some more information concerning the development of cancer, particularly in relation to heredity. It has been shown many times that certain strains are more susceptible than others. In other words, some animals are better able to resist the attack of the uncontrolled cells and to prevent their development. But once the tumor has developed the occurrence of metastatic growths is only a matter of time.

Granting that the individual is in a suitable condition for the new growths what is the process by means of which the original cells break away and

*Read at a meeting at the Nicholas Senn Hospital, Omaha, Neb., February 4, 1916.

give rise to new and distant formations? Most of us were taught that cancer metastasized through the lymphatics, and at that stage of our medical career we were well satisfied to accept a brief and dogmatic statement. The explanation given was to the effect that the cancer cells, as they divided, naturally went along the paths of least resistance, in other words the lymph spaces. The idea that the student got was that the cells were not particularly crowded, had plenty of fluid in which to float, and consequently drifted along with the current until the nearest lymph node was encountered. The comparison was made with emboli in the blood stream, and the similarity was considered absolute. After lodging in the nodes, the tumor cells continued to grow until in time more emboli were sent forth. As the greater part of the knowledge of cancer extension was derived from the study of malignant tumors of the breast, the accepted route was along the main lymphatics to axillary and supraclavicular lymph nodes, and from there to the blood stream. It was a simple explanation, easy to understand, and the theory of lymphatic emboli was popular.

Yet as long ago as 1889 Heidenhain, in studying breast cancer, drew conclusions that forecast later discoveries. He stated for instance that: "In the retromammary fat, lymph vessels run from the gland to the fascia, usually in company with the bloodvessels. In two thirds of cases of breast cancer numerous little cancerous metastases are found in these lymph vessels. The epithelial growth advances along the preformed channels, even though thick layers of fat, quickly to the fascia. The pectoralis major is generally unattacked so long as the carcinoma is freely movable under it. It first becomes diseased when a metastatic nodule on the fascia, growing independently, advances into it, or when the primary tumor infects it by its growth in continuity."

Ten years later, Stiles, of Edinburgh, studied the subject and agreed practically with Heidenhain and in his paper mentions "lymphatics distended by cancer cells." He says, however: "It must not be supposed that in carcinomatous mammae the lymphatics throughout the gland are extensively and continuously filled with cancer cells; in some breasts emboli are numerous; in others careful search fails to find them." Although on the trail of a newer theory, he failed to appreciate his findings and evidently remained an adherent to the embolus theory.

Another ten years elapsed and, in 1909, Handley, of London, elaborated what he calls the "permeation theory." Up to the year previous there had been no explanation other than the embolus theory, but this was now improved upon. It appeared to him, from a careful post mortem study, that the most distant and extensive involvement from a mammary cancer could be explained on the basis of lymphatic extension. Careful examination led him to believe that the tumor cells extended continuously from the primary growth down to the lymphatics of the deep fascia. These cells undergoing multiplication would then gradually advance and send offshoots to other lymphatics extending

at right angles to those in the deep layer. As the cells invaded the lymphatics, the latter became more and more swollen until they ruptured and the cells escaped. Accompanying this process there was frequently an obliteration of the lymph channels in consequence of a fibrous growth. For this reason it was not always possible to find a continuous strand of cells extending from one nodule to the next farthest away.

By measuring the distance between the original growth and the secondary foci it was found that the latter were generally equally distant; that is, that the deposit farthest away along the anterior skin surface was about at the same distance as the farthest growth on the back or on the arms. This would indicate that the spread took place in a centrifugal manner and that it occurred by the means of lymphatics alone.

It is interesting to note that Handley reports a case of melanotic sarcoma in which extension took place along the lymphatics. He found that in the early stages the processes of dissemination are essentially identical in carcinoma and in this type of sarcoma. "Dissemination is initiated by the access of malignant cells to the fine lymphatics, followed by the centrifugal spread of permeation along the main lymphatic plexus into which the primary growth pours its lymph, and by secondary permeation of small tributaries of this plexus. Embolic invasion of the regional lymphatic gland occurs, and around this fresh focus permeation recommences."

Although the lymphatic method of dissemination does occur in certain forms of sarcoma, yet it is more often found in cancer. On the other hand, invasion of the blood stream does occur in carcinoma probably more frequently than is generally believed. It may follow local infiltration of the veins from permeated lymphatics or by malignant cells carried into the blood along the thoracic duct from invaded lymphatic nodes. That it does not occur more frequently may be ascribed to embryological development. Cancer is essentially epithelial in nature, while the blood is of mesoblastic origin. Consequently there is almost invariably a destruction of such epithelial cells as do find their way into the blood stream.

Schmidt, in 1903, reported a study made by him of the lungs from patients with generalized cancers. He concluded that the majority of tumor cells that entered the blood were destroyed within the vessels without causing secondary growths. These cells were as a rule surrounded by coagulated blood and, if no penetration had occurred of the resistant endothelium, they became transformed into hyaline thrombi. Schmidt states that: "In the cases of carcinoma of abdominal organs the transportation of the tumor cells to small lung arteries occurs with considerable frequency. Only a small portion of the transported foci of growth form metastases; the bulk are either killed by the organization of their thrombotic covers, or encapsulated and made harmless in spite of their retaining power of proliferation."

Iwasaki, in order to substantiate Schmidt's observations, conducted a series of experiments upon

rats and mice into which he injected, intravenously, tumor suspension. The animals were killed on various days after the injections, and the whole lung tissue was examined in serial paraffin sections. He found that the destruction of tumor cells in bloodvessels by means of thrombus organization is not restricted to human neoplasms, but occurs equally in animal tumors. He also noted that all tumor cells introduced into bloodvessels do not necessarily disintegrate, as some authors believe, but if the technic is suitable, the lung will be attacked in a very considerable number of cases.

Takahashi, some three months previous to the work of Iwasaki, reported similar experiments in which he obtained practically identical results. He found that carcinoma and sarcoma are equally capable of producing growths in the lungs when injected intravenously. There was, however, marked variation in the frequency with which intravenous implantation results in growth. The cause of the variations in the production of metastases by the several strains seemed not so much an inability of the cells to make their way into the blood stream, as an inability to survive and grow after arrest in the vessels of the lungs.

This question as to the actual deleterious effect, if any, of the blood plasma itself has been much discussed. Iwasaki believes that the destruction of cells occurs also in bloodvessels by direct action of the plasma. His method of determining the effect was by an estimation of the percentage of disintegrating tumor cells found free in the bloodvessels. This, however, seems entirely too crude and unreliable to prove his contention, even if he is correct.

The majority of investigators, nevertheless, seem to doubt the ability of the plasma to destroy the cells, yet in most cases the explanation of body and organ immunity must in some way take into consideration the protective ability of the blood.

There have been many instances reported in which the carcinomatous thrombi found within the bloodvessels have evidently acted as foci for secondary growths. It is indeed a well recognized fact that distant metastases may occur suddenly after operations in which the diseased tissues have been roughly handled. For this reason the surgeon is as gentle as conditions will permit. That this is a real danger has been shown experimentally in experiments with mice. Secondary growths were more frequent in animals which had been constantly manipulated.

If we consider sarcoma for the moment, we shall find that the bloodstream acts as the main agent for its dissemination. This may be explained on two grounds, structural and histogenetic. In its development it is a well known fact that the bloodvessels are very poorly formed, in many instances there being no true wall, the tumor cells acting as the enclosing membrane. In this way it is easy for the cells to escape. An equally important fact is that the sarcoma cells are mesoblastic in origin, consequently when they gain entrance into the vessels they are not in alien surroundings. They are not destroyed, are carried to the nearest capillaries, and

many, finding lodgment, give rise to secondary tumors.

The formation of the metastatic tumor is interesting in that it is composed of descendants of the original cells that were transported. We do not find the local tissue assisting to form the tumor, except that in carcinoma the connective tissue is derived from that at the site of inoculation. There is evidently some peculiar action exerted by the cancer cells, as the new tumor will reproduce to a greater or less degree the type of the original neoplasm. The connective tissue will not grow wildly, but will approach approximately the primary arrangement. There is, not only a stimulus to its growth, but some controlling power that causes it to make an attempt to form a normal structure.

Of the many things that were taught us, one was to the effect that the metastatic tumor reproduced the original. That is the case in most instances, but not always. The reproduction will resemble, in a general way, the parent tumor, but marked variations may be found. We find, not infrequently, that the cells in the secondary growth seem to have lost, to an even greater extent than those in the primary tumor, the ability to specialize. They have taken upon themselves the habit of growth at the expense of their specialization. Adami mentions a tumor of the adrenal cortex, in which every transition was found, from the primary cancerlike mesotheliomatous growth to pure round celled sarcomalike metastases.

One of the most interesting features in the study of metastatic growth is, as a rule, either overlooked entirely or else thrown aside with but slight comment. It is the question as to why secondary growths are common in some parts of the body and very unusual in others. It might be thought that all that is necessary is that several cancer cells become lodged in a lymphatic or a blood capillary in order that a new tumor should develop. Such is not the case. Certain tissues of the body show a more or less well marked immunity to the growth of secondary cancer. We also find, on the other hand, that certain types of tumors show a special affinity for different tissues. Why should malignant tumors of the thyroid or of the prostate gland be particularly apt to metastasize in the bones, and melanotic tumors in the liver? It cannot be a matter concerned entirely with the size of the bloodvessels; there is evidently both an organ affinity and on the other hand an organ immunity. It is a well known fact that a primary malignant tumor in almost any part of the body will soon give rise to an infiltration of the liver. There is evidently something either present or absent that makes it a specially suitable locality for the development of malignant tumors. Yet there is this striking peculiarity that the liver, although nearly always involved secondarily, is very rarely the site of a primary tumor. If it can protect itself so capably from original assaults, why should it fall so ready a victim when the disease has once become implanted elsewhere in the body?

On the other hand, why is the spleen so rarely attacked? Its blood supply is great, its blood channels are numerous and wide, and there can be

no doubt that many a cancer cell must have gained entrance into its sinuses. But what has been the result? For no reason, as far as we can judge, both primary and secondary tumors are distinctly rare in this organ. From the physiological viewpoint, the spleen is frequently referred to as the graveyard of red cells. It may be that the ferment, or whatever the substance is, acts upon epithelial as well as upon mesoblastic cells. Whatever the cause, the result is a well marked degree of organ immunity.

In connection with this ability of certain organs to resist the growth of secondary tumors, it is interesting to study the cases of spontaneous recovery from cancer that have been reported, not only in mice, but also in human beings. Gaylord, in describing certain regressive mouse tumors, states that the epithelial cells at the margins of the nests where hemorrhage has occurred, show marked atrophic changes. An examination of the relation of these areas of hemorrhage to the epithelium strongly suggests that there is some connection between the extravasation of the blood and the marked atrophy.

There are many cases on record where years have elapsed, after the primary operation, before the patient has died. Two cases are particularly interesting, one reported by Mackay, in 1907, and one by Hodenpyl, in 1910. Both were carcinoma of the breast upon which radical operations were performed. Recurrences took place and secondary growths appeared. The patients became much worse and death was expected, when without any explanation they began and continued to improve.

In both patients the tumor regression took place after the formation of large collections of fluid within serous cavities, in the pleura in the first case, in the abdomen in the second. The tumor masses began to degenerate, became necrotic, and were cast off or absorbed as the exudate was taken up into the general system.

Although there is no proof, a reasonable theory would be that as some tumor cells were destroyed they set free certain substances that so acted upon the normal cells that they in turn formed a protective lytic material which destroyed more tumor cells. Hodenpyl, in his case, drew off the ascitic fluid and used it as an injection into other cancer patients. In this proteid exudate there was some substance that exerted an active influence upon the growth. It was used in some forty-seven cases, in all of which the tumors grew smaller and in some disappeared altogether. It was hoped that an antiserum might be procured by injecting tumor materials into animals, but as yet success has not been attained as the cells do not apparently act as antigens.

The explanation, therefore, of the definite organ immunity that we know to exist may be that there are protective ferments adapted to break down the complex molecule of the cancer proteid; at least to cause such interference as will prevent the development of the cancer cells.

Extensive as the work has been in regard to the etiology and the cure of cancer, there does not seem to have been much attention devoted to the explanation of metastasis. We have become so accus-

tomed to look upon this phenomenon as a purely mechanical affair that we have overlooked the many important problems that it presents. It might well be that a thorough study of this phase would throw much light upon the entire cancer question.

We must get away from the idea of a simple transplantation of tissue—it is much more than that. We can transplant skin from one portion of the body to another and it will grow, and what is even more interesting, we can transplant the skin from one individual to another of the same species. Those foreign bits of tissue will grow to a normal development and will then stop, evidently being under very definite control. Yet cancer cells, with their tremendous potential power for growth, will be destroyed. It cannot be through the development of an immune body, as the bodily resistance is present at the time of inoculation. Again, as has already been stated, the disease is a local one at first, but in the course of time the cells extend and secondary tumors develop.

The question, however, of general immunity is one that has attracted much attention, and many attempts have been made to immunize animals against inoculated growths. Woglom, in 1912, conducted numerous experiments by injecting given amounts of mouse tumor, kidney, or embryo skin. He concludes that the preliminary treatment with tumor or the above mentioned normal tissues causes the development of an immunity that reaches its maximum in about ten days, after which it gradually diminishes, probably to disappear after the lapse of about eighty days.

More or less similar results have been obtained by many observers, but no definite conclusions can be drawn. There appear to be no successful curative serums of an antitoxic nature, as the body fluids appear to be incapable of conveying anything to other animals.

Then, too, in studying all the phases of immunity, a most important element that has not been considered in the past, is that of heredity. The recent splendid work of Maud Slye has shown us what a factor this is in the matter of development of mouse carcinoma. It can readily explain, not only the different results obtained by different observers, but the differences that may appear in one laboratory when mice from various sources are employed.

In fact, we seem to be as far away as ever from a solution of the problem. It seems permissible to conclude, however, that when cancer does develop it is on account of the lack of some substance that normally is present in most persons. In those who are immune or who have recovered spontaneously, there may be a substance, not so much of an antitoxic as of a specific cytolytic character, one that destroys the inherently parasitic cells.

300 SYNDICATE BUILDING.

Pyorrhœa alveolaris.—In the treatment of pyorrhœa alveolaris (*Low. Med. Soc. State of N. J., March*) it has been found that it is not sufficient to give emetine alone. The drug must be combined with local treatment.

RIGHT SIDED ABDOMINAL PAIN.*

*From the Gastroenterologist's viewpoint.*BY SAMUEL FLOERSHEIM, M. D.,
New York.

Pain is a subjective symptom and must not be confounded with, or used indiscriminately in place of tenderness. Tenderness is an objective symptom and is elicited from the patient only during palpation or percussion. In order not to prolong this paper, I will give but passing mention to most of the ordinary diseases that, as we all know well, give rise to right sided abdominal pain.

Pain can be classified into two great divisions: 1. That which is referred from without the abdomen; and 2, that which originates within the abdomen. A further division of 1 includes pain as coming from the (a) thoracic cavity, (b) pelvic cavity, (c) cerebrospinal system, (d) skin, (e) bones, and (f) muscular structures. Of Division 2 the subdivisions would include the right and left sides and above and below the umbilicus.

I will first take up pain referred to the right side due to conditions outside the abdomen. In the chest we find right sided pleurisy, especially the basal and diaphragmatic varieties, empyema of the right chest, hernia through the diaphragm, mediastinal growths, acute cardiac dilatation, coronary angina, fracture of the lower right ribs, and intercostal neuralgia. The most important of these are intercostal neuralgia, basal pleurisy, and fracture of the ribs. They are to be differentiated from inflammations and ulcerations of the gallbladder, duodenum, and pyloric end of the stomach.

In the pelvic cavity, pain may originate from the uterine annexal diseases such as oophoritis, dermoids, salpingitis, simple, purulent, or malignant; broad ligament diseases; displacements, torsion, inflammatory diseases and growths either malignant or benign of the uterus, ectopic gestation, threatened or actual abortion, abdominal gestation, overdistended urinary bladder, cellulitis, and aneurysm or thrombosis of the iliac bloodvessels. The important ones, oophoritis, ectopic gestation, salpingitis, dermoids, and abortion require differentiation from appendicular disease.

The skin has been a fruitful source, in my experience, of causes of right sided abdominal pain. Most accountable, I have found the neuralgias of the lower intercostal nerves, the ileohypogastric and ilioinguinal, herpes zoster, foreign bodies, such as broken ends of hypodermic needles, sewing needles, shot, buried metallic and silk worm sutures, deep skin abscesses, and neurofibromata.

The muscular structures from rupture, overstrain, hematoma, and so called myalgia give rise to pain.

It may be thought far fetched to include the cerebrospinal system in this category, yet it has been noted that tabetic crises, tumors in the brain, spinal cord, and spinal nerve roots, and so called trophic disturbances are causes of pain. Brain irritation as a forerunner of impending cerebral apoplexy, had been advanced as a cause, the apo-

plectic seizure actually occurring two days later. The neuroses so called, such as hysteria and neurasthenia, must be remembered.

Caries of the spine, giving rise to psoas abscess and right scoliosis causing muscular strain produce pain.

General systemic conditions such as syphilis, rheumatism, typhoid fever, general adenitis (Hodgkin's disease or leucemia), arteriosclerosis, and malaria are conducive to pain.

Coming to the abdomen itself, we may consider material to be discussed under general headings, such as ulcerations, simple, infected, or syphilitic; neoplasm, either malignant or benign; infarcts; embolism or thrombosis; acute or chronic inflammations; torsion; displacements; ruptures; foreign bodies; adhesions, ordinary, inflammatory, or post-operative, and arteriosclerosis of any one or more of the number of organs within the abdominal cavity, especially of those lying within, or in close proximity to the right side.

In the stomach we have ulcers of the pyloric pouch and the pylorus; all forms of gastritis, from the simple to the phlegmonous types, including hemorrhagic and poisonous varieties; perigastritis; perforations; pylorospasm; peristaltic unrest; tabetic crises, hourglass stomach; foreign bodies; arteriosclerosis; and acute dilatation. The more important are ulcerations and inflammations (simple acute gastritis).

In the small intestines we have gastroduodenitis; ulcerations; atresia; adhesions; neoplasms; perforations; tuberculosis; syphilis; acute and chronic inflammations; foreign bodies; abscess within the folds of the gut; typhoid fever; bands and adhesions, ordinary or postoperative; intestinal spasm; lead poisoning; intussusception; tape worms; flies; maggots; moths and beetles. Particularly to be differentiated are duodenal ulcerations, gastroduodenitis, typhoid fever, and simple enteritis.

In the large intestines, there are the many forms of appendicular disease and neoplasm; inflammations of the cecum, including mobile, unrotated, atrophic, overdistended; perityphlitis; rupture; perforations, bands, adhesions, and displacements. Inflammations of the ascending, transverse, and descending colon, sigmoid, and rectum, including kinks, bands, strictures, ulcerations, dysentery, tuberculosis, prolapse, distentions, volvulus, intussusception, spastic constipation, and neoplasms, either malignant or benign.

In the mesentery we have rupture; infarcts; adenitis, adhesions; tuberculosis; cysts; and new growths.

The liver and gallbladder are foremost in our minds. I may, however, add others pertaining to the liver, such as perihepatitis; subphrenic abscess; simple congestion; cirrhosis; syphilis; at times, liver abscesses; cholangitis; liver stones; embolism; prolapse; injuries; and infarcts. In the gallbladder, beside the ordinary simple catarrhal and infected inflammations and ulcerations, stones, and gangrene, we have empyema; chronic atrophy; adhesions to other organs; overdistended and ruptured gallbladder.

Of kidney diseases, not stated, I may mention

*Read before the Yorkville Medical Society, December 20, 1915, in the Symposium on Right Sided Abdominal Pain.

torsion; prolapse; infarcts; rupture; and fusion of the kidneys.

The diseases of the pancreas include stones; neoplasms, cysts, and inflammations of the head; hemorrhage; and rupture. The spleen gives us prolapse and when markedly enlarged, pressure symptoms and possible rupture.

The bloodvessels of the abdomen may give rise to pain through thrombosis, embolism, and general arteriosclerosis causing angina.

We have, therefore, a mass of material to differentiate. We have coming daily before us most prominently, the usual diseases of the appendix, gallbladder, kidney, and stomach, yet there may be fortunate ones among us to have rarer disease to diagnose daily.

To make an exact diagnosis, especially at the first examination, is usually almost impossible. It is wiser to make a tentative diagnosis, requiring, in the beginning at least, either medical or surgical intervention, and as we continue to study the case more deeply a more accurate diagnosis or diagnoses may be advanced.

Often after histories have been taken, we obtain much additional information at subsequent physical examinations, and questioning throws light in opposite directions. We find, at times, difficulty in the diagnosis between gallstones, duodenal ulceration, and pyloric ulceration; kidney stones and appendicitis; infarcts of the mesentery and pancreatitis; acute dilatation of the stomach and transverse colon; perforated gastric ulcers, appendicitis, and pancreatitis; typhoid ulceration and appendicitis; skin neuralgias and appendicitis; enteritis and tape worms; and gallbladder inflammations and appendicitis.

204 WEST EIGHTY-SIXTH STREET.

GONORRHEAL INFECTION OF THE URETHRAL GLANDS.*

By ALBERT LEFORT, M. D.,
Roistel, France.

As this is a practical paper, written from the practitioner's standpoint, I shall not refer to the anatomy and pathology of the urethral glands, and shall enter at once into the clinical aspects of gonorrheal infection of these structures, which for convenience the old term of urethral folliculitis will be employed. This lesion may conveniently be divided into the, 1, acute form; 2, the subacute and, 3, the chronic form.

The acute form of folliculitis occurs at the time of the acute infection, and during the early stages of a gonorrhea hard, painful lumps will be found along the urethra, frequently giving rise to chordee. The symptoms of the folliculitis are obscured by the acute urethral process and, consequently, the folliculitis presents no special clinical features and may not even be diagnosed. But when the urethral inflammation has subsided, the folliculitis often remains, and from this time on it gives rise to clinical manifestations.

Subacute folliculitis succeeds the acute variety. Clinically the story is as follows: The patient presents an uncured gonorrhea with a discharge which soils the linen. There is little suffering, except after fatigue or imprudent diet, which will cause some pain in the canal, which rest will soon cause to disappear. On examination the patients' linen will be found covered with thick yellow or greenish spots, surrounded by a serous area, and are more abundant in the morning after sleep than during the day. The meatus is stuck together, and if the discharge hardens, it forms a scab which, when broken off, causes erosions of the mucosa with the loss of a few drops of blood. The lips of the meatus are red and this is an almost certain sign of folliculitis.

By palpation along the urethra we detect one or several small painful tumors about the size of shot imbedded in the urethral mucosa. They may attain the size of a pea and are usually round and hard with a smooth surface. The overlying skin is not adherent to them. When they occupy the inferior aspect of the urethra, they can be felt distinctly, but when in the upper part it is quite impossible to detect them because they are covered by the corpora cavernosa.

If the canal is irrigated and freed from pus, and pressure is then made upon these little tumors, a drop of pus may be made to appear at the meatus which, microscopically, is rich in gonococci. When the glands have been emptied, nothing more comes from the urethra, but after a little time the same phenomenon recurs.

If an olive tipped bougie is introduced, it will be found to stop at the level of the enlarged gland which always projects into the lumen of the urethra, and the instrument will cause pain at this point. When it is pushed beyond and then withdrawn, there will always be some pus mixed with blood on the heel of the instrument.

Disturbances in micturition are more or less characteristic. The flow is less free and the jet is deformed, being thin and lacking in vigor. The patient complains of a burning or tickling sensation when the urine passes through the canal, washing away a large quantity of shreds.

A subacute folliculitis reacts on the genital functions in a mild way. Some patients complain of a sensation of tension or tearing in the urethra at the time of erection which makes them fear coitus (and luckily so), while still others are troubled by atony or by priapism. This type of folliculitis has a marked tendency to return to the acute form, and to my mind is the most important form of the disease, requiring very careful and methodical intra-urethral treatment. If not properly managed, it passes into the chronic form.

Chronic folliculitis is the most attenuated form of the lesion, and in a patient who is not careful in his observations may pass by unnoticed. The lesion then will last indefinitely and will be discovered only by urethroscopic examination. But in subjects who attentively examine themselves, chronic folliculitis, although lacking in marked symptoms, will be noticed by the observing. There is no urethral

*Written especially for the NEW YORK MEDICAL JOURNAL.

pain, no urinary disturbance, but the essential symptom is a slight discharge occurring several times a day, spotting the patient's linen. These spots have usually the shape of the meatus and are light yellow in color. They are not opaque like the spots of the subacute type of the affection. The meatus is normal, and the only objective symptom noted is that by careful palpation of the urethra one or several small shotlike nodules in the neighborhood of the fossa navicularis will be detected. These nodules are painless, and a small quantity of pus may be expressed by pressure. The seat of predilection for acute or chronic folliculitis is in the lower wall of the urethra in the neighborhood of the fossa navicularis.

A folliculitis usually ends in resolution, but there are cases where it may be complicated by several accidents, namely, 1, abscess; 2, fistula; and, 3, stricture. It is clear that the gonococcus developing in a cul-de-sac of a urethral gland sets up various pathological changes and finally extends beyond the gland itself, causing a periglandular process, and as a consequence an abscess results which may open into the urethra and give rise to fistula. Should the abscess break down both into the urethra and through the skin, a urinary fistula results which is very hard to cure. This outcome is fairly frequent in the neighborhood of the frenum.

After a time a folliculitis will react on the surrounding cellular tissue, producing a progressive sclerosis ending in stricture.

The diagnosis of a folliculitis is usually easy, but there are several affections which it may resemble, particularly urethral chancre. An intraurethral syphilitic chancre occupying the borders of the meatus or the anterior part of the fossa navicularis can readily be seen and presents the usual characteristics of a chancre of the mucous membrane. If it is more deeply seated, it cannot be seen unless urethroscopy is resorted to, and by palpation a small, painless induration is felt, accompanied by an indolent enlargement of the inguinal glands. At other times the initial syphilitic accident gives to the exploring fingers the sensation of a cartilaginous plaque, similar to the feel of a chancre on the tongue. The secretion of a hard chancre is slight, grayish in color, while micturition is more or less interfered with. When the urethral chancres are multiple, or if a chancre coexists with a gonorrhea, the diagnosis becomes obscure, and we must wait until the discharge has ceased in order to resort to endoscopy. The appearance of secondary lesions will also reveal the real nature of the induration.

It must be recalled that tertiary syphilis does not spare the urethra. A gumma of the penis is a solid tumor, a kind of little nucleus forming a slightly rounded projection in the urethra and distinctly circumscribed. It is absolutely indolent and there is no inflammatory process in the penis. When the gumma breaks down a thick, dirty pus, stained with blood, may be expressed from the urethra. I know of no case of an intraurethral ulcer malle.

A tuberculosis localized to the urethra is seen as granulations or ulcerations. The former are similar to those met with in tuberculosis of the tongue, grayish in color, hardly visible to the eye; when

they soften they give rise to ulcerations. The process causes hemorrhage and a yellowish discharge rich in bacilli. The epididymis, seminal vesicles, and prostate are also involved.

If in some cases a folliculitis may spontaneously heal and disappear, the majority take on a torpid evolution and persist if treatment is not adopted. This I cannot enter into as it will be found in detail in all modern textbooks, but I would say that electrolysis and intraurethral cauterization of the follicle have been most satisfactory in my hands. Of course, we must treat any other chronic urethral lesions that may be present at the same time, results of the gonorrhea which has given rise to the folliculitis.

QUININE AND UREA INJECTIONS IN HYPERTHYROIDISM.

BY LEIGH F. WATSON, M. D.,
Oklahoma City.

Assuming that the symptoms of toxic goitre are caused by excessive activity of the thyroid function, many have attempted to limit this secretion by removing a portion of the gland, or ligating its arteries. Approaching the problem from another aspect, some have attempted to neutralize this hyperactivity by means of milk, blood, or serum of animals whose thyroids have been removed; still others have employed injections of different substances into the thyroid. Although these various methods are possessed of advantages and shortcomings, until a longer period of time has elapsed since any of them were instituted, it will be impossible to know just how much value they possessed. There is the question as to the future condition of the patient who has been treated by any of them.

GENERAL OBSERVATIONS.

The studies of Wilson (1) have definitely proved the constant association of the symptoms of exophthalmic goitre with primary parenchymatous hypertrophy and hyperplasia of the thyroid gland. Kendall (2) has isolated from the thyroid of exophthalmic goitre an active principle, Substance A, which when injected into a normal person increases pulse rate, vigor, metabolism, and nervous irritability; a very small amount will produce marked symptoms of hyperthyroidism. He also observes that in exophthalmic goitre the secreting capacity of the gland is greatly increased and the reservoir capacity much decreased.

Bearing in mind these pathological changes which accompany exophthalmic goitre, it is obvious that medical treatment which stops short of destroying a portion of the enlarged and hyperactive gland, will at times fail to afford relief from the acute symptoms, and will also fail to prevent recurrence when the hypersensitive although quiescent goitre is subjected to severe psychic strain.

DISTURBANCES IN OTHER DUCTLESS GLANDS.

Too often toxic goitre is regarded as a disease of the thyroid gland alone, while in reality all the glands of internal secretion are more or less involved. I

have found glycosuria in eighty-five per cent. of the severe cases of hyperthyroidism. Doctor de Sajous was the first to emphasize the close relationship and interaction existing between the ductless glands in health and disease.

Rautmann (3), who has recently reported the findings from autopsies on patients dying of exophthalmic goitre, states that an enlarged thymus very frequently accompanies hyperthyroidism; the suprarenals and ovaries are involved in a majority of cases; the hypophysis, parathyroids, and islands of Langerhans are less frequently affected. He states further, that the changes in the thyroid, parathyroid, thymus, and hypophysis are of a hypertrophic hyperplastic nature, while the changes observed in the suprarenals, ovaries, and islands of Langerhans are of a pronounced atrophic hypoplastic type.

TREATMENT.

Too frequently the hyperthyroid patient is not regarded as a sick person. Because his symptoms may not be severe enough to compel him to stay in bed, the physician is liable to be lax in insisting on close medical supervision. Surgeons and internists agree that any procedure for the treatment of hyperthyroidism must be based upon a period of rest, with medical, dietetic, and hygienic measures suited to the needs of the individual case.

The hyperthyroid patient will usually do best away from home, removed entirely from surroundings suggesting mental and physical exertion. Inquiry will frequently disclose some particular factor of work or worry that has contributed to the symptoms or perhaps caused the disease, and which should be corrected as far as possible. Sympathetic friends and relatives should be excluded, thus giving the patient an opportunity for repose, as complete as can be, in a cheerful atmosphere.

ORGANOTHERAPY.

Organotherapy has an established place in the treatment of hyperthyroidism. It is necessary to make a careful study and examination of each patient to determine which ductless glands are contributing to the symptoms, and if their action is one of hypofunction or hyperfunction. If the condition is found to be one of decreased function, glandular extracts should be administered; if it is a disturbance of hypersecretion, a nucleoprotein serum may be given in selected cases.

Hygienic. A patient suffering from severe hyperthyroidism should have a rest of several weeks, on an open veranda or in a bright, cheerful room, carefully isolated from seriously ill or noisy patients. For the first few weeks he must lie down the whole or greater part of the day. The more favorable the climatic conditions, the better for him.

Dietetic. Body weight can be increased best by a simple nourishing diet, with plenty of carbohydrates, milk, fats, vegetables, and a little meat.

Medicinal. The administration of drugs is usually not necessary and should be avoided as far as possible; the treatment of symptoms as they arise is the best rule rather than any routine medication.

QUININE AND UREA INJECTIONS.

In selected cases, I believe hyperthyroidism can be relieved by means of injections of concentrated solutions of quinine and urea into the thyroid.

The method is recommended only to relieve hyperthyroidism and not to remove the goitre. It is sometimes true that in small toxic and atoxic goitre the inflammatory reaction following the injection is sufficient to cause the disappearance of the tumor; but the process is slow, and when the injection is used for this purpose alone, the results are liable to be disappointing.

The procedure is one that is surrounded by certain dangers, immediate and remote. One inexperienced is liable to puncture the trachea or one of the large bloodvessels, or to make the injection into the soft tissues of the neck. Injections that are too extensive will produce the same symptoms of myxedema that follow the removal of too much thyroid by operation. For this reason, it is necessary to discontinue injections before symptomatic relief is secured.

The necessity of minimizing the slight pain from any injection by the use of local anesthesia cannot be too strongly emphasized.

Preliminary injections into the thyroid gland of a few minims of a sterile salt solution, followed by injections of sterile water, are necessary to raise the patient's threshold to stimuli, thereby preventing an acute attack of hyperthyroidism which might otherwise follow the slight pain of the first quinine and urea infiltration. As soon as no hyperthyroid reaction follows the water injections, their usefulness is at an end. The use of quinine and urea injections without this preliminary precaution is likely to be disappointing if it is not disastrous.

CONCLUSIONS.

1. The quinine and urea injection is recommended only to control hyperthyroidism and not to remove the tumor. The method is suitable for use only in a hospital by men experienced in the difficulty of thyroid surgery. The danger of destroying too much of the gland must always be borne in mind.

2. The injection treatment depends just as much as any other procedure for the relief of hyperthyroidism upon the important factor of rest, with careful hygienic and dietetic supervision.

3. The role of other ductless glands in contributing to the symptoms of hyperthyroidism must be ascertained and treated accordingly.

4. The necessity of minimizing the slight pain of any injection by means of local anesthesia cannot be too strongly emphasized.

5. If the quinine and urea treatment is administered without preliminary injections of a few minims of sterile salt solution, followed by injections of sterile water, attacks of acute hyperthyroidism, which might result disastrously, are liable to follow.

REFERENCES.

1. J. B. WATSON, *Quinine and Urea Injections*, 1914.
2. F. C. KENDALL, *Thyroid*, 1914.
3. H. RAUTMANN, *Metasthen*, 1914.

COLORADO BUILDING.

MEDICAL QUESTIONS IN THE PENNSYLVANIA COMPENSATION ACT.*

By HARRY A. MACKEY,
Philadelphia,

Chairman of the Workmen's Compensation Board.

A close inspection of the Pennsylvania Workmen's Compensation Act in relation to the medical profession will disclose some phases of extreme interest to the physician. Section 301 of Article III declares that the terms "injury" and "personal injury" as used in the act shall be construed to mean only violence to the physical structure of the body, and such disease or infection as naturally results therefrom. It further declares that the term "injury by an accident in the course of his employment" shall not include an injury caused by an act of a third person intended to injure the employee because of reasons personal to him, and not directed against him as an employee or because of his employment; but shall include all other injuries sustained while the employee is actually engaged in the furtherance of the business or affairs of the employer, whether upon the employer's premises or elsewhere, and shall include all injuries caused by the condition of the premises or by the operation of the employer's business or affairs thereon, sustained by the employee, who, though not so engaged, is injured upon the premises occupied by or under the control of the employer, or upon which the employer's business or affairs are being carried on, the employee's presence thereon being required by the nature of his employment. Therefore it has been made perfectly clear by this act that it does not cover occupational disease nor any illness or sickness incident to the prosecution of a man's work other than can be directly traced to the original injury received in the course of employment and within the State of Pennsylvania.

Therefore it is plain to the physician who is called upon to attend a case, whether or not it is one that will come within the terms of compensation and, when properly commissioned, whether or not he must abide by the terms of this act as to fees. In this particular, it might be well to bear in mind that the employee, having automatically accepted the terms of the compensation law by not rejecting it in the manner provided for, has placed himself in a position where he has accepted its benefits in lieu of all other forms of action or claims for damages. This also applies to medical fees, for the reason that the injured employee cannot depart from the terms of the act—employ a physician and undertake by any process of law or reasoning to place the burden of payment upon the employer, for Section 303 of Article III provides:

Such agreement (referring to the acceptance of compensation by express agreement or by silence) shall constitute an acceptance of all the provisions of Article III of this act, and shall operate as a surrender by the parties thereto of their rights to any form or amount of compensation or damages for any injury or death occurring in the course of the employment, or to any method of determination therefore, other than as provided in Article III of this act. Such agreement shall bind the employer and his personal

representatives, and the employee, his or her wife or husband, widow or widower, next of kin, and other dependents.

Physicians, as well as lawyers, forgetful of this section, have advanced the thought that inasmuch as our compensation law does not provide for the payment of compensation for disfigurement or loss of any part of the body that does not involve actual loss of wages or compensation, that undoubtedly the employee would retain his old common law action for damages for loss in these respects. As a matter of fact this is one of the most common arguments used by representatives of stock insurance companies against the State Fund, whereby they undertake to draw the conclusion that their insurance is better than the State Fund in that the latter only covers liability created by the act, whereas the stock company policy will cover any liability that may grow out of the loss of an ear, or a nose or a finger, where actual loss of wages does not follow. Professor Bohlen, chief counsel for our board, very ably summed up the argument against this proposition when he said:

The employee agrees to give up his common law rights to recover damages for any personal injury due to a work accident and all the harmful consequence which he suffers therefrom, and in return receives a right to the compensation provided in the act. He obtains a certainty of a speedy and fixed compensation if he is killed or disabled, in place of his previous right to full damage on the comparatively rarely occurring occasions when he could prove that the accident was due to his employer's negligence. In return he gives up not only his right to full damages for those harms for which compensation is provided, but also all right to any compensation or damages for those very infrequent consequences, such as mutilations and disfigurements, which do not entail loss of earning power and so are not the subject of compensation. It is therefore clear that the sole remedy of an employee who has agreed to accept the compensation provisions of Article III, is under that article and that he can maintain no action at common law for any harm resulting from a work accident whether covered by the compensation schedules or not. There is therefore no right of action at law to recover damages for a mutilation or disfigurement not causing disability for more than fourteen days. An employee so mutilated is entitled only to the medical, surgical, and hospital services which the employer is required by Section 306 (c) to supply him, and if these are refused and he is forced to provide them for himself, his sole remedy is by petition to the Workmen's Compensation under Section 412 of the Compensation Act.

That section of the act which probably has excited the most interest and comment upon the part of the medical profession is Section 306 (e) referred to in the foregoing opinion, which reads:

During the first fourteen days after disability begins the employer shall furnish reasonable surgical, medical, and hospital services, medicines, and supplies, as and when needed, unless the employee refuses to allow them to be furnished by the employer. The cost of such services, medicines, and supplies shall not exceed twenty-five dollars, unless a major surgical operation shall be necessary; in which case the cost shall not exceed seventy-five dollars. If the employer shall, upon application made to him, refuse to furnish such services, medicines, and supplies, the employee may procure the same, and shall receive from the employer the reasonable cost thereof within the above limitations. If the employee shall refuse reasonable surgical, medical, and hospital services, medicines, and supplies, tendered to him by his employer, he shall forfeit all right to compensation for any injury or any increase in his incapacity shown to have resulted from such refusal.

In view of the fact that the provisions of this section have been the subject of deliberation of

*Read before the Dauphin County Medical Society, February 2, 1916.

medical societies all over the State, it would be well for us to note in passing the provisions of some of the other States in the Union. Those who framed the Pennsylvania act had the benefit of the experiences of our other States and of course indulged in a close inspection of the various statutes of those States. Because of a most serious study of this legislation in practically every State of the Union, from every angle, it will be instructive to observe how these particular questions have been met elsewhere.

COMPENSATION ACTS IN VARIOUS STATES.

The compensation law of Alaska was approved April 29, 1915, and became effective July 28th of the same year. It provides that only in case of death where there are no dependents, employer must pay necessary expenses, if any, arising after injury and before death; the maximum medical and surgical aid being placed at \$150.

The laws of 1912 of the State of Arizona provide that only in case of death, when medical and burial expenses to be paid by representatives of deceased out of lump sum of compensation recovery.

The laws of 1913 of California provide that the employer must furnish such medical treatment, etc., as may be required at time of injury and within ninety days thereafter, but such time may be extended by the commission. If employer fails to provide such treatment, he is liable for the reasonable expense incurred by employee in procuring same.

In Colorado the laws of 1915 provide that the employer must furnish medical, surgical, and hospital treatment as reasonably needed during first thirty days of disability. The maximum is \$100, unless other terms have been arranged by prior agreement. In case of hernia, if employee requires an operation, special fee is provided with a maximum fee of \$50 to be paid by employer, insurer, or commission.

In Connecticut the laws of 1915 amending the Act of 1913 provide that the employer must furnish such medical, surgical, or hospital treatment as may be reasonable or necessary or employee may do so at employer's expense. The employer's liability therefore limited to prevailing charges. The employee's refusal to accept such services or failure to provide same suspends right to compensation.

The law of 1915 of Hawaii provides that during the first fourteen days of disability, employer must furnish reasonable surgical, medical, and hospital services, etc., with maximum of \$50. The liability for such treatment is limited to prevailing charges, considering patient's standard of living.

In Illinois the Act of 1913, as amended at the session of the legislature held in 1915, provides that employer must furnish medical aid, etc., for eight weeks after injury; with maximum of \$200. But employee may elect to engage his own physician at his own expense.

The Indiana Workmen's Compensation Act of 1915 provides that the employer must furnish medical aid, etc., during thirty days after injury and, at his option, may continue same during entire period of disability or any remaining part thereof. Employee's refusal to accept treatment suspends, and may forfeit compensation for period of continuance. If employer fails to provide such attendance for thirty days, he is liable for reasonable cost thereof, subject to approval of the board.

In Iowa the employer, if requested by the employee or ordered by court, must furnish reasonable medical aid, etc., not exceeding \$100 at any time after the injury and until end of second week of incapacity.

In Kansas only in case of death with dependents, employer must pay reasonable expenses of medical attendance and burial. Maximum of \$100.

In Louisiana during first two weeks after injury, the employer must furnish reasonable medical, surgical, or hospital services, not to exceed \$100 in value, unless employee refuses to accept.

In Maine during first two weeks after injury, employer must furnish reasonable medical and hospital services, etc., as needed, with a maximum of \$30. In case of major surgical operation, if parties disagree on cost thereof, the commission must fix amount upon petition of either party.

In Maryland the employer must furnish medical or hos-

pital services, etc., as required by commission, not to exceed \$150 in value. If employer fails to provide it after request by injured employee, latter may do so at employer's expense.

In Massachusetts the association or insurer must furnish reasonable medical aid, etc., during first two weeks of incapacity, or for longer period in discretion of the board. Note what is meant by the word "association," in this particular the statewide Mutual Insurance Association.

In Michigan the employer must furnish reasonable medical aid, etc., when needed during first three weeks after injury.

In Minnesota the employer must furnish medical aid, etc., including crutches and apparatus, as reasonably necessary, for a period not to exceed ninety days. If he fails to provide them, he is liable for expense thereof, maximum \$100, but at any time within one hundred days after injury, if found necessary, court may require employer to furnish further treatment, maximum total \$200.

In Montana during first two weeks after injury, employer, insurer, or accident fund must provide reasonable medical and hospital services, etc., maximum \$50, unless employee refuses.

In Nebraska employer must furnish reasonable medical aid, etc., as and when needed, during first twenty-one days of disability; maximum \$200. If employee refuses such aid, the employer is not liable for any consequent aggravation of injury.

In Nevada employer must provide such medical, surgical, or hospital treatment as may be reasonably required at time of injury and thereafter, maximum period of four months; otherwise employee may do so at employer's expense, or he may elect to receive such aid through the commission. In the latter event, employee's cause of action against employer is to be assigned to the commission. Employers are authorized to effect a mutual or cooperative arrangement among themselves or with their employees, to provide such treatment, and to deduct from employees' wages not more than one dollar each a month to contribute to cost of such arrangement.

In New Hampshire only in case of death with dependents, employer must pay expenses of medical attendance and burial. Maximum \$100.

In New Jersey employer must furnish reasonable medical aid, etc., as and when needed during first two weeks after injury; maximum \$50.

In New York, under the laws of 1913, amended in 1915, the employer must furnish such medical aid, including crutches, apparatus, etc., as required or requested by employee during sixty days after injury. Charges therefore subject to regulation by commission and limited to those that prevail in community for similar treatment of persons of like standard of living.

In Ohio the commission, in its discretion, may disburse for medical aid, etc., such sum as it may deem proper, not to exceed \$200 in any one case.

In Oklahoma the employer must furnish such medical aid, including crutches, apparatus, etc., as may be necessary, during fifteen days after injury. Charges for such treatment subject to regulation by the commission and limited to those that prevail in community for similar treatment of persons of like standard of living.

In Oregon the commission may provide or authorize employers to provide at its expense first medical aid, etc. Maximum \$250.

In Rhode Island employer must furnish reasonable medical aid, etc., when needed during first two weeks after injury. Charges therefore to be determined by Superior Court in case of disagreement.

In Texas the association (referring to insurance) must furnish reasonable medical aid, etc., when needed, during first week of injury. For failure to do so, it is liable for reasonable expenses thereof, provided that notice of injury is given.

In Vermont during the first fourteen days of disability, employer must furnish reasonable surgical, medical, and hospital services; maximum \$75. Liability therefore is limited to charges prevailing in community for similar treatment of persons of like living.

In West Virginia, unless employee is entitled to treatment from some other source, the commission must pay from State fund for medical, surgical, or hospital treatment, etc., as may reasonably be required, maximum \$150, except that in certain cases, if permanent disability, maximum may be \$300.

In Wisconsin employer must furnish such medical aid, etc., including crutches and apparatus, as required at time of injury, and thereafter during disability, maximum period ninety days. For failure to do so he is liable for expense thereof. Commission is authorized to pass upon reasonableness of medical and hospital bills.

In Wyoming the employee's refusal to submit to medical or surgical treatment forfeits right to compensation. Payments of compensation are not to be made until employee is discharged by physician, except upon latter's order. No provision is made as to who must pay for such treatment.

Therefore those who framed the Pennsylvania act had reason to incorporate at least two provisions which seem to have been universally adopted throughout all these States, and must necessarily be considered as being established by the wisest exercise of discretion on the part of those who have given this subject great study, namely:

1. The right of the employer to select medical attendants.

2. In having a waiting period of from ten to fifteen days, during which time the employer furnishes medical attendance and becomes responsible for a certain amount as provided by the act, varying in different States, but during that period the employee receives no compensation. It is perfectly evident that this period of waiting is a very wise and necessary precaution as that is the testing period and insures the employer against the malingerer. The right of the employer to select the physician is fundamentally right. It may be criticized from the viewpoint of the medical profession alone as restrictive upon the free choice of individual doctors. It may cause a few medical men to indulge in caustic criticism of the act. It may create in the medical profession specialists who will be selected by employers and insurance companies to treat these cases, nevertheless from the standpoint of the public, whose interest is only quickly to return a productive element of society to activity, it will work out to the economic advantage of industry, for the reason that it will readily occur to any one that with the right to select physicians to attend the injured man during the waiting period of two weeks, the commercialism of the employer will dictate to him the thought of securing the best medical attendance so as to return that man to his employment before the expiration of the two weeks' period in order to avoid liability of compensation which begins upon the fifteenth day after the accident.

I have had some correspondence with the commissions of other States in regard to the medical aspect of their acts and have received some very interesting communications. For instance, John Mitchell, chairman of the State Industrial Commission of the State of New York under date of January 25th last, writes:

Section 13, of the New York Statute in relation to the treatment and care of injured employees, provides that the employer shall furnish for an injured employee medical, surgical, or other attendance or treatment, nurse and hospital service, medicines, crutches, and apparatus during sixty days after the injury. The language of this section would seem to indicate that the employee is required to accept medical and surgical service tendered by the employer; however, the language of the law is somewhat involved and its meaning has not yet been determined by the courts.

The practice of this commission is to approve the bill rendered by the physician who has treated an injured employee, even when the employee selects

the physician himself. That is to say, if an injured employee notifies his employer that he has been injured and requests medical treatment and then selects his own physician, the commission will approve the bill of said physician, provided that it is reasonable within the meaning of the law. If the employer or his insurance carrier has refused to pay this bill the physician is then permitted to enter suit in the civil courts for its collection.

It is expected that the New York Legislature at its present session will amend the act so as to make clear and certain the meaning of the section in question.

W. L. Blessing, commissioner of the State Industrial Commission of the State of Oklahoma, under date of January 24, 1916, writes:

Our law is not very explicit in the matter of handling physician's bills. However, the commission has taken the stand that when the employee refuses to accept the employer's physician without showing good cause to the commission, we have refused to award payment to the physician selected by you.

Chairman John B. Hanna, of the State Industrial Accident Commission of the State of Maryland, writes under date of January 27th:

The Maryland act provides that in addition to the compensation provided for, the employer shall promptly provide for an injured employee, medical and surgical attendance, etc., not to exceed \$150. If the employer fails to provide, the injured employee may do so at the expense of the employer. There is, however, an additional paragraph which provides that "the employee shall not be entitled to recover any amount expended by him for such treatment or services unless he or someone in his behalf shall have requested the employer to furnish the same, and the employer shall have refused or neglected to do so."

Many employers have insured in casualty companies that have a staff of physicians who look after compensation cases. These, as a rule, require a technical compliance with the act and refuse to pay for the services of physicians selected by the employees. Other employers and insurance carriers are more liberal and do not object when the employee selects his own physician, if he selects a physician of good professional standing. Our policy in managing the State Accident Fund is to allow the employee to choose his own physician if he desires to do so, provided that he is a man of known professional skill and is a graduate of a reputable medical school. We have a fee schedule as a guide in passing upon physicians' charges. Our experience shows that the commission should have wider powers concerning the employment of physicians. Many insurance carriers and employers do not acquaint employees with their rights and do not offer medical services, and then when the employee selects his own physician, raise the point that no request was made, as the law provides, and the employee must pay the bill himself. This creates dissatisfaction among both employees and physicians.

Chairman E. McLaughlin, of the Industrial Commission of Colorado, under date of January 25, makes a notable suggestion to our board contained in the following:

The question as to whether the sections referred to give the employer the absolute right to name the physician has not been passed upon by this commission in concrete form. In actual practice, sometimes the employer and sometimes the employee, names the physician. In my personal opinion, it is unfortunate that your statute gives to the employer

specifically the right to name the physician, and as a matter of practice, I beg to suggest that it would be well for your board to recommend to employers that they take into account the wishes of the employee in naming the physician.

Chairman Vaughn, of the Industrial Board of the State of Illinois, writes under date of January 27th, as follows:

The amount of compensation which shall be paid to the employees for an injury not resulting in death shall be:

(a) The employer shall provide necessary first aid, medical, surgical, and hospital services; also medical, surgical, and hospital services for a period not longer than eight weeks, not to exceed, however, the amount of \$200. The employee may elect to secure his own physician, surgeon, or hospital services at his own expense.

Our experience has been that the fact that the employer is required to do this, meets all objection. The employee is not bound to do anything in his own behalf. It is the duty of the employer to see to it at once, and hence the employee is relieved of the responsibility and usually gets the very best medical attention. It is true, that when the time comes for testifying in the case concerning the man's injury, there is some criticism of the attitude of doctors furnished by employers with reference to the nature, character, and extent of the disability; but my notion about it is that this provision would be an improvement upon the one allowing the employee to select his own physician. It being the duty of the employer to do this, it is done at once, without any thought on the part of the employee, and usually the very best of physicians are called in. True, we have no experience along the line of allowing an employee to select his own physician, and can only guess at what the relative merits of the two methods would be. At any rate, I have no hesitancy in saying that ours works very satisfactorily, except upon the question of testifying before the board as referred to above.

(To be concluded.)

Contemporary Notes.

Finding the Way.—There is only one best conduct of life for you, and that is—the one that is best for you. Those who wander aimlessly in quest of the single right formula for existence, soliloquizes *Collier's* for March 25, 1916, grope in a maze through which they must thread their way endlessly in search of the centre which does not exist. There is no one recipe which will serve for all mankind. Each must learn, not his neighbor's, but his own best way of living. To one it may be the routine task, the daily round, to curb the wandering will and bring content. To another it may be the fortitude to escape the sheltering care of habit or the lassitude of sloth. To one it should be the abandonment of philosophy or introspection to rub elbows with his fellow men; to another the willingness to let the soul awaken and breathe amid the sky rimmed prairie and under the deathless stars. To one, hearthstone and slippers; to another, the seven seas, the aurora borealis, and the Southern Cross. To one, society; to another, solitude. To one, the quiet which stills the passions; to another, the eternal restlessness which brings achievement. The best rounded life contains something of each and all. There are but two attitudes to

avoid; the level line of least resistance, and the rigidity of self distrust which denies every impulse simply because it is impulse. Somewhere between the two lies your course. Many are the thickets to be hewed down, many the crags to be scaled. But beyond stands the Inn in the Clearing, where faithful travelers may find the refreshment, the rest, and the kindly words of welcome, which form the goal and reward of life well lived.

Physicians and Insurance Companies.—More and more, observes the *Journal of the Indiana State Medical Association* for February, 1916, are the physicians of Indiana beginning to learn that they are to be made the victims of the rapacious insurance companies in the matter of fees for services rendered in cases that come under the Workmen's Compensation Act unless a united stand is taken for what is reasonable and right. From many parts of the State come complaints from physicians who are having their troubles with the insurance companies in securing just compensation, and the question arises as to just what the medical profession is going to do about the matter. If it was a question of securing anything more than established fees the *Journal* would offer no protest to the effort on the part of insurance companies to protect themselves from being imposed upon. However, in not a single instance that has come to our attention have the fees to which the insurance companies have offered objection been anything more than would have been charged a private patient for similar services in the locality in which the services were rendered. The question is bound to be a serious one unless medical men refuse to be browbeaten and coerced in accepting anything which the greedy and conscienceless insurance companies see fit to offer for medical and surgical services.

Under Oath, He Prefers the New York Medical Journal.—In the course of the libel suit brought by a large proprietary medicine concern against the American Medical Association, on April 5th, Dr. W. F. Ashmore, according to the *Journal A. M. A.* for April 15th, was called as a witness for the defendants. Doctor Ashmore testified that he was a practising physician residing in Anniston, Anniston county, South Carolina, and had been practising for twenty-two years. The first fifteen years he had been almost exclusively among the cotton mills and rural districts of Oconee county, South Carolina, and Greenville county, South Carolina. On cross examination, Doctor Ashmore testified that he was city physician and had been chairman of the Board of Health of his city for two or three years. He is a member of the South Carolina Medical Association and ex-president of the County Medical Association. He was asked:

Q.—You could be a member of the American Medical Association by just subscribing for the *Journal* (i. e., of the American Medical Association)?

A.—Yes, sir, but I prefer other journals; there are other journals I like better.

Q.—You say you prefer other journals?

A.—Yes, sir.

Q.—What other journals?

A.—I prefer the NEW YORK MEDICAL JOURNAL.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 22, 1916.

1616—SHAKESPEARE—1916.

Shakespeare might have made the most popular
and successful physician of his time had he over-
come his evident prejudice against a profession
which, in both theory and practice, was, on the
average, well worthy the flings of ridicule of his
earlier plays.

Physicians are not by any means always popular
in proportion to their technical learning, nor are
they successful in their practice according to their
schooling; but they acquire and hold their clientèle
largely through their personality, and in no incon-
siderable measure accomplish their cures through
their inherent good sense and their insight into the
minds of their patients. If such is the case today,
how little indeed must the science and the training
possessed by the average physician of Shakespeare's
day have had to do with his popularity or success.
The practice of medicine in the sixteenth century
was necessarily based largely on a heap of tradition
and superstition; and the orthodox practitioner, who
went about letting blood promiscuously and not in-
frequently ministering potions he would "tremble
to receive himself," had either a precedent bound
and custom ridden mentality, or was a thorough
charlatan.

Many a patient did wisely to

Abandon his physicians . . .

Under whose practices he hath persecuted time with hope,
and the suggestion, but recently disappearing from
common banter, that the doctor, as well as disease,
was often responsible for untimely demise, was put
with justice as well as satire into the mouth of more
than one of Shakespeare's characters. It may have
been horse play to please the mob, but it was not
without foundation in fact.

And yet there were wise and worthy physicians in
Shakespeare's day—men of philosophic mind, not
too muddled with metaphysics, who studied Nature
as well as books and who learned from experience
as well as from precept, and made the most of the
scant science of the time. The dramatist had, in his
later years, evidently become acquainted with such,
perhaps in connection with the last illness of his
father (1601) or of his mother (1608). He may
have become acquainted with William Harvey, who
was but fourteen years younger, and he must have
had much respect for Dr. John Hall, who, in 1607,
despite the query in the *Merry Wives of Windsor*,
"Will you cast away your child on a fool and a
physician?"—was married to Shakespeare's eldest
daughter.

It may have been only for the saving of the family
feeling, but, at all events, in the plays written after
1605 there is no more sarcasm at the expense of the
medical profession. In *Cymbeline* (1609) he ad-
mits "by medicine that life may be prolonged," and
in *Pericles* (1608) he makes the dignified Ceremon,
Lord of Ephesus, say:

. . . I ever
Have studied physic, through which secret art
By turning o'er authorities, I have
(Together with my practice) made familiar
To me and to my aid the blest infusions
That dwell in vegetatives, in metals, stones;
And I can speak of the disturbances
That Nature works and her cures; which doth give me
A more content in course of true delight,
Than to be thirsty after tottering honor
Or tie my treasure up in silken bags
To please the fool and death.

That his son-in-law was worthy to inspire such
a tribute is proved by the fame in which he was held
"far and near" and by the words of praise bestowed
by a fellow physician who published one of his
books: "I take it to be a sign of his ability that such
who spare not cost, and they who have more than
ordinary understanding—nay, such as hated him for
his religion, often made use of him."

Shakespeare's incisive mind penetrated keenly the
shallow medical science of the day and observed
closely its limited art. He understood the role of
Nature in the cure of disease; he knew the current
classification of drugs, the practice of animal ex-

perimentation with some of them; and he is persuaded that "the most sovereign prescription in Galen is empiricic."

He was familiar with a large number of diseases and with a considerable array of remedies employed for them. He was, however, especially keen in distinguishing between the mental and the physical sources of bodily derangement. The "good doctor" in *Macbeth* (1605) sees at once that Lady Macbeth "more needs the divine than the physician," and the sympathetic physician in *King Lear* (1605) understands well the nice balance always existing between physical and mental sanity. Indeed, Shakespeare would have made the supreme psychiatrist.

Though Shakespeare was no professional physician, he went out of his way, as a playwright, to preach the gospel of health. He emphasized the dangers of venereal disease, pointed with the finger of ridicule at the results of gluttony, and inveighed against excess in the use of alcohol. He did better than "minister to a mind diseased," in that he has treated "the immortal part" of millions of those not over the narrow border line which separates the normal from the pathological, but too frequently dangerously near it.

THE NEXT STEP IN HEALTH INSURANCE

The principle of compensation for industrial accidents is accepted today as sound and beneficial. It was bitterly fought by many persons a few years ago. The principle of compensation for occupational disease is likewise sound. We would define occupational disease to be disease caused, promoted, or prolonged by remediable work conditions.

We would submit for the consideration of the New York Senate committee on health insurance a plan for the extension of accident compensation legislation, to include occupational disease, as being the next logical step toward introduction of health insurance principles. Insistence upon compulsory health insurance legislation in the present uninformed state of public opinion would be apt to arouse intense and well justified opposition and would set back by many years the whole movement for health insurance.

The trend of economic thought is toward diminution of suffering and waste through disease. One important means for reducing waste of human life is insurance. We are thoroughly accustomed to life insurance, but health insurance in this country is comparatively new. The NEW YORK MEDICAL JOURNAL strongly advocates health insurance and believes in legislation which tends to make health insurance acceptable, effective, and universal, but

it strongly deprecates compulsory legislation. Legislation of any kind should be the result of emphatic and educated public opinion, and never should be imposed upon a community. Professor John Dewey has recently defined our country as "essentially a cooperative undertaking, one which rests upon persuasion, upon ability to convince and be convinced by reason; or, in ordinary language, upon public opinion. If we have a real social organization and unity it is in virtue of the existence and the influence of that impalpable thing called public opinion: the common mind, the common intention, resulting from free exchange and communication of ideas, from teaching and from being taught." Social legislation compulsory in character unless expressive of public opinion is unAmerican, unenforceable, and places a premium upon evasion, perjury, and litigation.

A recent health insurance act, Senate Bill No. 236, was an effort to impose by compulsion a method of health insurance upon the workers of New York State. It has been referred to a special committee for further study. We have desired to promote the widest possible discussion of this health insurance act, realizing that the more thoroughly it was studied, the more clear its defects would be. We have believed that the sponsors of this happily defunct measure never realized its implications of political graft. The duties of the health insurance commission as proposed by the act, instead of being merely supervisory as stated by our correspondent Mr. Joseph B. Chamberlain, were also plenary, autocratic, inquisitorial, and irresponsible. Fortunately this bill is dead—*de mortuis nihil nisi bonum*.

THE SANITATION OF SWIMMING POOLS.

There has been a rapid and commendable increase in the last few years in the number of swimming pools in gymnasiums and recreation centres. The danger from a sanitary standpoint has been recognized, and usually efforts are made to sterilize the water in some fashion or to minimize the risk of conveyance of disease by this means. In well conducted pools patrons are required to bathe with soap and to take a shower bath before entering the pool. Even with such precautions, however, it is evident that pollution of the water will occur, and with it the possibility of transfer of disease. There is now no sanitary standard for comparison, and it is first necessary to obtain data on desirable methods of analysis.

M. Levine (*Journal of Infectious Diseases*, XVIII, 293, 1916) has studied this question in the swimming pool of the Iowa State College with some interesting and valuable results. He found that con-

tinuous filtration of the pool lowered the bacterial content by sixty per cent. During six weeks, presumptive tests for *Bacillus coli* before use of the pool were generally negative. Afterward, positive tests were more common until finally gas producing bacteria were constantly present in one c. c. and sometimes in 0.1 c. c. of the water. He found that, without disinfection, continuous filtration gave the best results in lowering the content of *Bacillus coli* when the temperature of the water was less than 74° F., and that the temperature of the room should be higher than that of the water. Continuous filtration alone, however, was not enough to maintain the pool in a sanitary condition and was best supplemented by disinfection.

Since contamination is constantly being introduced by bathers, disinfection should be continuous and at its maximum when the tank is in use. Levine did not find the use of calcium hypochlorite satisfactory after the tank was vacated. The hypochlorite serves as a good terminal disinfectant but is too irritant to the eyes, and possibly to the teeth, to be desirable while the tank is in use. He recommends copper sulphate as meeting the specific requirements in a strength of one part in one million parts of water. It is cheaper, is nonirritating, and the action is slow and consequently spread over a considerable period. Addition of the copper sulphate immediately before the tank is to be used gives the maximum action when it is most needed. This, combined with continuous filtration and an occasional terminal disinfection with calcium hypochlorite, will keep a tank in sanitary condition for several months.

PROGRESSIVE LIPODYSTROPHY.

Only fifteen cases apparently have been reported of the rare condition of lipodystrophy, beside those cited by Charles Herrman in the *Archives of Internal Medicine* for April 15th. The most striking symptom is the disappearance of fat from the face and from the entire body above the crests of the ilia; below these points, the fat is stationary or increases. Examination, both physical and clinical, is usually blank as to findings. The family and personal history may be negative. The ductless glands are unaffected. Herrman thinks that the disease must be due to something in the circulating blood, its bilateral character lending support to the hypothesis. The disease occurs only in women and girls.

The trouble seems to begin either between the sixth and seventh year or at puberty; the onset is insidious, painless, and symmetrical. In the lower part of the body, the increase of fat is most marked in the gluteal region. After some years the fatty growth ceases. Examination shows no impairment

of muscular function, no change in electrical reaction, no disturbance of sensation, no vasomotor trouble. The x ray discloses nothing. The blood serum is clear. Pulse, respiration, and intestinal peristalsis are unaffected.

Diagnosis is easy, the cadaverous expression of the face in an otherwise healthy looking person being characteristic. The prognosis is good. As to treatment, none has succeeded, so far; endocrine extracts have accomplished nothing. For cosmetic purposes, suet has been injected into the cheeks, but has eventually been absorbed. Herrman is going to try paraffin injections, as he believes the facial deformity due to the disease to be worse than the loss of mobility of feature sometimes caused by paraffin.

PUBIC PHTHIRIASIS CAUSED BY PEDICULUS CAPITIS.

J. Nicolas and G. Massia (*Annales de dermat. and de syphilig.*, January, 1916) describe a case of the rare infestation of the pubic area by the head louse. Their patient, a working man, thirty-five years old, applied for treatment of a syphilitic gummata of the ankle, together with various specific eruptions on the body, many of them aggravated by scratching. The syphilitic history was clear; the patient laid stress, however, in his personal history on loss of sleep for the previous two months due to uncontrollable itching in the pubic region. On examination of the pubis the writers found numerous lice in the hair of both pubis and abdomen, but they were not hooked about the hair after the manner of crab lice. The nits were also attached to the hair, but not to the roots; they were found usually about half way up the hair. The patient had no lice on the head, the body, or the clothing. There is but one similar case in the literature, viz., that reported by G. F. Lydston, of Chicago (*Jour. of Cutan. and Genitourin. Dis.*, 1892, p. 399); this was a pruritus vulvæ due to head lice. There seems to be a curious instinct among the insects which prevents them from settling in an unaccustomed part of the human body. There was no possibility of confusion, as the writers easily distinguished the head louse from the crab and body louse by microscopic examination, which also differentiates the nits without difficulty. Such cases are of interest to the practitioner, if only for their rarity.

GLYCERIN AND ICHTHYOL IN SEPTIC WOUNDS.

G. G. Alderson communicates to the *Lancet* for April 1st his experience at a divisional rest station in France in opening and treating superficial abscesses. It was decided to replace boric fomentations with glycerin and ichthyol. At first a twenty per cent., but later a ten per cent. solution spread on

ordinary white lint was used, and then for economy commercial instead of pure glycerin was employed. Fifty-nine cases were thus treated after operating under an anesthetic, beside many others of which no record was kept and in which no anesthetic was necessary. They included carbuncles, whitlows of all types, and three cases of cellulitis, two of the upper and one of the lower limb.

In favor of this treatment were: 1. Saving of labor and material—one application daily in place of three boric fomentations. 2. Efficiency as a dressing. Several of the cases had been previously treated with boric fomentations; in these the discharge was never more in twenty-four hours on the one glycerin and ichthyol dressing than on any one of the fomentations, though these had been changed twice and thrice daily. 3. The dressing did not adhere to the wound. 4. Men voluntarily told the nursing orderlies that they found the ichthyol dressing more soothing. This treatment is therefore recommended to medical officers, civil and military, for use in dressing superficial septic sores and wounds, as being as efficacious as the boric fomentation, and more economical in time and material.

TO SIMPLIFY METRIC PRESCRIBING.

Dr. W. W. Hardwicke communicates to the *British Medical Journal* for April 1st a method of translating doses in apothecaries' weight into the metric system. By the following mode of proceeding, he writes, very little, if any calculation is required.

Say seven and a half grains is the dose we wish to give; write it down as 7.50 grams, and we at once have sixteen doses (the gram being taken at its approximate equivalent), and we substitute metric for old measures at one stroke. The same with minims, bringing them to mls. We can then proceed to divide the amount, or multiply it, to any number of doses we wish to prescribe, and so adapt them to the sizes of bottles as at present manufactured. When the time arrives that metric bottles are made, we shall be as familiar with the new as with the old system. Where fractions or submultiples are concerned—as in pills—it necessitates greater exactitude. If the dose should happen to be one sixteenth the proceedings may be as given above; but if not, the easiest way is to divide 0.65 (= one grain) by the denominator, thus: Grain $1/5 = 0.013$ (13 mg.), grain $1/60 = 0.00167$ (c. mg.), and so on. To prescribe ten pills we simply move the decimal point one place to the right, thus: 0.13 and 0.0167.

News Items.

Mary Putnam Jacobi Memorial Fellowship.—Dr. Mildred Clark, of the 1914 class of Johns Hopkins Medical School, recent winner of this fellowship, will use it for research in medical bacteriology in Dr. Theodore Janeway's department at the Johns Hopkins Hospital.

Philadelphia Medical Club Reception Postponed.—The reception to be given by the Medical Club of Philadelphia in honor of Dr. Wilmer Krusen, director of public health of Philadelphia, has been postponed to Friday evening, April 28th, on account of April 21st being Good Friday.

A Commission to Study Health Insurance.—The New York State Senate has passed the Mills bill creating a commission to investigate health insurance and to report proposed legislation to the legislature of 1917. The measure provides that the commission shall consist of two senators, two assemblymen, and four other members to be appointed by the chairman. It carries an appropriation of \$25,000.

Dr. Hobart Amory Hare Honored.—In recognition of Doctor Hare's twenty-fifth anniversary as a member of the faculty of Jefferson Medical College, the student body of the institution presented to him on Tuesday, April 17th, a bronze copy of Mercury, by Pigale, now in the Louvre. Addresses were delivered by Dr. Francis X. Dercum and Dr. John Chalmers Da Costa. The presentation was made by Doctor Da Costa.

Transfer of Authority at Saratoga Springs.—The legislature has passed the bill transferring the work of the Saratoga Springs Reservation Commission to the State Conservation Commissioner, Mr. George D. Pratt, of Brooklyn. The bill has gone to the Governor for signature. It is to be hoped that Mr. Pratt will appoint a deputy to represent him at Saratoga Springs who will be a good business man and able to further the development of the spa on the lines adopted by European experts.

Delay in Merger of Philadelphia Medical Colleges.—Plans for the consolidation of the Medical Department of the University of Pennsylvania, the Medico-Chirurgical College, and the Jefferson Medical College have been halted temporarily, until the commission appointed by the city solicitor completes its appraisal of the buildings belonging to the Medico-Chirurgical College. When the report of the commission is submitted to the trustees of the institution, and accepted, the negotiations will go forward.

A Symposium on the Workmen's Compensation Act.—The Committee on Scientific Program of the Philadelphia County Medical Society is arranging a symposium on the Workmen's Compensation Act in its relation to the medical profession, for the meeting of the society to be held on Wednesday, May 10th. Dr. Frank C. Hammond, 1729 Arch Street, Philadelphia, is chairman of this committee, and will appreciate information from any member of the society in regard to such phases of the act as have directly involved medical practitioners.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, April 24th, North Branch of the County Medical Society; Tuesday, April 25th, West Philadelphia Medical Association, Medico-legal Society, Mount Sinai Hospital Clinical Society; Wednesday, April 26th, County Medical Society; Thursday, April 27th, Pathological Society, Northwest Branch of the County Medical Society, Northern Medical Association (seventieth anniversary banquet); Friday, April 28th, Neurological Society, Medical Club (reception).

Plans Filed for Addition to Bellevue Hospital.—Plans have been filed for the construction of the central building of the new Bellevue Hospital. It will face on First Avenue and will be known as the F and G sections, six and ten stories high. On the first floor will be medical wards, second floor erysipelas wards, third and fourth floors tuberculosis wards, fifth and sixth floors medical wards, seventh floor children's medical wards, and eighth floor babies' medical wards. There will be an interior court extending from the ground to the top which will give light and air to all parts of the wards.

Medical Medals.—The Army Medical Museum possesses a valuable collection of medals relating to medicine, which was started and fostered by the late Dr. John S. Billings, and it is highly desirable that this collection should be added to and completed, as far as possible. To this end, Lieutenant Colonel C. C. McCulloch, Jr., librarian, Army Medical Museum and Library, Washington, D. C., respectfully solicits the assistance and advice of physicians who are collectors of medical medals. The museum appropriations will avail to purchase individual medals which are not in their collections. The purchase of private collections, or of individual items in them, will be carefully considered, private donations of separate medals or groups of medals will be most welcome and will be duly credited to the donors, and the transmission of catalogues of medals for sale is requested. If physician-collectors will bring this notice to the attention of antiquarian establishments having medals for sale, the favor will be most highly appreciated.

Bronx County Physicians and Dentists to Hold a Joint Meeting.—On Tuesday evening, April 25th, the Bronx County Medical Society will hold a joint meeting with the Bronx County Dental Society. Dr. Percy R. Howe, of Boston, will read the paper of the evening, his subject being *Infections Arising from Apical Ends of Tooth Roots*. Among those who will take part in the general discussion are Dr. H. Roth, Dr. H. W. Frauenthal, Dr. W. G. Eynon, Dr. J. B. Stein, Dr. Alfred R. Starr, Dr. Herbert L. Wheeler, and Dr. Arthur L. Swift.

Laboratory Diagnosis of Disease.—The Public Health Council of the State Department of Health, at its meeting on April 4th, passed the following resolution: "It is the judgment of the council that laboratory facilities in the State, both within and without the department being now adequate to make diagnostic examinations in diphtheria, typhoid fever, and tuberculosis, it is feasible and desirable for the department to enforce the sections of the Sanitary Code relating to prompt and uniform notification in these diseases by such means as will compel physicians at once to seek laboratory assistance in diagnosis in all doubtful cases."

Food Values and Their Relation to Disease.—At a stated meeting of the New York Academy of Medicine, held Thursday evening, April 20th, the program consisted of a discussion of some recent developments in our knowledge of food values and their bearing upon the causation of disease and upon its management. Dr. Casimir Funk read a paper on *Vitamines*, a new factor in nutrition. Dr. Alfred F. Hess presented a paper which dealt with group similarities of the deficiency diseases, as illustrated by the clinical and experimental study of infantile scurvy. The papers were discussed by Professor Graham Lusk, Dr. P. A. Levene, Dr. L. Emmett Holt, Dr. Warren Coleman, and others.

Baby Week in New York.—The week beginning May 6th has been designated as Baby Week in New York. The general committee appointed by the Mayor to conduct the campaign is headed by Dr. Haven Emerson, health commissioner. The active work of the campaign will be undertaken by a central committee, presided over by Dr. Alfred E. Shipley and composed of the chairmen of a number of subcommittees, among them being Dr. Ira S. Wile and Dr. Louis C. Ager. In connection with the propaganda of infant hygiene a determined effort will be made to arouse interest in maternity insurance as a powerful factor in the reduction of infant mortality.

The Association of Tuberculosis Clinics will hold a public meeting on Thursday evening, April 27th, at the New York Academy of Medicine. Home care in tuberculosis is the topic selected for consideration, and the program has been arranged to bring out a discussion of the various angles from which the subject of home care may be considered. Addresses will be delivered as follows: *Accomplishments and Failures of the Tuberculosis Campaign in New York*, by Dr. James Alexander Miller; *Handicaps in the Social Care of Tuberculosis*, by Thomas J. Riley, Ph.D.; *After Sanatorium Care*, by Morris D. Waldman; *Community Protection*, by Dr. Haven Emerson. The discussion will be opened by Dr. Hermann M. Biggs, Dr. Charles J. Hatfield, and Dr. Walter H. Conley.

Social Insurance Committee of the American Medical Association.—The purpose of this committee is explained in the following resolution, passed by the board of trustees of the American Medical Association, a copy of which was sent to each member of the committee:

Resolved, That the committee appointed jointly by the Council on Health and Public Instruction and the Judicial Council, consisting of Doctors Alexander Lambert, Frederic Cotton, and H. B. Favill, be approved, and that the purpose and duties of this committee be understood to be the careful compilation of information in re social or health insurance and the relations of physicians thereto; and to do everything in their power to secure such constructions of the proposed laws as will work the most harmonious adjustment of the new sociological relations between physicians and laymen which will necessarily result therefrom, and that this committee be authorized to carry on its work wherever seems most desirable.

Since its formation, the committee has lost one member in the death of Dr. H. B. Favill, whose place has not yet been filled. I. M. Rubinow, M.D., is secretary of the committee. He wishes to place himself at the service of the medical profession in providing information regarding the subject of health insurance, either through correspondence or by making addresses on this topic before medical and other organizations. His address is Room 904, 131 East Twenty-third Street, New York.

Mosquito Extermination in Brooklyn.—Another step toward ridding Brooklyn of mosquitoes was taken on April 18th when bids were opened at the department of health for ditching and draining the marsh lands adjoining Jamaica Bay. This is the work for which the city recently appropriated \$150,000, the work to be completed within 150 working days. Six firms submitted bids. An investigation is now being made to determine the financial responsibility of several of the low bidders and their ability to properly perform the terms of the contract. The department of health hopes to sign the contract within a few days and expects to have the contractor begin work by Mosquito Week, May 1st to 7th.

Motion Picture Demonstration of the Treatment of Fractures.—At a meeting of the Section in Orthopedic Surgery of the New York Academy of Medicine, held Friday evening, April 21st, Dr. G. W. Hawley gave a motion picture and lantern slide demonstration of methods of precision in the treatment of fractures. The pictures showed the following: An improved fracture table; a portable fracture table; a telescoping extension splint for fractures of the lower extremity; a practical fracture bed; open fixation of fractures by a clamp which is removed after the wound is closed and cast applied; a new method of "locking" fractures; a device for holding the foot while plaster is applied; a "fracture jack"; a new device for the reduction of congenital dislocation of the hip.

American Climatological and Clinical Association.—The thirty-third annual meeting of this association will be held in Washington, D. C., May 9th, 10th, and 11th, under the presidency of Dr. James Alexander Miller, of New York, in connection with the tenth Congress of American Physicians and Surgeons which meets in Washington at that time under the presidency of Dr. W. S. Thayer, of Baltimore. Twenty-eight papers are listed on the program, which includes memorials to members who died during the past year, the reports of delegates to the Second Pan-American Scientific Congress, and to the annual congress on Medical Education, Public Health, and Medical Licensure at Chicago, and a report of the formation and work of the American Society for the Control of Cancer. Dr. Philip King Brown, of San Francisco, and Dr. Henry M. Bracken, of Minneapolis, are vice-presidents of the association and Dr. Guy Hinsdale, of Hot Springs, Va., is secretary and treasurer.

American Academy of Medicine.—The forty-first annual meeting of this organization will be held in Detroit, June 9th to 12th, under the presidency of Dr. Woods Hutchinson, of New York. Dr. George A. Hare, of Fresno, Cal., is president-elect, and will deliver the presidential address on Friday evening, June 9th. This will be followed by the annual address, by the Hon. Thomas Mott Osborne, of New York, on Prison Reform. Saturday's sessions will be devoted to a discussion of Legislation and Medicine. On Sunday, the seventh annual conference on Western Medicine in Eastern Lands will be held, with Dr. L. Duncan Bulkley, of New York, as chairman. On Monday morning the final executive session will be held, after which the members of the academy will visit certain industrial plants in Detroit to study the social medical problems connected therewith. Dr. Thomas Wray Grayson, 1101 Westinghouse Building, Pittsburgh, Pa., is secretary of the academy and will be glad to furnish programs and full information regarding the coming meeting.

A Low Death Rate in New York.—According to a bulletin issued by the department of health, the death rate for the first sixteen weeks of this year was lower than ever before during the corresponding period. Last year to the middle of April the rate was 15.59 per 1,000 of population; this year 15.57.

During the week just passed the death rate was 2.49 points lower than the rate for the corresponding week of last year. This reduction in mortality is due chiefly to the fewer deaths from influenza, lobar pneumonia and bronchopneumonia and heart diseases, although scarlet fever, whooping cough, typhoid fever, cerebrospinal meningitis, diarrheal diseases, and bronchitis also showed a decreased mortality. On the other hand the mortality from measles, diphtheria, tuberculosis, and Bright's disease was somewhat higher than in the corresponding week of 1915. Altogether the number of deaths reported during the week was 1,555, giving a rate of 14.52 per 1,000 of population, compared with 1,778 and a rate of 17.01 for the corresponding week of 1915.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Oberlin College.

Sixteenth Communication.

MORPHINE (*Concluded*).

Under morphine action the cutaneous secretions alone remain normal, all other secretory activity of the body being partially inhibited, the kidneys showing the minimum effect. Glycogen disappears from the liver, and the excretion of carbon dioxide is lessened; but there is an increase of lactic acid in both the blood and urine. Altogether there is a profound influence exerted by this drug throughout the body, so that the specific action sought is much complicated by other undesired actions.

Absorption is fairly rapid and resorption continues for some time.

The chief indication for morphine is the relief of pain of a nonneuralgic type. In this field it is the drug *par excellence*, despite its many untoward features. Especially is it of great use in the pains of intestinal colic, where it usually gives almost magical relief when administered in the form of the tincture, preferably the denarcotized preparation. This latter point is one for earnest consideration as well as a subject for further study. Many an observation has been made of the long delayed, even frequently inadequate action of morphine administered hypodermically for the relief of acute colic, and the contrasted prompt relief afforded by the oral administration of laudanum. If the tincture is combined with a liberal dose of oleum ricini, the endoenteric cause of the pain will be swept out not many hours later.

The abdominal brain is normally an excellent coordinator, but it sometimes continues to transmit reflexes far beyond the limits of systemic conservation. This is frequently the case in dysentery and choleraic disturbances, where the excessive exosmosis rapidly exhausts the sufferer. Herein the timely check exerted by morphine on the glandular and serous exudates may occasionally prove the salvation of the patient. For this purpose it is indeed fortunate that we have such a drug.

Persistent debilitating cough may be largely controlled by one of the opium derivatives, preferably codeine. Of course there simply results an induced diminution of reflexes, chiefly through an interruption of the irritating sensations. But not infrequently the temporary relief is of sufficient duration to permit of the restoration of the parts to normal, especially in the absence of unproductive hacking. The great danger lies in the physician's liability to resort injudiciously to so effective a palliative.

Another important action of morphine is that to which it owes its name, the abuse of which property has caused such widespread degen-

eracies. There are undoubtedly a few occasions when the physician is entirely justified in using the soporific powers of opium, but these occasions are as clearly defined in their indications as they are limited in number, and may be classed among the extremes and emergencies. In most cases of insomnia some other measure than a dose of morphine should be employed, if the welfare of the patient is to be guarded with scrupulous conscientiousness.

Fermentative Diarrhea in Infants (Carbohydrate Form).—Lewis Webb Hill (*Boston Med. and Surg. Jour.*, April 6th) divides the diarrheas of infancy into three classes, infectious, nervous, and fermentative. The last is caused by the excessive decomposition of either carbohydrate or proteid material in the intestine. The carbohydrate type is the commoner and includes nearly all cases of diarrhea with strongly acid stools. The three principal causes are too high a sugar percentage in the food, too much food at a time, and bad milk. The one important principle in the treatment of such a case is to give a food low in carbohydrate until normal conditions are restored. If this food can contain a considerable amount of protein, in an easily digestible form, a great deal will have been gained, for the reaction of the intestinal contents can be changed from acid to alkaline by the alkaline end products of protein disintegration, and the source of the diarrhea removed. It is the high protein and relatively low carbohydrate percentage that has made egg white milk and its modifications valuable. The great drawback is their difficulty of preparation. The use of skim milk dilutions, with the addition of powdered casein, meets the indication, and such mixtures are much more simple. He recommends for babies under six months old a mixture of skim milk and water with enough calcium casein to bring the protein proportion up to 2.60 per cent.—giving the formula: Fat, 0.25; sugar, 2.25; protein, 2.60. For babies over six months old the same dilution of casein is added to three per cent. One third of an ounce of powdered casein in a mixture of sixteen ounces of skim milk and water is used, but the powdered milk and sixteen ounces of water raises the protein proportion to 2.60 per cent. In a forty-eight ounce mixture, half skim milk and half water, two thirds of an ounce of powdered casein raises the protein to three per cent. The amount given at each feeding depends on the individual baby, but in general slightly smaller amounts are given than would be given to a well baby of the same age and weight. The usual course is that after a day or two of this feeding the stools begin to diminish in number, become more yellow, and after three to five days become pasty, light yellowish brown in color, and alkaline in reaction. After the diarrhea has stopped, whole milk is added to make the fat proportion from one to two per cent., and if this is borne well, in two

or three days enough sugar is added to make the sugar proportion about 3.5 per cent. Malt sugar is the best to use. Sometimes the powdered casein is continued, sometimes not, but he has not fed any case on it longer than ten days. If the malt sugar causes no diarrhea, a gradual addition of sugar and a return to normal feeding are made. No drugs should be given in these cases, unless there is tenesmus and discomfort at defecation and a great many stools, when it may be wise to give small doses of opium. Hill does not believe in the initial dose of castor oil.

Treatment of Acidosis.—Howland and Marriott (*Bull. Johns Hopkins Hosp.*, March) state that the alkalies may be given by mouth, by rectum, subcutaneously, or intravenously. Vomiting and diarrhea frequently render their administration by mouth or by rectum out of the question, so one of the other methods must be employed. Intravenous administration is the method of choice, especially when rapidity of action is desired, and with acidosis it is always desired. A four per cent. solution of sodium bicarbonate is employed for intravenous use, a two per cent. for subcutaneous. The quantity to be injected depends upon the weight of the patient, the severity of the symptoms, and the effect produced, but is always large. It must be given until the urine is alkaline. Even in infants under one year as much as ten grams in twenty-four hours may be required.

Epidemic of Relapsing Fever Treated with Neosalvarsan.—Prussian (*Münch. med. Wochenschr.*, March 7th), in considering the etiology of this epidemic, concluded that it was due to infection by lice. The bite of a single louse, which is supposed to be sufficient to produce typhus fever, is not sufficient to cause relapsing fever. There must be prolonged contact, and the number of pediculi on the body must be large. In the epidemic reported, 127 cases were treated, of which ninety-seven received neosalvarsan. In 94.4 per cent. there was no recurrence after a single injection of 0.45 gram. Five of the cases did not respond. These cases were, curiously enough, given specific treatment at the beginning of the first attack of fever. The cause of failure might be explained by the presence of strains of spirochæta which were particularly resistant to arsenic; that, while the treatment was instituted early, it was not given at the proper time; and, thirdly, that the dose was not sufficient. The duration of the fever of the cases successfully injected was from two to four days. There was not a single mortality.

Inhibitory Properties of Magnesium Sulphate in Tetanus.—The theory is set forth by S. J. Meltzer (*Journal A. M. A.*, March 25, 1916) that the magnesium salt enters the lymph, bathing the synaptic junctions of the various nerves, and interrupts the passage of impulses. This blocking action may not only interfere with the transmission of nerve impulses in tetanus, but also may even prevent the wandering inward of the tetanus toxin and thereby act directly on the cause of the disease. For clinical use the adult dose should be one c. c. of a twenty-five per cent. solution for each twenty pounds of body weight, given intraspinally. The

patient should then be placed on his back to permit of the diffusion of the solution. Where there is strong opisthotonos brief inhalation anesthesia should precede the injection. Complete relaxation usually lasts twenty-four hours or more, when a second dose, this time of 0.8 c. c., may be given. If the injection is followed by too great depression of the respiratory mechanism, lumbar puncture should be performed with the patient's head elevated to permit of the escape of the fluid and the canal should be washed out several times with Ringer's solution. Artificial respiration may be required to combat the respiratory depression, also lavage of the spinal canal. Calcium and physostigmine are of no avail after intraspinal injections. For children the intraspinal dose should not exceed 0.5 c. c. of the solution for each twenty pounds. In milder cases gradual reduction of the spasms may be secured by the repeated subcutaneous injection of 1.2 c. c. to the kilogram of weight for adults and 0.6 to 0.8 c. c. for children. A six per cent. solution may be used for intravenous injection, giving two to three c. c. a minute until the respiration slows. A small amount of calcium chloride in 2.5 per cent. solution may be given intravenously at once if the respiratory depression becomes too great for safety.

Prevention of Asiatic Cholera.—According to Allan J. McLaughlin (*Boston Medical and Surgical Journal*, April 6th), the most important role in the transmission of cholera is played by the bacillus carrier. He has never known a carrier to harbor cholera vibrios longer than twenty days, and the great majority lose their vibrios in less than ten days, but cases have been known in which they were present for longer periods. Eleven cases are cited from literature in which the vibrios persisted for from ten to sixty-nine days. The five day quarantine detention without stool examination is insufficient to guard against the release of a carrier, so discharge from quarantine is made now only after a negative bacteriological examination of the stool. The bacteriological diagnosis is our sheet anchor in preventing cholera, and is the only accurate means of diagnosis.

Inflammation of the Accessory Nasal Sinuses.—Prompt and energetic treatment is demanded if the condition is severe and threatens complications involving the orbit or cerebral tissues. Otherwise in acute cases C. A. Veasey (*Northwest Medicine*, March, 1916) advocates expectant measures which can be carried out by the general practitioner. The general treatment should include thorough catharsis and the administration of aspirin, or aspirin and phenacetin, for the relief of headache. Sweating should be induced in the early stages, and much relief is to be secured from the application to the forehead and temples of iced cloths or hot compresses. The rest of the treatment should be directed to the combating of the nasal inflammation and congestion and the provision of suitable conditions for drainage of the sinuses. The turgescence of the mucosa should be reduced by the application of weak solutions of cocaine. Adrenaline should not be used, since its aftereffects lead to greater congestion. After the mucosa has been shrunken, it should be

cleansed by irrigations with normal salt or mild alkaline solutions. This should be followed by the local application of a twenty-five per cent. solution of argyrol or an oily spray. The patient should douche his nose freely every hour or two with hot salt solution; deep inhalations of steam laden with menthol and benzoïn will keep his nose clear. Two tablespoonfuls of the following mixture may be added for this purpose to a small amount of boiling water and the vapor inhaled through a paper cone:

R Mentholis, 3i;
Tincture benzoini comp., 3iv.
M, et Sig.: Use for inhalation in steam.

Relief may also be secured by keeping a small piece of cotton which is impregnated with some menthol in each naris. In chronic cases the treatment belongs to the field of rhinology.

Recurring Colds in Children.—Peter D. McCornack (*Western Medicine*, March, 1915) says that recurrent colds are usually found in children suffering from the exudative diathesis, and treatment must be directed to the underlying condition. Such children usually eat more than they need, particularly of carbohydrates and fats. The diet should, therefore, be modified by the reduction or elimination of sugar, the use of skimmed milk, or the elimination of all milk, and the provision of carbohydrates only in the form of the usual vegetables, cereals, and coarse breads. Meat should be allowed only three times a week. The clothing should be light and warm; the child should receive a warm bath daily, followed by a cool sponge bath and brisk rubbing; the bowels should be kept open; and the children should live in the fresh air day and night. No expectorants should be given, but the lithemia should be attacked by large doses of sodium bicarbonate or salicylate. Thyroid extract often proves of value merely as a tonic, and adrenaline gives relief in extreme attacks.

Treatment of Uterine Hemorrhage by the Röntgen Rays.—J. A. Corscaden (*American Jour. Obstet.*, January, 1916) states that in metrorrhagia in a grossly negative uterus, a permanent amenorrhea may justifiably be induced with the x rays in women at least thirty-eight years of age. In younger women, in whom a permanent menopause would be disastrous, it is possible, with precise methods and modern apparatus, to produce a temporary or partial amenorrhea, by so graduating the dose as to destroy only the more mature ovarian follicles. In cases of fibromyoma, hemorrhage can similarly be arrested by the production of the menopause, but when the tumors are ulcerating or pedunculated the hemorrhage, not being dependent on the menstrual excitant, i. e., the corpus luteum, may persist after menstruation has ceased. In general, fibromyomata which are not an immediate or remote menace, occurring in women over thirty-eight years of age, are suitable for x ray treatment. The conditions constituting an immediate menace are inflammation or necrosis of the tumor, sarcoma, and the coincident occurrence of dangerous diseases of the annexa. At times, the mechanical dangers of a large fibroid contraindicate radiotherapy, as in cases in which a large mass presses on the bladder and intestines and requires several months to diminish. Corscaden operates in about forty per cent. of the

cases and treats sixty per cent. with the x rays. In women under thirty-eight years myomectomy or hysterectomy, unless otherwise contraindicated, is performed because, unless permanent amenorrhea is induced with the x rays, the tumor will often resume its growth with the reappearance of the menses. In the author's x ray technic the attempt is made, by filtration and the production of a highly penetrating ray, to confine the action to the ovaries themselves. In hemorrhage from malignant disease the rays are contraindicated.

Indications for Operation or Deep Röntgen-therapy in Myomata and Metropathies.—Charles A. Pfender (*Medical Record*, April 1, 1916) writes that deep röntgenotherapy causes a shrinkage of the myoma, either through the ovaries as in menopause, or by a direct selective action on the tumor cells. Radiation is always indicated in climacteric and preclimacteric bleeding from the uterus, preceded if possible by an examination of scrapings from the uterine mucosa to exclude malignancy. In all cases of fibroids where the patient shows marked anemia or myocarditis, or renal disease which contraindicates surgical measures, deep röntgenotherapy should be practised, except where pressure is urgent and dangerous from the size of the tumor. Contraindications of röntgenotherapy are malignancy, severe pressure symptoms from large tumors, submucous myomata, suppuration or degeneration of the fibroids, cases of uncertain diagnosis, and annexal complications.

Iodine in Tetanus.—Experiments on guinea-pigs proved to A. T. MacConkey and S. S. Zilva (*British Med. Jour.*, March 18, 1916) that the admixture of Gram's solution of iodine with tetanus toxin materially diminished the toxicity of the latter. A mixture of iodine and tetanus toxin was found to produce some degree of immunity in pigs when several injections were made. It was thought possible that the administration of iodine might prove of value in the treatment of tetanus, but experiments proved that they were without value. This is contrary to the opinion expressed by Auregan, who claimed to have secured curative effects in human cases from the administration of a pure electrochemical colloidal iodine. Iodine seemed to be of use only when it was directly applied to the site of infection, so that it could come into immediate contact with the toxin before absorption.

Pharmacological Superstitions.—Horatio C. Wood, Jr. (*Journal A. M. A.*, April 8, 1916) says that we still indulge in a number of worthless therapeutic practices based on abandoned theories of pathology, technical pharmacological errors, misinterpreted clinical observations, or mere relics of medieval superstition. There is absolutely no scientific support for the use of lithium or its salts in medicine, yet they are still widely prescribed. Sarsaparilla has long been proved to have no therapeutic action in syphilis and the compound syrup is not a suitable vehicle for the administration of the salts of mercury or the iodides. Basham's mixture is not a diuretic of value, is irritant to the stomach, and is by no means the best form for the administration of iron. Much the same may be said regarding the unsuitability of the chloride of iron as a hematinic,

and it is certainly not the "strongest" form of iron, as is often stated. The fallacy of using opium as a local anodyne is with us still, although it has long since been proved that its sedative actions are wholly central, excepting a slight action directly on the intestine when taken per os.

Epinephrine in Partial Heart Block.—Danielopolu and Danulescu, at a recent meeting of the Biological Society of Bucharest (*Presse médicale*, February 17, 1916), reported experimental work in which it was found that where incomplete dissociation of the auricular and the ventricular beats exists, injection of epinephrine causes almost entire disappearance of the heart block and a pronounced increase in the heart rate. To antagonize clinically the manifestations of cerebral anemia, sometimes fatal, which occur in attacks of heart block, we should resort, therefore, to epinephrine instead of to atropine, as has been customary, the former exerting a far more marked and prompt accelerating action on the ventricles.

Filtered Röntgen Rays in Skin Diseases.—Experience with both filtered and unfiltered rays in the treatment of a wide variety of skin diseases has shown Fritz M. Meyer (*Berliner klin. Wochenschr.*, Oct. 18, 1915) that filtered, hard rays have the following advantages: The result in many cases of chronic disease is more rapidly and more certainly secured with relatively slight damage to the unaffected skin. Certain skin affections previously uninfluenced by the ordinary rays, yield to hard, filtered rays, and others in which results could be obtained only at the cost of severe damage to the tissues respond to the hard rays without injury. The dangers of reaction are minimized, and when reactions occur they are slight. By the use of larger tubes a greater area can be treated at a single exposure. Painstaking protection of unaffected skin is not necessary. Eczema, psoriasis, chronic lichen simplex, furunculosis, buboes, favus, etc., and hypertrichosis all respond favorably to hard rays.

Autogenous Vaccine in Staphylococcic Septicemia.—Etienne and Zuber, in *Paris médical* for February 12, 1916, report a case of septicemia in a boy of fourteen years, in whom *Staphylococcus albus* was the infecting organism. The portal of entry was probably the tonsils. The only local manifestations were enlarged tonsils with crypts and a chain of swollen lymphatics in the neck. Excessively malodorous stools were also noted. Vaccine treatment was started about seven weeks after the beginning of the disturbance, the patient having meanwhile gradually become weak and anemic. The organism was obtained from the blood and killed by subjection to a temperature of 60° C. for an hour on two occasions. Twenty vaccine injections, increased gradually from ten to eight hundred million organisms, were given in the course of the succeeding three months. From the start of the treatment, the condition began to improve. Each injection reduced the temperature on the second or third day, though at times a slight rise (negative phase) preceded. The patient was then discharged and soon resumed his work as a traveling salesman. Six months later, however, the patient developed a progressively increasing paresis, with diarrhea and

finally edema, and succumbed in three weeks. Several blood cultures were negative. The condition was considered an acute ascending poliomyelitis. In spite of the ultimate fatal termination, the patient's recovery from the earlier infective condition is ascribed to the vaccine.

Surgical Treatment of Gastric and Duodenal Ulcers.—George Woolsey (*Medical Record*, April 1, 1916) states that the commonest, simplest, and safest surgical procedure is gastroenterostomy, which is successful in eighty-two per cent. of cases. He has employed three methods, von Eiselsberg's proximal division and suture of the stomach, Wilms's method of pyloric exclusion where a band of fascia one half inch wide is fastened around the stomach proximal to the ulcer, and lastly the method of infolding the pyloric end by suture. The more radical operations for gastric ulcer are excision, pyloric resection, and mesogastric resection. Excision is not a safe operation without an added gastroenterostomy. In pyloric ulcer the Billroth method is the best followed by gastroenterostomy, or the Polya-Reichel modification where the proximal end of the stomach is sutured directly to the jejunum. Where the ulcer is farther from the pylorus, the operation of choice is the mesogastric resection or resection in continuity. The appendix should always be inspected and removed, if abnormal, and Moynihan advocates its routine removal. In gastric or duodenal hemorrhage gastroenterostomy is the safest and most successful measure, while direct transfusion of blood may be of importance.

Treatment of Hemorrhoids by Injection.—Arthur S. Morley (*Lancet*, March 18, 1916) feels that this method is of value. The patient does not have to spend more than twenty-four hours in bed, and in some cases can return to his work after twelve hours; neither local nor general anesthesia is required; the method is inexpensive and hence available to many who could ill afford an operation; it is safe and applicable in patients who could not safely undergo general anesthesia or an extensive operation; and it is always harmless. It is not suited for the treatment of strangulation, irreducible hemorrhoids, or to cases with complicating ulceration, fissures or fistulas. Where there has been much fibrous change in the hemorrhoid it does not give complete relief, though even here it may materially reduce the size of the mass. Through a Kelly sphincteroscope the piles are brought into plain view and from two to six minims of the solution given below are injected into the centre of each through a short needle mounted in a curved dental base. The lowest piles should be injected first in case there is bleeding after the removal of the needle. The solution to be used contains twenty per cent. of phenol:

Phenol,	grains xlviii;
Glycerin, .....	.....
Distilled water, .....	.....

If the first injection proves insufficient to reduce the piles to small fibrous ridges, a second may be made without difficulty. In a few cases there has been a recurrence. Following the injection there is usually very marked swelling of the piles which may prolapse with stool and these should be well greased with petrolatum and replaced gently by the patient.

Hydrotherapy in Cardiovascular Disorders.—J. H. Kellogg (*Illinois Medical Journal*, March, 1916) states that technic is of the utmost importance. In cardiovascular disease the best means for relieving the contracted vessels is baths at 90° to 98° F. with rubbing of the skin to maintain the surface circulation. The baths should be of fifteen to forty minutes' duration, and sprays are of value also partial cold rubbings with water at 65° to 75° F., and wet girdle packs and hot packs of the legs at night. Primary low pressure cases improve rapidly under cold baths, intermittent cold precordial applications being of great service in insufficiency of the right ventricle, while prolonged precordial compresses may be used in the lost compensation of the left ventricle in high pressure cases.

Chronic Urethritis in Women.—This condition is more common than is usually recognized; it may occur alone or in association with other pelvic conditions, but it is often the main cause of the symptoms. Its treatment, as worked out by W. F. Shallenberger (*Journal A. M. A.*, April 1, 1916), is the direct application of silver nitrate to the urethral mucosa through a cystoscope or speculum. Solutions varying from five to twenty per cent. may be employed, the latter for application to limited areas only. Applications should be repeated every three to five days. Colloidal and organic silver preparations are of value in mild cases. In obstinate cases lasting relief may be secured by nerve blocking with injections of a mixture of novocaine, quinine, and ureahydrochloride into the paraurethral tissues.

Kaolin in Diphtheria Carriers.—B. Rappaport (*Journal A. M. A.*, March 25, 1916) reports further favorable experiences from the insufflation of this drug in diphtheria carriers. The kaolin should be dried and finely powdered and kept in this state for use. The powder should be blown into the nose with a rubber bulb and six treatments at two hour intervals should be given each day. Before each treatment the kaolin remaining from the preceding should be removed by means of a mild alkaline spray such as a solution containing two per cent. each of the bicarbonate and the baborate of sodium. The tonsils should be removed in such cases when the kaolin treatment fails.

Beriberi, Prophylaxis and Treatment.—Accepting it as proved that this disease is due largely to a deficiency of diet, from which certain vitamins are wanting, William Henry Willcox (*Lancet*, March 11, 1916) advocates the following plan of treatment. In the early stages and in all cases with cardiac symptoms the patient should have absolute rest in bed. Only in the acute cases with gastric symptoms should the diet be restricted. Here, and in all other cases, yeast should be administered, as this contains large amounts of the required vitamins. The yeast may be given in the form of dried cakes weighing half an ounce each, of which six should be administered daily. These can be made palatable by breaking them up in warm milk to make a cream, to which more milk and some sugar are then added. A half a pint of fresh fluid yeast may be given daily in the place of the cakes, flavored with lemon. Pea soup, made from dried peas, and three or four raw

or lightly cooked eggs should be given daily. The addition of fresh lemon juice to this dietary is valuable. When solid foods can be taken they should be added, the following being the richest in vitamins: Brains, liver, sweetbreads, kidneys, hearts, peas, beans, lentils, oatmeal, brown bread, milk, fish, meat, and bread. Several commercial yeast extracts are available. Fresh fruits and vegetables should be given. Prophylaxis consists in the provision of a dietary rich in the requisite vitamins; general sanitary measures should be observed.

Ulceromembranous Stomatitis and Gingivitis.

—As the result of experience among troops, F. B. Bowman (*British Medical Journal*, March 11, 1916) found this condition to be associated with the presence of Vincent's organism, *Endamœba buccalis*, and various common pyogenic organisms ordinarily found in pyorrhea. Treatment by emetine alone proved ineffective, but when this was combined with arsenic, favorable results ensued:

R Vini ipecacuanhæ.	3ss;
Glycerini.	3i;
Liquoris acidi arsenosi, ad.	3i.

M. et Sig. Use as mouth wash; do not swallow. "Poison."

This should be applied carefully to all of the pockets about the teeth, the gums, and to ulcers twice daily after the removal of pus. The teeth should also be cleansed twice daily with ten or fifteen drops of the solution on the brush.

Treatment of Congenital Dilatation of the Colon.—Richard M. Smith, in the *Lancet-Clinic* for March 25, 1916, divides cases of this affection into two groups requiring, as a rule, different treatment. The two groups are distinguished by the presence or absence of marked obstruction. The nonobstructive group exhibits the usual constipation, large, hypertrophied colon, and visible peristalsis, but does not have the recurring attacks of pain, fever, vomiting, and acute obstructive signs of the other group. The latter shows obstructive attacks, despite every effort to prevent them. The treatment of a new case should be begun as though it belonged to the first group, until the history of the previous case is accurate, and obstructive attacks are very frequent and severe. The constipation of the first group will in many cases yield to careful treatment. Cathartics are of no great assistance, but enemata, preferably saline (Schneiderholm), are of value. Saline or oil irrigations are usually necessary at occasional intervals to bring down retained hard fecal masses. Massage helps to strengthen the abdominal wall and mechanically move along the fecal material, especially if a drainage tube is placed in the rectum. The diet is an important factor in the treatment. Best results are obtained with one yielding much cellulose and favoring retention of water in the feces. Smith recommends coarse breads and cereals, green vegetables, and agaragar in some form. Large quantities of water should be ordered, that there may be no chance for a dry stool. Russian oil is also of great assistance. When careful medical treatment fails, or when obstructive symptoms are in the foreground, surgical treatment must be resorted to, preferably colopexy, or resection of the bowel in two sittings.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

October 18, 1915.

Extrahepatic Formation of Bile Pigment, by A. A. Hymans, Van den Bergh, and I. Snapper.—Investigation proved that in man whenever there was an extravasation of blood into the tissues or one of the body cavities, there resulted in a short time a production of bilirubin in the extravasated fluid. At times the amount of bilirubin so produced was considerable, several times as much as was normally found in the gallbladder. Further investigations showed that in certain forms of anemia of hemolytic origin the blood of the spleen contained much more bilirubin than that of the peripheral blood or even of the splenic artery showing a similar extrahepatic formation of bile pigment in the tissues of the spleen. In such cases the spleen was found to be engorged and it was believed that an excess of blood thus came in direct contact with the spleen pulp which was tantamount to an extravasation in other portions of the body. That the spleen was not the only organ in which this pigment formation took place in such cases was shown after splenectomy, in which there was still an excess of bilirubin in the peripheral blood. A similar condition of hemolytic anemia with extrahepatic bile pigment formation could be induced in dogs by poisoning with phenylhydrazin. From these observations evidence was secured to show that in certain anemias there is a dissolution of blood within the spleen with the local formation of biliary pigments.

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT.

March 7, 1916.

Occult Blood in the Stool and Gastric Contents in Carcinoma of Stomach, by Joseph Emmert.—In a series of twenty-one cases of carcinoma of the stomach the finding of blood in the gastric contents and in the stool was the most prominent symptom, being absent in only one case. This symptom occurs early and is present in most patients when they first seek medical advice. In one case a positive blood test was obtained in a patient who complained of symptoms for only four weeks. If blood is present in the stomach contents, carcinoma of the intestine may be ruled out. A positive guaiac test is the most constant symptom, and if it is negative the diagnosis of carcinoma ventriculi is doubtful. It is of value in determining whether old ulcers of the stomach are undergoing carcinomatous changes. The chronic ulcer not undergoing carcinomatous changes will give a negative guaiac test. Finally, the test for occult blood has the great advantage that, in the hands of the experienced, it takes only a few minutes.

Improved Trommer's Test, by K. Sauer.—In performing Trommer's test for sugar, when copper sulphate is added to the urine, cupric hydrate is formed in the presence of any considerable amount of sugar. This is at once dissolved and a blue solution results. It is difficult to determine just when enough copper sulphate has been added, as the caustic soda causes the formation of earthy phosphates

and clouds the urine and, also, because of the blue color of the cupric oxide not in solution. If insufficient copper sulphate is added a reduction to cuprous hydrate takes place on heating, but no precipitate forms. If too much copper sulphate has been added the cupric oxide not dissolved can hide the formation of cupric hydrate and a positive reaction is not obtained. An easy method to overcome these two difficulties is to filter the urine to which an excess of copper sulphate has been added. The earthy phosphates and the undissolved cupric oxide are filtered off and a clear blue solution remains. This clear solution can now be tested accurately with copper sulphate. By this method the detection of 0.4 per cent. to 0.2 per cent. sugar is possible.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

February 15, 1916.

Pulmonary Disorders of Paratyphoid Origin, by J. Minet.—In the course of six months of active service in a typhoid hospital, seven cases of paratyphoid lung conditions were met with. One case showed an ordinary acute bronchitis; a pure culture of the bacillus of Gartner was obtained from the sputum. In a case of paratyphoid fever due to the A paratyphoid organism, intercurrent lung congestion from the same bacterium was met with. In another case, at the beginning of convalescence from B paratyphoid fever, an attack of lung congestion due to the A organism, apparently acquired by direct contact with a patient in the next bed, took place, with prompt recovery. In two cases, one due to the A and the other to the B organism, a form of chronic lung congestion was noted, manifested in a series of febrile exacerbations in which the organisms were found in pure culture in the sputum, without disappearing entirely during the intervals. Treatment proved unavailing, the patients progressively losing weight for several months, after which recovery gradually took place. In the two last cases there was apical involvement, simulating chronic tuberculosis in one instance and acute in the other. These conditions persisted after several months' treatment. Isolation of the paratyphoid organisms from the sputum was effected by inoculation of one per cent. peptonized oxgall, cultivation on the ordinary media being impossible owing to the numerous varieties of cocci therein. In the oxgall medium, which favors the growth of typhoid and colon organisms at the expense of the others, an abundant growth of the motile paratyphoid rods took place in fifteen to twenty-four hours.

PRESSE MÉDICALE.

February 17, 1916.

Intermittent Insomnia as a Manifestation of Periodical Psychosis, by Gilbert Ballet.—There is a variety of "nervous" insomnia which should be clearly distinguished from the ordinary insomnia of senility or arteriosclerotic autotoxemia and that of irritable and emotionally unstable individuals in general. This variety is characterized, 1, by the exaggerated stress, sometimes amounting to a phobia and leading to suicidal ideas, which the patient lays on the discomforts of his sleepless periods;

2, by an unusual mental depression during the daytime, with lessened zest for work and a tendency to morbid preoccupations; 3, by the absence of a gradual increase in the frequency and duration of sleeplessness, the latter often at once reaching its maximum intensity and likewise, later often disappearing suddenly; and, 4, by recurrence at more or less protracted intervals, sometimes with a period of excitement and later one of depression in the past history. This form of insomnia is simply a manifestation, in a mild or unusual form, of a periodical psychosis. It may be the result of some form of autointoxication, just as attacks of depression are sometimes seen to appear, from the same cause, after the termination of a paroxysm of asthma. Violent emotional shocks may have similar results. This is supported by the observed fact that careful avoidance of autotoxemia and mental shocks actually has some influence in warding off attacks of excitation or depression, or of insomnia as their equivalent. Opium is of but little use in this type of insomnia. Veronal, trional, chloral hydrate, and amylen hydrate are of greater value, as is also a bath up to the waist, at 28° C. and of five minutes' duration, taken just before retiring. At best these measures are uncertain. The insomnia may, however, disappear of its own accord, either suddenly or after gradual regression in a few days' time.

Sensory Symptoms in Lesions of the Peripheral Nerves, by Belenky.—The prevailing uncertainty as to the sensory symptomatology of peripheral nerve lesions is due in part to faulty technic in examining the sensory functions in clinical cases. The epidermis, Belenky finds, is utterly insensible to a wisp of cotton drawn over it, the sensations ordinarily ascribed to it being in reality taken up by the local hairs which the cotton disturbs. When these hairs are shaved off, sensibility to the cotton wisp disappears. Actual epidermic sensation is aroused only by a pressure of at least two or three mgm. exerted by a more or less pointed instrument such as will not disturb the surrounding hairs. Clinically, the epidermic and hair forms of sensations are often dissociated because, whereas epidermic sensation is actually superficial, the impressions received through the hairs are taken up only at the bulbs of the hair follicles, situated deep in the subcutaneous cellular tissue, and in neighboring fields of nervous distribution, such as those of the radial and median nerves supplying, respectively, the dorsal and palmar portions of the hand, a lesion of a nerve involving epidermic sensation may not involve the deeper pilar sensation. Confusion of this nature is to be avoided by more careful sensory examination. Cases of section of the radial nerve with apparent conservation of sensibility are to be explained in the same way, and Head's hypothesis of the uniform conservation of deep sensibility in a part the superficial sensibility of which has been lost is shown to be based on a misconception. Section of a nerve which is merely physiological, i. e., not associated with complete separation of the nerve into two fragments, can often be distinguished from an absolute anatomical section through the fact that, although there is complete motor paralysis and paralysis of all ordinary forms of sensation, such as

contact, heat, cold, and pricking with a pin, a marked hyperesthesia is noticed when the skin of the area affected is pinched.

RIFORMA MEDICA.

March 20, 1916.

The Widal Reaction in Those Vaccinated against Typhoid, by L. Datta.—Examination of 130 Italian soldiers for the Widal reaction following antityphoid vaccination, showed that this reaction gradually diminished, until after ninety days it was positive in only a small percentage of cases. Up to thirty days the positive reactions were seventy per cent., from thirty to sixty days thirty-five per cent., and after ninety days only 7.6 per cent. were positive. The duration of the Widal and the quantity of agglutinin produced are in proportion to the quantity and concentration of the vaccine, and this is evidenced by the much longer duration of the reaction in the French and German armies where the vaccine used is more concentrated.

REVISTA DE MEDICINA Y CIRUGIA PRÁCTICAS.

March 14, 1916.

Recurrent Fever, by L. Figuera Ballester.—This paper is based on the study of 600 cases of malaria observed on the coast of Marruecos, and shows once more that quinine in sufficient doses conquers the disease and prevents recurrence.

Hoarse Cough in Cases of Foreign Body in the Air Passages, by A. García Tapia.—Tapia maintains that when a healthy subject, having previously aspirated a foreign body, coughs repeatedly, it is probable that the foreign body is still in the respiratory tract. Botella avers that a hoarse cough is pathognomonic of a foreign body in the air passages, but Tapia disagrees.

A Detail in the Technic of Extirpation of the Larynx, by Ernesto Botella.—The writer claims priority in the suture of the tracheal mucous membrane to the skin in laryngectomy, having advocated it, in 1908, at the surgical congress in Madrid, asserting at that time that this measure produced rapid cicatrization of the tracheal mucosa to the skin, and that the assured nutrition of the first tracheal ring prevented sloughing.

BRITISH MEDICAL JOURNAL.

March 18, 1916.

Spirochetes and Their Granule Phase, by H. B. Fantam.—The question of the formation of granules by the several forms of spirochetes, including those commonly pathogenic for man, is discussed on the basis of the findings of the author and of others, whose work is cited. The conclusion is reached that these minute bodies represent a part of the life cycle of these protozoal parasites and that they are probably often the means of communicating infection.

LANCET

March 11, 1916.

Diet in the Causation of Mental Disease, by Charles Mercier.—The author seeks to show that deficiency of protein or excess of fat, starch, and sugar in the dietary may lead to mental disease; most of his cases showed marked improvement or

complete recovery when the diet was changed. The commonest manifestations were confusion of mind, depression, screaming fits, emotional hyperexcitability, defects of memory, and even hallucinations. Mercier specifically scouts the idea that diet is a factor of etiological importance in any but a limited number of mental cases, but he does believe that it is the chief factor in a certain number.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

April 1, 1916.

The Cause of Gastric Ulcer, by W. E. Burge and E. L. Burge.—One of the most commonly approved theories accounts for the formation of gastric ulcer on the hypothesis of digestion of the mucous membrane by the acid gastric juice after the mucosa has been damaged by diminution of its normal blood supply. Such an hypothesis seems to indicate some inhibitory action on self digestion which was related to the oxidative processes of the normal tissues. This theory was tested by the authors and evidence was gained which showed that the digestive properties of the normal enzymes were enormously inhibited by the presence of active, nascent oxygen. These experiments seem to explain the normal resistance of living tissues to the action of digestive enzymes and the loss of resistance with a diminution in the blood supply.

The Afterresults of Tonsillectomy, by John C. Simpson.—Of 571 subjects, 320 suffered from frequent sore throat, and sixty-four per cent. of these were relieved by the operation. Examinations made some time after showed that nearly forty-five per cent. of the boys still had some tonsillar tissue remaining. More than half of the cases of mouth breathing were relieved, and about the same proportion were relieved of nocturnal enuresis. Nearly three quarters of the boys felt that their health had been improved; more than three quarters of the cases of ear trouble or impaired hearing were relieved. The voice was improved in about a third. The operation had little or no definite influence on scholarship.

MEDICAL RECORD.

April 1, 1916.

The Springs of Saratoga; Their Value in the Treatment of Disease, by W. Gilman Thompson.

—The springs were first described by Valentine Seaman, in 1779, and the waters were carefully analyzed by him. They may be divided into three classes, the saline laxatives, the alkaline salines, and the alkaline iron or chalybeate, all copiously charged with natural carbonic acid. The first group contain a high percentage of magnesium carbonate and are useful in chronic constipation, hepatic congestion and cirrhosis, chronic arthritis, arteriosclerosis with high tension, obesity, gout, and diabetes. The second group are antacid and are beneficial in gastric hyperacidity, rheumatism, goutiness, lithemia, gravel, and neuritis; they resemble French Vichy. The third group are valuable in anemia and retarded convalescence. The supply is abundant and requires no deep well drilling, as the waters rise easily from a depth of 150 to 600 feet.

Fistula of the Rectum, by Charles J. Drueck.—The abscess preceding fistula may usually be found

beneath the skin near the anus, between the mucous and muscular coats of the rectum, between the rectum and the levator ani, or finally, in the ischio-rectal fossa. The first symptoms are those of abscess followed by a persistence of the purulent discharge, then by retention of pus, and the formation of secondary abscesses. The fistulous tracts may frequently be palpated under the skin because of their hardness. Probing except at operation is dangerous, as it may produce new channels. Blind internal fistulae are the hardest to diagnose and are found only by internal rectal examination and any case with persistent uneasiness within the rectum, showing pus in the stools, should be carefully examined.

A New Blood Stain, by B. Lemchen.—This stain is a saturated solution of benzidine in absolute alcohol, placed on blood smears for one half minute, followed by hydrogen peroxide. The slide is then washed in water and dried with filter paper. By this method the red cells and the nuclei of nucleated red cells are stained blue, as is fibrin, while the white cells are not stained nor are the platelets. Lemchen deduces from this staining that the red and white cells are of different origin and that the platelets have not their origin in the nuclei of the red cells and that fibrin has the same composition as red cells.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

March, 1916.

Calculus in the Fossa navicularis, by Captain J. D. Morgan.—The case reported is that of a man, who, while lifting a heavy weight, felt a sharp pain in the region of the bladder and an extreme desire to micturate. He passed no blood. Later, micturition became extremely difficult and painful. He discovered a hard, movable mass near the end of his penis. On pressing this back a little way up the urethra he was able to micturate easier and with less pain. On examination a firm object could be felt in the urethra near the meatus, and on separating the lips the tip of a tan colored mass could be seen. A skiagram was made which showed the mass to be a nucleated calculus about the size of an olive situated about half an inch from the end of the urethra. Under local anesthesia it was removed in one piece.

Convenient Radium Emanation Table for Clinical Work, by Walter C. Stephenson.—The table given shows the hourly decrease of any quantity of radium emanation for an indefinite period. Primarily it shows the hourly decline in activity of 1,000 millicuries of radium emanation. The table deals with 307 hours and contains 301 numbers. When a supply of emanation at the time of its maximum does not correspond to the number on the table, it is obvious that in less than an hour later the amount remaining will correspond to the next lower number. In using the table it is immaterial whether the activity of an emanation is estimated in millicuries or as being in equilibrium with a radium salt. For clinical work it has the great advantage that the operator can estimate on the spot the average quantity of emanation employed.

Proceedings of Societies.

MEDICAL ASSOCIATION OF THE SOUTH- WEST.

Tenth Annual Meeting, Held at Oklahoma City,

The President, Dr. J. D. GRIFFITH, in the Chair.

(Continued from page 765.)

Diagnosis and Treatment of Pellagra.—Dr. J. LEWIS DAY, of Norman, Oklahoma, said his most successful form of treatment had been dietetic. Following the suggestions of several investigators, for the past eight or twelve months, he had fed his pellagra patients upon a diet rich in animal proteids and low in carbohydrates. This had been done regardless of diarrhea or stomatitis. He did not believe that any case of diarrhea had been made worse by this diet. When a patient first admitted having or was suspected of having pellagra, instead of the usual initial mercurial purge, castor oil was administered, then the foregoing diet was instituted. Many patients had come to his hospital giving a history of having existed upon purely liquid diet for six or eight weeks, with progressive weakness and increasing severity of all symptoms. He placed such patients on the foregoing diet with almost immediate improvement. In addition to the diet, where possible, he placed a patient in a ward where they slept in the open air and were permitted to lie down for a few hours each day. He did not allow them to sit in the bright sunlight, but his experience did not show that the ordinary daylight had any bad effect upon the skin lesions. Seasons of the year had seemingly little to do with the progress of the disease, except that during extremely hot weather, the response to treatment was slower. This line of treatment was almost identical with that suggested by Dr. Joseph Goldberger of the U. S. P. H. Service. While he did not believe that it was a specific, yet the results, compared with other forms of treatment, seemed to justify him in giving it a thorough trial. The last word concerning pellagra was yet to be said. His experience seemed to coincide with that of others, who believed pellagra was due to some deficiency in certain elements of diet.

New Management of Pellagra.—Dr. W. T. WILSON, of Navasota, Texas, reported 432 cases of pellagra treated up to September 25, 1915, ranging from the mild to the severest type, 175 cases treated by himself, and 257 cases treated by other physicians. Of this number, thirty-three had ended fatally. From May 4, 1914, the total number of patients discharged to June 9, 1915, was 200, with three deaths. He was unable to account for this low death rate, except that he had asked for a report on completed cases to June 9th, and the seriously sick were probably on treatment at that date. Again, the disease did not become serious before the middle of May. The total number of cases from June 9th to July 31st were 119 with eleven deaths; total number of cases from July 31st to September 25th, 113, with nineteen deaths, making a total out of 432 cases, of thirty-three deaths. There was an error in the August issue of the *Texas State Jour-*

nal, reporting only three deaths out of 319 cases, when it should have been fourteen deaths.

Of last year's cases, treated by other physicians, as well as himself, twenty-two out of a total of ninety-two had symptoms of a recurrence. That report was almost complete. In each case they had been treated but a short time, averaging about twenty-one days, and again on being put on treatment this year they responded immediately. There had been reported a total of thirty-three deaths this year to September 25th. Most of those deaths occurred during the months of July, August, and September, between June 9th and September 25th. Pellagrins, as a rule, did not give satisfactory results in surgery, but a valuable test, when in doubt as to pellagra, was to expose the bare arms to the sun for an hour for the space of two or three days, and if the patient was a pellagrin, the characteristic eruption usually appeared. As to the use of drugs, his opinion was that in acute pellagra, or in pellagra of recent origin, picric acid was of value; that was, internally and as a gargle. In severe types or those with malarial symptoms, quinine hypodermically should be used first, then the picric acid. In the chronic forms he alternated or gave at the same time picric acid as stated above and sodium cacodylate hypodermically, and he also gave the patient sodium bicarbonate at intervals. In his returns on the foregoing cases he noticed that several physicians had reported good results from the use of thymol. It was possible that the death rate was higher than this report represented, owing to the failure of some physicians, who had had deaths, to make a report. He had reported all deaths just as he had received them.

Catarrhal Deafness: A New Method of Treatment.—Dr. W. E. DIXON, of Oklahoma City, stated that every abnormal condition of the nose and throat should be corrected before ear treatments were begun. This would often cure the deafness. After recovery from throat and nose operations, and especially secretions in the nasopharynx, the speaker passed an applicator wound with cotton, which had been dipped in a five per cent. solution of cocaine and adrenaline in one tube, and immediately followed this by another dipped in a one or two per cent. solution of silver nitrate. The next day, the other tube was treated in a like manner. This mode of treatment was continued until the hearing was improved or until the tubes were patent. The author had treated each tube every day, but felt that better results were obtained, perhaps, by not treating so often. It might be better, after the first week or two of treatment, to treat each tube only twice a week, then once a week. Finally the patient would say that the air passed freely, at which time it was best to lengthen the interim between treatments.

It must be remembered that he treated the tube for a double purpose—first, to open the tube for the purpose of restoring normal tension between the drumhead, the ossicles, and the labyrinthine fluid; and, second, to treat the mucous membrane of the tubes as they would the mucous membrane of the urethra or that of any other part of the body. Thus good results were obtained by continuing the treat-

ment after the tube stayed open. In some cases the deafness was greatly relieved or cured, but the tinnitus continued; however, it would generally become less and less in intensity. As the treatment was continued, he seldom used inflation, for the reason that in his practice most cases had previously been treated time and time again by inflation and vibration of the ossicles without getting permanent relief. A stricture of fibrous bands in the tube could not be relieved by inflation; good and lasting results could not be obtained. It was surprising how quickly these same cases could be restored to usefulness by direct treatment of the tubes. He had had cases which had been treated off and on by various otologists in different cities without apparent relief, and yet they had not heard a telephone bell in ten or twenty years, much less the tick of a clock.

These patients had been made to hear normal conversation by direct treatment of the tubes. Prognosis was not good in cases where the occlusion of the tubes had not been a factor in the cause of the deafness, or in cases where deafness and tinnitus was caused by adhesive bands within the tympanum. In all other cases the results for useful hearing had been most encouraging.

The Treatment of Nevus.—Dr. J. L. McDERMOTT, of Kansas City, Missouri, said the treatment should be instituted as soon after birth as the strength and health of the baby permitted, especially in marks which manifested a tendency to grow. If properly treated the growth would be checked at once and its complete removal would be facilitated. As to the method of treatment, that would depend upon the age of the patient, the site of the growth, its size and character, and the ability of the doctor to keep his patient under observation and control for the necessary time to complete the treatment.

In recent years Röntgen therapy and radium therapy had grown in popularity in the treatment of nevus. This was due to the fact that operators had perfected their technic to the extent that they could produce whatever degree of reaction they desired. Both x ray and radium had a specific and selective action on the endothelial cells of the vessel walls and produced an endarteritis followed by a fibrosis. Successive treatment caused the fibrous tissue to undergo contraction and the vessels were largely obliterated. How perfect the results of the treatment would depend on the operator's ability to destroy the subcutaneous vessels, and at the same time preserve the surface epithelium.

Between Röntgen therapy and radium therapy there was little difference in the end result, provided a rational technic for each was carefully carried out. With Röntgen therapy a larger area could be treated at each sitting than with radium, consequently the former was the quicker method. To accomplish the best results with either, the operator must master the dose measurements.

The question of filtration was pertinent in this connection. If the nevus was of the port wine type and not indurated or elevated above the level of the normal skin, little if any filtration would be necessary in Röntgen therapy. If radium was used, however, a silver or aluminum filter was an advantage. The thickness of the filter would depend on

the strength of the radium and the degree of reaction desired.

In papillary angioma and small localized nevus, excellent results might be secured with carbon dioxide snow. Even in cavernous angiomas, where spontaneous hemorrhages had occurred, the snow might be used without danger of hemorrhage. In the application of snow, caution should be used in the depth of the freezing, for as in any other form of treatment an ugly scar might result if due care was not used.

Dr. E. H. SKINNER, of Kansas City, Missouri, could only add his testimony to what Doctor McDermott had said with reference to the treatment of these conditions. He had not had success with radium in treating port wine marks, but he thought all of the work that had been done with radium in lymphangiomas could be duplicated by the x ray. There was a tendency at the present time to take advantage of radium which all of them could not afford to keep in their offices, and as long as the same results could be obtained by means of the x ray, except in cases of port wine marks, it was unnecessary to tell patients that radium was the only treatment.

Early Recognition of Some Serious Affections of the Eye.—Dr. G. A. LANDES, of Parsons, Kansas, stated that a source of confusion to the general practitioner was the differential diagnosis between conjunctivitis, iritis, and glaucoma. Every ophthalmologist saw cases of iritis that had been treated as conjunctivitis till the eyes had been damaged beyond repair and cases of glaucoma which had been treated as iritis until the eyes were ruined. In all three conditions the eye was inflamed, but there were certain characteristic differences. Conjunctivitis had a marked secretion. In conjunctivitis, too, inflammation was more marked on the lids than on the eyeballs, so that the further away from the cornea, the redder the conjunctiva. They saw distinct coarse vessels in the conjunctiva, and the color was brick red. In iritis the tendency was for the injection to be pericorneal, while there was no secretion, and the color of the injection, which was deeper seated and composed of finer vessels, was bluish pink. In glaucoma, the eyeball gave the impression of being edematous, and was very much injected.

The complaint of the patient ought also to give suggestions as to the differential diagnosis. In conjunctivitis the patient did not complain of pain. He said that the eyes itched or smarted, or felt full of sand. In iritis, on the other hand, which was often extremely painful, the patients complained bitterly, and the pain was distinctly worse at night, but had remissions. The eye was also generally very sensitive to light and tender to the touch. Glaucoma was more painful than iritis; and the pain was often greater than the patient could endure. He often suffered from nausea and vomiting, and the most excruciating agony. The cornea was distinctly anesthetic to the touch, while in iritis the cornea was very sensitive.

The papillary differences were most important. In conjunctivitis, the pupil was not affected; it contracted and dilated, and reacted to light and accommodation, as in the other eye. In iritis, on the other

hand, there was active inflammation of the iris with swelling, and the pupil was contracted, and unless it had been medicated, was smaller, and the iris had a different color from the other iris. It was somewhat muddy and the markings were less distinct. In glaucoma, the pupil was widely dilated. With the increase in tension there was paralysis of the pupil which dilated widely, just as though a solution of atropine had been used in the eye. By putting in a solution of homatropine or atropine, if the iris had existed some time, they would find that adhesions were present between the iris and the lens and that the pupil was irregular in shape. The surest way to differentiate was to examine the tension. Sometimes it might be a little softer and sometimes a little harder than normal; whereas in acute glaucoma the eye became as hard as stone. If they palpated both they would be able to appreciate that one eye was much harder than the other. Unfortunately, the treatment for either one of these conditions was not good for the other. If they contracted the pupil in iritis, they did harm, whereas if they treated glaucoma on the suspicion that it was iritis, they made the conditions very much worse. If they were in doubt, they could use one remedy, dionin. It relieved the pain and lessened the tension, so if they were playing for time dionin was a good remedy to use.

The Treatment of Gonorrheal Ophthalmia.—

Dr. H. GIFFORD, of Omaha, drew the following conclusions: 1. While mild applications were sufficient in the great majority of cases, if ulceration of the cornea occurred, or if the discharge persisted in spite of other treatment, they should, 1, try silver nitrate up to eight per cent. twice a day, using hooks to turn out the retrolarsal folds and protect the cornea; 2, use fluorescein every day; 3, use prophylactic treatment before closing up an apparently well eye; 4, with some form of protection for the cornea either by Thiersch flaps or sliding conjunctival flaps, entirely prevent ulceration, and shorten the disease by the vigorous use of strong remedies.

Nervous Disorders Associated with Pelvic Disorders.—

Dr. G. H. MOODY, of San Antonio, said that any pelvic disease should be corrected, if possible, just as should any disease of any other organ of the body, without reference to the question as to whether a nervous or mental disorder existed or not, in order to stop its drain upon the general health, provided that in a neurotic individual where a surgical operation or other heroic treatment was indicated, the nervous depression or instability was not so great as to precipitate an acute outbreak. Several cases had come under his observation where nervous and rundown women had become abruptly insane immediately after an operation, well performed, and in good surgical hands. A few cases also had been operated in under his observation during an attack of insanity, neurasthenia, or hysteria, with intensification of the nervous symptoms, induced by the extra strain and shock made by the operation and anesthetic upon an already depressed nervous system. He had also seen more or less important operations made upon a diseased pelvic organ in an excited, delirious, or maniacal patient, result in marked improvement, where the operation was followed by the patient being put to bed and absolute

rest enforced, the same immediate improvement having been also observed in others, men as well as women, not requiring an operation, where absolute rest and proper care and attention were likewise enforced.

Dr. G. W. ROBINSON, of Kansas City, Missouri, stated that if the pelvic organs were diseased in nervous women, they should be treated just as they would in those who were not nervous. They knew a great many healthy ovaries had been removed without benefiting patients, and usually patients had been made worse. But since they had learned so much about exhaustion, fatigue, and shock from Crile and others, they knew the same changes took place in the nerve cells as the result of constant pain as occurred as the result of shock. Changes took place, chromatolysis occurred, and adrenaline was increased. The effect of the increase in adrenaline was to make the liver secrete a surplus. In states of anxiety, great fear, and great shock, they found sugar in the urine. The glycogen of the body was exhausted, chromatolysis occurred in nerve cells, and they had a state of nervous exhaustion. They also got a state of intoxication because in these conditions the body was not able to take care of toxins that developed normally in the system, and naturally they would expect neurological conditions to develop as the result of continued pain. Especially did they have infections in the pelvis from which there was an absorption of toxic material.

Dr. S. GROVER BURNETT, of Kansas City, Missouri, knew of no question more difficult than when they should remove pathological conditions in the pelvis in a patient who had gone to pieces mentally. He was asked that question yesterday in the case of a woman in an acute mental state with a slight prolapsus of the uterus. The question arose as to whether correction should be made and the pelvic organs removed. His advice was no. The woman was in a condition of collapse, and at this time of her life with the effect of the anesthetic and shock of the operation, he would be afraid to assume the responsibility of an operation. But as Doctor Moody had well said, where there were unmistakable lesions in the pelvis that were doing damage to the patient, they should be removed, exactly as in any other situation. If they had a lesion of the arm or in the abdomen, or anywhere else, they would naturally remove it, but there had been too much of this removal business in women for so called neurotic ovaries. Surgery in such cases was contra-indicated.

What Was Being Done for the Feeble-minded.—

Dr. W. L. KENDALL, of Enid, Oklahoma, said, first, it was recognized that a great many children whom they had formerly thought to be wilfully bad, were actually mentally delinquent and unable to do well. Secondly, there had been discovered some remarkable methods of testing the intelligence of children and showing that many were below par. The results of those investigations had shown that at least two per cent. of the children in the public schools were mentally defective and incapable of taking their place in society. To show what this meant, they had only to take an example. Applying this rate to New York city, they would find that there were 15,000 feeble minded children in the public

schools of that city, and this figure had been amply verified by other means and by observation. Furthermore, a careful study into the causes of feeble mindedness had shown that it was very largely hereditary, at least two thirds being children of feeble minded parents, or grandparents, or both.

Under the compulsory education law, all children now came to public attention when they entered school. Placed in colonies, which were in reality well regulated communities, where all those people did all the work that they were capable of doing, and lived under conditions that were easy for them, the problem became simplified by persons of intelligence who managed the colony, and children became happy and harmless. A great many could be trained to do things with their hands. They could carry on much of the work of the colony and become partially or even completely self supporting under their direction. The hygiene of the backward child, then, included the recognition of his condition and treating him in accordance with his mental capacity. If only one half of one per cent. of the thirty million dollars annually spent on hospitals, twenty millions on insane asylums, twenty millions for almshouses, thirteen millions on prisons, and five millions on the feeble minded, deaf, and dumb, were spent on the study of the bad germ plasm that made necessary the annual expenditure of nearly one hundred millions in the care of its product, they might hope to learn just how it was being reproduced and the best way to diminish its further spread.

(To be concluded.)

Letters to the Editors.

THE MILLS BILL.

NEW YORK, April 14, 1916.

To the Editors:

I think it so important that the medical profession understand correctly the Mills Health Insurance bill that I venture to ask you to allow me to correct the editorial article which appeared in the March 18th issue of the JOURNAL.

The principal point which the writer makes is the complete control of the insurance by "three political appointees," the State commission. This is a misconception of the administrative organization proposed by the bill. Local mutual organizations actually manage the system, thus assuring local responsibility and freedom from that control by "political appointees" which so concern the writer of the article. These associations, like other mutual insurance associations, are composed of and controlled by the persons who pay the premiums—employers and employees. They fix and collect the premiums, organize the medical administration, and control their own members receiving sick benefits. They, and not the commission, make the arrangements with "physicians, nurses, hospitals, dispensaries, pharmacists, institutions, associations, and other persons," so that the criticism of the lack of control of such contracts which the writer thought the commission made, is based on an error.

The assertion furthermore that the "public treasury" will be "looted" appears to be based on the same misconception, for the employers and employees who manage the local associations, would have to "loot" their own pockets to the extent of four fifths of the cost of the insurance before they could loot the State to the extent of the other fifth. In any case, they would have to show the State commission that their own arrangements for medical and other benefits are reasonable and that the cost is fair, and the com-

mission will not have any inducement to join in the looting, for it will not profit thereby either directly or by patronage. Full publicity of accounts to the commission and to those who pay the premiums and who are recipients of the benefits know whether or not they are being properly served, is another check on both insufficiency and looting, either of the pockets of the contributors or the State treasury.

The duties of the State commission are chiefly supervisory, somewhat like those of the State insurance commissioner in regard to other insurance organizations. It compels the collection of a premium large enough, combined with the State contribution, to pay minimum benefits fixed in the act and other benefits which the mutual organization itself votes to grant, thus assuring solvency; it has the power to examine and pass upon the arrangements for the medical benefit and also the regulations controlling the action of members in benefit. It acts, furthermore, as a court of appeal from the decisions of the administrative authority of the local mutual organization. How this could be called "vast and uncontrolled power over employees and employers alike" it is difficult to see.

It is also objected that hearings before the commission shall not be subject to common law or statutory rules of evidence. It is only necessary to say that the compensation commission in New York, indeed, compensation commissions generally, are under the same rule. It is excusable only in a medical man who does not understand the procedure of government authorities to aver that the prohibition against divulging information acquired by the commission would make its hearings a "star chamber procedure." The purpose of this provision, which was taken from the compensation law, is to assure persons who give testimony that the information gained will not be handed out to their competitors in business. It is a protection and not an instrument of oppression, and as such is contained in the Interstate Commerce Commission, and in the Federal Trade Commission Laws.

Conditions in the various districts of the State, in the city of New York, in cities like Poughkeepsie, and the smaller manufacturing towns, are so different that it was deemed wise to include in the bill itself, as introduced, no detailed provision as to the medical service, and to depend on the criticism and suggestions of physicians themselves to bring out in conference the facts on which a final draft could be based. The committee which drew up the bill believed that the provisions, if any, which affect the medical profession should be the result of consultation with the profession. I urge the physicians of the State to study carefully the Mills bill and the advisability of urging the passage of the resolution introduced by Senator Mills to create a commission to study health insurance. Before such a commission they will have an opportunity of presenting fully their views as to the course which legislation on health insurance should take, legislation which the active interest displayed over this State, in Boston at a hearing before a Massachusetts legislation committee, and in Washington before a committee of Congress, seems to be impending.

JOSEPH P. CHAMBERLAIN.

ANOTHER VIEW OF THE MILLS BILL.

NEW YORK, April 14, 1916.

To the Editors:

I have read the article on the Mills Health Insurance Act which was published in the NEW YORK MEDICAL JOURNAL, and I beg you to accept my deepest appreciation for having published it. I am always glad to hear of anyone fighting these promoters of a second inquisition, these thankless beings who want to live on the consecration of the workers' bodies to their experiments in order to attain their political aims.

I hope that all respectable and reputable doctors are going to join together and fight these swindlers of human liberty to a finish. It is their duty to do so or else they may be rightly accused of complicity, and I beg of you in the name of God and humanity never to relax in your fighting spirit, but on the contrary to intensify it.

C. JULIEN.

P. S. No compulsory health insurance, no compulsory medical examination, and no compulsory medical treatment should exist in a country like America, it would be an insult to it. Medical freedom and religious freedom should be its watchword.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Endocrine Organs. An Introduction to the Study of Internal Secretion. By SIR EDWARD A. SCHÄFER, LL.D., D.Sc., M.D., F.R.S., Professor of Physiology in Edinburgh University. With Numerous Illustrations. New, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1916. Pp. ix-150.

This volume is based upon the author's Lane Medical Lectures, delivered at Stanford University, California, in the summer of 1913. Soon after they were delivered the lectures were published in an abbreviated form and without illustrations; they are here issued in a revised form, with an index, with numerous tracings and photographs, and with the correction of the many incidental errors which somewhat marred the former publication. At the same time the price, which was formerly 75 cents, has now been placed at \$3.50. In this volume the reader will find a concise, but authoritative account of our present knowledge of the endocrine glands and internal secretions; he will also find sufficient guidance to the enormous literature of the subject. The book will serve as a valuable introduction to the larger monographs on the same topic, as well as a useful supplement to the existing textbooks on physiology and practice.

The Practitioner's Medical Dictionary. Containing all the Words and Phrases Generally Used in Medicine and the Allied Sciences, with Their Proper Pronunciation, Derivation, and Definition. By GEORGE M. GOULD, A.M., M.D., Author of An Illustrated Dictionary of Medicine, Biology, and Allied Sciences, The Student's Medical Dictionary, Pocket Medical Dictionary, etc. Third Edition—Revised and Enlarged. By R. J. E. SCOTT, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine, Editor of Hughes's Practice of Medicine, Gould and Pyle's Cyclopaedia of Medicine and Surgery, etc. Based on Recent Literature with Many Tables. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. viii-962.

Gould is apparently a lexicographical genius, for his dictionaries have all enjoyed extraordinary sales, despite the mannerisms and eccentricities which have distinguished them from the ordinary run of word books. In this third edition of the modestly named *Practitioner's Medical Dictionary*, we have all the advantages of the genius plus the untiring industry and profound scholarship of an admirably chosen editor. The result has been not only the clearing away of a number of inaccuracies, but the addition of over 20,000 words to the vocabulary, a conscientious revision of etymology, etc., and a frequent condensation and improvement in the difficult matter of definition. We are glad to see the Greek letters again; recent lexicographers have discarded them with grotesque effect. The word invented by the NEW YORK MEDICAL JOURNAL, viz., *ergophobia*, we find now firmly entrenched in medical nomenclature; it even boasts a rival, *ergasiophobia*. When our own form of the word first appeared in 1903, it had quite a triumphal reception throughout Europe, which culminated in a two column humorous article in *Figaro*, of Paris, in 1907. The type used in this dictionary is new and clear, and its smallness is ingeniously accounted for; the volume in its flexible cover is a pleasure to handle. Placing the eponymic terms in their alphabetical order is a novelty to be thankful for; and we are glad to see carried out our policy of the avoidance, as far as possible, of diacritical marks. The book will, we hope, be an additional bulwark against the boattail spelling, which gives such an extraordinarily illiterate look to much of our medical literature; and it is well that author and editor have preserved the final *e* to distinguish alkaloids from glucosides and other bodies. The use of vowels with their English values, however, to indicate pronunciation, is curiously reactionary and not unlikely to prove misleading at first sight. We think that not only the practitioner will be grateful for this dictionary, but the medical writer, historian, and scholar will not find it want-

ing. It contains bad words; but the lexicographer is a recorder, not a reformer, and if we may paraphrase the French form of the adage, he is obliged to *prendre son mal où il le trouve*. We trust that this sound, honest, and excellent compend will displace a few of the pretentious lexicographical fakes of recent years.

Transactions of the American Association of Genitourinary Surgeons. Twenty-ninth Annual Meeting Held at the Greenbriar Hotel, White Sulphur Springs, May 18 and 20, 1915, and a Combined Meeting of the Association with the American Gynecological Society. Volume X. New York: Frederick H. Hitchcock. Pp. xii-339.

It is a difficult matter to review the transactions of so important a society as this, especially when its annual publication contains the record of an allied society with which it held a joint meeting—the American Gynecological Society. There is little in the realm of urological surgery that the transactions do not reach in either the papers themselves or the discussions. Among the most important is a contribution by Dr. George K. Swinburne on Fulguration in Gonorrheal Folliculitis, showing that the urologists are on the alert for the application of electricity to their healing art and science. There is no doubt that this subject of electrotherapeutics has been largely neglected owing to the trifling and toylike character of much of the generating apparatus sold to physicians, and owing to improper choice of currents, polarities, and electrodes. A paper of practical importance is the Prognosis of Urethral Stricture, by Edward L. Keyes, Jr., which represents mature observation of these difficult sequels of urethral infection even in these days when absolute obstruction by stricture and extravasation of urine is more and more rare. There is no doubt that the remote aftertreatment of stricture cases, consisting in the passing of sounds at long intervals, is too little remembered by general practitioners and too rarely heeded by patients. Relapsing conditions of importance are covered by the paper of Cabot and Crabtree on Frequency of Recurrence of Stone in the Kidney after Operation. The return of these dangerous deposits after perfectly successful removal has not yet been settled as to cause. The combined meeting was concerned largely with the various phases of renal infection excluding tuberculous forms and including vesical conditions associated with invasion of the upper urinary organs. Taken as a whole this volume is a valuable reference work for anyone interested in this field of surgery.

Memorias do Instituto Oswaldo Cruz. Ano 1915, Tomo VII, Fascículo I. Rio de Janeiro-Manguinhos. Pp. 138. This volume of 138 pages is published in Portuguese and contains three articles, the first of which, entitled *A Voyage on the San Francisco River and Some of Its Tributaries*, by A. Lutz and A. Machado, is of interest to geographers and is beautifully illustrated in halftones.

The second article is of biological interest only and is on the Tabanides of Brazil and Neighboring States, by Adolph Lutz, and has three admirable colored plates appended showing the anatomical features and differentiating characteristics of the various members of this class of insects.

The third division of the book is devoted to Interesting Facts in the Epidemiology of Tick Diseases, which takes up the question of transmission of trypanosomiasis by these insects.

Interclinical Notes.

An unexpected treat in the *April Century* is the first installment of a serial story by the dean of American letters, William Dean Howells, entitled *The Leatherwood God*. There is a pathetic little masterpiece of a short story, by Inez Haynes Gillmore, *The Night Before*, and a curious tale involving the supernatural, *Souls on Fifth*, by Granville Barker. Terrifying to any New Yorker with imagination is *Ripe for Conquest*, by Major Robert R. McCormick, in which the writer points out that an abysmal ignorance of modern war exists even in the Senate and House committees on military and naval affairs, and avers that at Plattsburg it was proved that the officers did not know

enough to be privates. Personally we liked best of all in this *Century* What Are Gasolene's Intentions? by Eugene Wood, a most remarkable scholarly essay in the guise of humor. Illustrations are numerous and very fine, including a most satisfactory portrait of Edgar Allan Poe.

* * *

The April *Current Opinion* starts off as usual with an excellent selection of cartoons from all over the world and well digested comment thereon; this is followed by studies of Newton D. Baker, Lord Robert Cecil, and Enver Pasha, articles on drama and the opera, and a digest of science. Haeckel's opinions on the war are given under the head of "Religion," hardly the classification he would have chosen, we think. Oblivion is foretold for the plays and epigrams of Oscar Wilde, a forecast with which we by no means agree, although the writer says that his best things have been so widely stolen that we have forgotten who said them first. There is a strong plea that New York should issue a series of adequate and artistic posters, something that Newark, N. J., has just done. A lot of excellent poetry is collected into this issue. We think *Current Opinion* is specially fitted for perusal by the doctor.

* * *

Once a month the *Survey* gets out a special monthly edition; the latest is the issue for April 1, 1916. It bears on the cover a portrait of Thomas Mott Osborne, posed in a head cage he found in a New York prison; it gives him a grotesque resemblance to a baseball catcher. Winthrop D. Lane tells of the old and new routine at Sing Sing; compared with the old, he says, Sisyphus led an adventurous life. Truly a mere description of it is sufficiently horrifying, and it is a wonder that more prisoners did not go mad. Ruth Pickering tells us that within the past ten months, 100,000 wage earners have won the eight hour working day. Caspar Day has a short story, Fader-Mens, which tells how we Americanize some of our immigrants. There is some witty talk against "preparedness"; we wish greatly that someone could tell us exactly what to do in this matter. Logically, we can see nothing between complete disarmament and an army and navy big enough to hold two nations at bay—which is absurd.

* * *

H. G. Wells, in *The Research Magnificent*, page 99, refers twice in one paragraph to a horse, once as an "American trotter," and again as a "gaunt pacer." Are American trotters and pacers synonymous in England, or doesn't Mr. Wells know the difference between the widely varying gaits?

Meetings of Local Medical Societies.

MONDAY, April 24th.—Medical Society of the County of New York.

TUESDAY, April 25th.—New York Psychoanalytic Society; New York Dermatological Society; Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; Onondaga Medical Society, New York; New York City Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Woman's Hospital Society, New York; Therapeutic Club.

WEDNESDAY, April 26th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Surgical Society; New York Society of Internal Medicine; Schenectady Academy of Medicine.

THURSDAY, April 27th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, April 28th.—Society of New York German Physicians; New York Clinical Society; Manhattan Medical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Italian Medical Society of New York; Academy of Pathological Science, New York; Hospital Graduates' Club, Brooklyn.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending April 12, 1916:

Allen, R. L., Assistant Surgeon. Granted one month's leave of absence from May 5, 1916. Baughman, D. S., Assistant Surgeon. Relieved at Seattle, Wash., and ordered to proceed to Marine Hospital, San Francisco, Cal. Carter, H. R., Assistant Surgeon General. Granted two days' leave of absence from March 23d, and four days from March 28, 1916, on account of sickness. Cobb, J. O., Surgeon. Directed, at the request of the Assistant Secretary of the Department of the Interior, to proceed to the Wahpeton Indian School, Wahpeton, N. Dak., and to the Vermillion Indian School, Tower, Minn., to investigate the status of the water supply. Corput, G. M., Surgeon. Directed to proceed to Tampico, Progreso, Frontera, Puerto Mexico, Tuxpan, and Vera Cruz, Mexico, to ascertain sanitary conditions. Crohurst, H. P., Sanitary Engineer. Relieved from duty in the investigation of industrial wastes, and assigned to duty in the investigation of stream pollution, Cincinnati, Ohio. Foster, M. H., Surgeon. Granted two days' leave of absence on account of sickness, March 15-16, 1916. Francis, Edward, Surgeon. Directed to proceed to Beaufort and Port Royal, S. C., to investigate quarantine conditions. Frost, W. H., Passed Assistant Surgeon. Granted three days' leave of absence on account of sickness, from April 5, 1916. Galloway, T. C., Jr., Assistant Surgeon. Granted twenty-one days' leave of absence from April 7, 1916. Glennan, A. H., Assistant Surgeon General. Granted three days' leave of absence from April 12, 1916. Hasseltine, H. E., Passed Assistant Surgeon. Directed to proceed to Fisherman's Island, Va., to conduct laboratory investigations of the pollution of shellfish. Miller, K. E., Assistant Surgeon. Directed to proceed to Union City for studies of rural sanitation in Obion County, Tenn. Phelps, E. B., Professor. Ordered to proceed to Urbana, Ill., to attend the meetings of the American Chemical Association, April 18-21, 1916. Prather, D. J., Assistant Surgeon. Directed to proceed to Union City for studies of rural sanitation in Obion County, Tenn. Streeter, H. W., Sanitary Engineer. Detailed to attend a meeting of the American Chemical Association at Urbana, Ill., April 18-21, 1916. Voegtlin, Carl, Professor. Detailed to deliver a lecture on vitamins before the Academy of Sciences, Washington, D. C., April 28, 1916. Wells, W. F., Sanitary Chemist. Directed to proceed to Fisherman's Island, Va., to conduct laboratory investigations of the pollution of shellfish. Wilbert, M. I., Technical Assistant. Detailed to attend the meetings of the Division of Pharmaceutical Chemistry, and the Assistant Editors of Chemical Abstracts of the American Chemical Society at Urbana, Ill., April 19-21, 1916. Young, G. B., Surgeon. Directed to proceed to Minneapolis and St. Paul, Minn., to investigate sanitary organizations and administration.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending April 15, 1916:

Bowen, Albert S., Captain, Medical Corps. Relieved from further temporary duty at Douglas, Arizona, and ordered to temporary duty with Field Hospital Company No. 3, Columbus, New Mexico. Coulter, John S., Captain, Medical Corps. Transferred from Field Hospital No. 7, to temporary duty with Ambulance Company No. 7. Greene, John V., First Lieutenant, Medical Reserve Corps. Relieved from duty on the transport *Sheridan*, to take effect upon the arrival of that transport at Manila, P. I., and will then report to the commanding general of the Philippine Department for assignment to duty. Howard, Deane C., Major, Medical Corps. Relieved from duty as attending surgeon,

Washington, D. C., to take effect upon the relief of Lieutenant Colonel Charles F. Mason, Medical Corps, from duty with the Panama Canal, and will then proceed to the Canal Zone and report in person to the Governor of the Panama Canal for duty. **Jones**, Glenn I., Captain, Medical Corps. Relieved from further temporary duty with Field Hospital Company No. 3, and will report for temporary duty at Cantonment Hospital, Columbus, New Mexico. **Kneeder**, Harry D., First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in that corps is accepted by the President, to take effect April 12, 1916. **Loving**, Robert C., Captain, Medical Corps. Relieved from further temporary duty with Field Hospital Company No. 3, and will report for temporary duty at Cantonment Hospital, Columbus, New Mexico. **McAfee**, Larry B., Captain, Medical Corps. Relieved from further temporary duty with Field Hospital Company No. 3, and will report for temporary duty at Cantonment Hospital, Columbus, New Mexico. **McAndrew**, Patrick H., Major, Medical Corps. Relieved from duty in charge of the Base Hospital, Fort Bliss, Texas. **McDaniel**, Adolphus A., First Lieutenant, Medical Reserve Corps. Assigned to temporary duty with the Sixth Brigade, Douglas, Arizona. **McKellar**, Harry B., Captain, Medical Corps. Relieved from duty in the Hawaiian Department, to take effect at such time as will enable him to comply with this order, and upon arrival at Honolulu of the transport to sail from San Francisco on or about July 5, 1916, will proceed on that transport to the Philippine Islands; upon arrival at Manila, will report to the commanding general, Philippine Department, for assignment to duty. **McLellan**, George H., Captain, Medical Corps. Granted one month's leave of absence (sick leave) with station to Camp Harry J. Jones, Douglas, Arizona. **Maddux**, Henry C., Captain, Medical Corps. Ordered to proceed to Fort Bayard, New Mexico, and report to the commanding officer of the General Hospital at that place for duty. **Mason**, Charles F., Lieutenant Colonel, Medical Corps. Relieved from duty with the Panama Canal, effective upon the expiration of such leave as may be granted him by the Governor of the Panama Canal. **Sanford**, Joseph L., First Lieutenant, Medical Reserve Corps. One month's sick leave is further extended one month. **Stuckey**, Harrison W., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Rosecrans, California, effective upon the expiration of leave granted him, and will report to the commanding officer, Fort Hancock, New Jersey, for duty, and by letter to the commanding general, Eastern Department. **Truby**, Willard, Major, Medical Corps. Relieved from further duty with First Battalion, Fourth Field Artillery, and will proceed for temporary duty in charge of the Base Hospital, Fort Bliss, Texas. **Wickline**, William A., Captain, Medical Corps. Transferred from Ambulance Company No. 7 to Field Hospital No. 7 for temporary duty. **Worthington**, George B., First Lieutenant, Medical Reserve Corps. Ordered to active duty with First Battalion, Twenty-first Infantry, San Francisco, Cal., with station at Fort Rosecrans, California.

The following named officers having reported at the headquarters, Southern Department, are assigned to temporary duty as follows: Captain George F. Juene-mann, Medical Corps, to Sixteenth Infantry, Columbus, New Mexico; Captain Glenn I. Jones, Medical Corps, to Field Hospital Company No. 3, Columbus, New Mexico; Captain John S. Coulter, Medical Corps, to Field Hospital Company No. 7, Columbus, New Mexico; First Lieutenant Chauncey L. Chase, Medical Reserve Corps, to Sixth Brigade, Douglas, Arizona.

Births, Marriages, and Deaths.

Born.

Ash.—In Council Bluffs, Iowa, on Saturday, March 18th, to Dr. and Mrs. William E. Ash, a daughter. **Pease**.—In Burlington, Vt., on Sunday, April 9th, to Dr. and Mrs. Clifford A. Pease, a son. **Ross**.—In Charlotte, N. C., on Monday, April 10th, to Dr. and Mrs. Otho B. Ross, a daughter. **Vietor**.—In New York, on

Sunday, April 2d, to Dr. and Mrs. John A. Vietor, a daughter.

Married.

Bailey—Braune.—In Boston, Mass., on Wednesday, April 5th, Dr. Karl Roland Bailey and Miss Fannie Jeannette Braune. **Brands—Read**.—In Bayonne, N. J., on Thursday, March 30th, Dr. Robert J. Brands and Miss Lillian Read. **Devitt—Davis**.—In New London, Conn., on Thursday, March 30th, Dr. Ellis King Devitt, of Lyme, Conn., and Miss Carmen N. Davis. **Goetz—Strauss**.—In Omaha, Neb., on Monday, March 27th, Dr. James Goetz and Mrs. Louise Strauss. **Loughran—Briggs**.—In Kingston, N. Y., on Wednesday, April 5th, Dr. Robert L. Loughran, of New York, and Miss Althea H. Briggs. **Porter—Worcester**.—In Waltham, Mass., on Tuesday, April 4th, Dr. Charles T. Porter, of Boston, Mass., and Miss Barbara Worcester. **Strickland—Sherlock**.—In Waltham, Mass., on Saturday, April 8th, Dr. Samuel P. Strickland and Miss Bessie Sherlock. **Waldie—Ray**.—In Lowell, Mass., on Tuesday, March 28th, Dr. George McLeod Waldie, of Tewksbury, Mass., and Miss Jennie Louise Ray.

Died.

Barker.—In Brooklyn, N. Y., on Tuesday, April 11th, Dr. Evan James Jones Barker, aged seventy years. **Bartlett**.—In Brookfield, Mass., on Wednesday, March 29th, Dr. Hiram P. Bartlett, aged eighty years. **Black**.—In Greenville, Mich., on Thursday, April 6th, Dr. Duncan K. Black, aged fifty-five years. **Brantley**.—In Atlanta, Ga., on Friday, March 31st, Dr. Henry Pope Brantley, aged sixty-eight years. **Brinkerhoff**.—In Minooka, Ill., on Tuesday, April 4th, Dr. John J. Brinkerhoff, aged forty-seven years. **Butchart**.—In Nanking, China, on Tuesday, February 15th, Dr. James Butchart. **Claxton**.—In Germantown, Pa., on Tuesday, April 4th, Dr. Charles Claxton, aged fifty-seven years. **Cook**.—In Harlan, Iowa, on Tuesday, March 28th, Dr. E. L. Cook, aged seventy-eight years. **Cooper**.—In Wilmington, Del., on Thursday, April 6th, Dr. Smith Cooper, aged sixty-four years. **Coxe**.—In Chino, Cal., on Sunday, April 2d, Dr. Dorran B. Coxe, aged sixty-one years. **Cummings**.—In Roxbury, Mass., on Friday, March 24th, Dr. M. Louisa Cummings, aged seventy-three years. **Davis**.—In St. Petersburg, Fla., on Monday, April 3d, Dr. Thomas D. Davis, aged seventy years. **Dorsett**.—In Willacoochee, Ga., on Tuesday, April 4th, Dr. Thomas W. Dorsett, aged thirty-eight years. **Hitchcock**.—In Binghamton, N. Y., on Sunday, April 9th, Dr. De Witt Hitchcock, aged sixty-six years. **Holleyman**.—In Covington, Ga., on Sunday, April 9th, Dr. T. S. Holleyman, aged forty-nine years. **Hunt**.—In East Providence, R. I., on Wednesday, April 5th, Dr. Simeon Hunt, aged seventy-nine years. **Kelly**.—In Trenton, N. J., on Thursday, April 6th, Dr. Edward Kelly, aged sixty-two years. **Klinkowstroem**.—In Denver, Colo., on Sunday, April 2d, Dr. Emil V. Klinkowstroem, aged sixty-one years. **McCann**.—In Detroit, Mich., on Monday, April 3d, Dr. Joseph H. McCann, aged thirty-one years. **Meyers**.—In Alledo, Ill., on Wednesday, April 5th, Dr. U. G. Meyers, aged fifty years. **Mortland**.—In Edgerton, Ohio, on Monday, April 10th, Dr. David G. Mortland, aged sixty-eight years. **Peck**.—In Norwich, Conn., on Monday, April 3d, Dr. Anthony Peck, aged sixty-eight years. **Schwarz**.—In Tacoma, Wash., on Saturday, March 25th, Dr. Emil Schwarz, aged eighty years. **Senseney**.—In St. Louis, Mo., on Friday, April 7th, Dr. Edgar Moore Senseney, aged sixty-one years. **Stafford**.—In Port Chester, N. Y., on Wednesday, April 12th, Dr. Oscar J. Stafford, aged fifty-eight years. **Strauss**.—In Baltimore, Md., on Wednesday, April 5th, Dr. George A. Strauss, aged fifty-nine years. **Strong**.—In Omaha, Neb., on Tuesday, March 21st, Dr. Mary Strong, aged sixty-two years. **Tillotson**.—In Clarno, Oregon, on Tuesday, March 21st, Dr. W. C. Tillotson, aged fifty-nine years. **Warford**.—In Orange, N. J., on Friday, April 7th, Dr. George T. Warford, formerly of New York. **Warren**.—In West Newbury, Mass., on Wednesday, April 5th, Dr. Orin Warren, aged eighty-three years. **Whelchel**.—In Gainesville, Ga., on Saturday, April 1st, Dr. John E. Whelchel, aged fifty-seven years. **Worcester**.—In Keene, N. H., on Thursday, April 6th, Dr. Franklin D. Worcester, aged sixty-four years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 18.

NEW YORK, APRIL 29, 1916.

WHOLE No. 1952.

Original Communications.

CONSTITUTIONAL CONDITIONS CAUSED BY ORAL SEPSIS.*

By JUDSON DALAND, M. D.,
Philadelphia,

Professor of Clinical Medicine, Medico-Chirurgical College;
Physician, Medico-Chirurgical Hospital.

The object of this communication is to stimulate interest in the far reaching and sometimes vital importance of dental sepsis; to encourage the prevention or prompt detection and removal of septic foci; to emphasize the necessity for making dentistry a specialty in surgery, and to urge a closer relationship between the physician and dentist.

Although more than a quarter of a century ago Dr. W. D. Miller (1) showed that oral sepsis caused constitutional conditions, its importance is only beginning to be appreciated. About three years ago this subject was presented to the Pennsylvania Dental Society (2), and excited no interest and no discussion. Two years later the subject of septic tonsillitis, as a cause of so called rheumatism, was presented to the Philadelphia Clinical Association (3), and in the discussion certain members denied that polyarthrititis could be caused by a septic tonsil.

The frequency of filthy and septic mouths in hospital and dispensary patients, without obvious ill effects, is probably one of the reasons why so many physicians deny that mouth sepsis causes constitutional diseases. Dr. A. Marx White (4) observed that twelve per cent. of the patients admitted to the hospital of the University of Minnesota were suffering from constitutional disease due to mouth infection, showing not only the importance but also the frequency of secondary infection.

THE QUESTION OF IMMUNITY.

Practitioners, observing that pus may be discharged from a sinus communicating with an apical abscess for months without producing manifest symptoms, erroneously conclude that oral sepsis rarely if ever produces constitutional diseases, forgetting that drainage lessens this probability, and that absence of symptoms does not prove the absence of disease. Certain of these patients may have acquired an immunity, while in others early pathological changes already exist that are recognizable with difficulty, or not at all.

Protective immunity may be lessened or lost by

age, intercurrent diseases, such as chronic Bright's disease, diabetes, rachitis, tuberculosis, influenza, fatigue, or overstrain, or any infection other than the one to which the individual is immunized. Many physicians experience mental difficulty in associating oral sepsis with endocarditis, and yet it has been well known for many years that small septic foci in other parts of the body—as an abscess in the neighborhood of an ingrowing toe nail—may produce this lesion. It is well known clinically that recurring or chronic endocarditis may exist for years without producing symptoms demanding medical advice, and this disease may be caused by oral sepsis.

Serious consideration of the evidence furnished by clinicians, pathologists, and bacteriologists, including animal experimentation, during the past three years, cannot fail to convince the most skeptical that even small and apparently insignificant septic foci in the mouth are capable of producing, not only serious, but sometimes fatal diseases of vital organs. The virulence of the streptococcus is more important than the extent of the lesion.

DISEASES DUE TO ORAL SEPSIS.

That pyorrhea may produce furunculosis is evidenced by a case observed fifteen years ago, which greatly intensified my interest in this subject. The patient counted 180 boils and carbuncles which appeared during four years. Extensive pyorrhea was present for ten years. After the extraction of septic teeth and cure of the pyorrhea, the furunculosis disappeared with the exception of a small boil and one carbuncle, which appeared during the following three months, after which the patient remained in excellent health during the following thirteen years. As no treatment was employed, with the exception of laxatives and digestives, it is reasonable to assume that the pyorrhea caused the furunculosis. This experience marked the beginning of a study of the relationship of oral infections to constitutional diseases, and a careful examination of the mouth became a part of the routine of the physical examination of each patient.

Recently an increasing number of physicians and dentists have observed cases of so called rheumatism relieved by removal of septic foci from the mouth. They have likewise occasionally observed the extraordinary rapidity with which pain disappears from so called rheumatic muscles and joints; and this object lesson has perhaps contributed to the rapid spread of the belief that a septic mouth may produce constitutional diseases.

The most frequent clinical expression of the

*Read before the Academy of Stomatology, Philadelphia, at its monthly meeting, January 25, 1916.

secondary manifestations of oral sepsis is so called rheumatism, better named septic polyarthritides, frequently associated with the involvement of sheaths of muscles and tendons, of the endocardium, pericardium, and myocardium, and the walls of arteries. Hartzell has shown that about half the cases of septic polyarthritides are complicated by endocarditis. Osteitis may occur in any bone without involving the joint, and is often overlooked when the vertebrae and sacrum are involved. Billings (5) has proved that chronic dental sepsis is an important cause of arthritis deformans.

If the original focus remains undetected, recurrence, more or less frequent, leading to impairment or loss of function of the affected joints, or cardiac incompetency, with or without embolism may occur. In like manner acute parenchymatous nephritis occurs, which may become chronic if the original septic focus is allowed to remain; but when removed the albumin, casts, and erythrocytes frequently disappear. Acute primary infective parenchymatous nephritis usually subsides promptly when the septic focus is removed. Severe infections may cause secondary suppurative nephritis.

Moderate grades of anemia are common in mouth sepsis, and usually there is an equal loss of red cells and hemoglobin, although a greater loss of hemoglobin is not infrequent. Occasionally the blood picture is one of pernicious anemia, which may pursue a fatal course if the sepsis is severe and long continued.

Dr. William Hunter (6) considers pernicious anemia as a chronic infective disease, and that a septic mouth is one of the causes. He calls attention to the frequency of septic diseases of the mouth preceding the appearance of the pernicious anemia.

It has been proved that bronchitis, pneumonia, pancreatitis, cholecystitis, cholelithiasis, indigestion, and peptic or duodenal ulcers may be due to a septic mouth. Acute gastric or duodenal ulcers may become chronic if mouth sepsis is allowed to persist. The infection is usually hematogenous, but may occur from materials swallowed.

Trigeminal neuralgia, secondary to apical abscess, is well understood; but that neuralgia in various parts of the body, including sciatica, may be due to toxic irritation or septic inflammation, is not generally recognized.

Ititis, phlebitis, skin eruption, and pruritus occasionally result from mouth sepsis.

One of the commonest and least recognized constitutional effects of mouth sepsis is the more or less well marked malaise, or feeling of great fatigue, due to toxic substances, produced by pyogenic organisms. That this is true is clinically evidenced by the prompt disappearance of this distressing symptom when the focal cause has been removed. When this condition exists unrecognized for a number of weeks or months, it is apt to be explained on the ground of excessive work, or as the result of stress and strain of the nervous system, or of other causes. Although mental or physical depression from toxemia may seem unimportant, it causes suffering, diminished efficiency and resistance, thereby inviting disease; nasal obstruction caused by the relaxation and swelling of the turbinal bodies, particularly

noticeable at night, causing mouth breathing, unrefreshing sleep, and dryness of the tracheobronchial membranes, leading to inflammation, has also been observed.

Secondary infections due to oral sepsis may also be caused by a septic focus situated in any part of the body.

THE ROLE OF STREPTOCOCCI.

The brilliant work of Rosenow (7) should be familiar to every practitioner of medicine and dentistry. He has proved that a streptococcus of low virulence may be transmuted into one possessing high virulence, if deprived of oxygen; moreover, under suitable cultural conditions ordinary streptococci may be changed into typical encapsulated lanceolate pneumococci. Under moderate oxygen tension an ordinary streptococcus may be changed to *Streptococcus viridans*; and when deprived of oxygen may be converted into *Streptococcus haemolyticus*. Streptococci, modified by varying cultural procedures, show varying selectivity for the different tissues of the body. In animals, heart lesions have been experimentally induced, and from these lesions the recovered organisms have caused ulcers of the stomach. With the organism obtained from this ulcer, infections of the joints have been produced. With the organisms obtained from the joints, pneumonia has been produced. He has therefore conclusively proved that streptococci possessing a low grade of virulence may, by cultural methods, be transformed in such a way as to produce not only organisms of varying virulence, but also organisms which, when injected into animals, uniformly produce the same lesion.

Streptococcus viridans, so commonly found in mouth infection, has a special predilection for the heart and joints. The intravenous injection of streptococci of the proper grade of virulence may be followed by ulcer of the stomach and duodenum (8), due to localized infection and secondary digestion; and the affinity of this organism for the stomach is so great that a general infection may not occur. Rosenow inclines to the opinion that this infection is by way of the blood.

The organism producing so called acute rheumatism is one occupying a position between *Streptococcus viridans* and *Streptococcus haemolyticus*, which is more virulent than *Streptococcus viridans*, and less virulent than *Streptococcus haemolyticus*.

Certain strains of streptococci producing arthritis often simultaneously produce endocarditis, pericarditis, and myocarditis, and when modified by cultural methods, these organisms may show a preference for muscles, including the myocardium and the kidneys.

The commonest of the organisms in septic foci of the mouth is *Streptococcus viridans*, which takes on the characteristics of *Streptococcus haemolyticus*, when obtained from a deep abscess or from a region containing but little oxygen, as is typically present in apical abscess.

Hartzell (9) has verified the observation that paraapical abscesses and pyorrhea pockets both harbor streptococci, which will induce in animals inflammation of the heart muscle, vegetations on the heart valves, infected joints, inflammation of the blood-

vessel walls, and both focal and diffused infection of the kidneys.

Although Dr. Arthur Henrici (10) concludes that peridental inflammations are primary lesions, the organisms gaining access to the tissues through either the root canal or at the gingival margin, and are not secondary to some other focus; nevertheless, it is probable that in exceptional cases the reverse may be true. He inoculated thirteen rabbits with a strain of *Streptococcus viridans* obtained from the saliva of persons with relatively healthy mouths, and two rabbits died with characteristic lesions and three died with no lesions. Of twenty-four rabbits injected with streptococci from a dental abscess, thirteen died with characteristic lesions and five with no lesions, showing that streptococci from periodontitis, although identical with cultural streptococci, were of higher virulence. He concludes that *Streptococcus viridans* is chiefly present in chronic dental abscesses and pyorrhea alveolaris.

In 131 cases of pyorrhea treated in the dental infirmary of the College of Dentistry of the University of Minnesota, in 1914 and 1915, it is interesting to observe that in forty-one cases no disease could be detected; indigestion and stomach trouble were present in thirty cases; heart trouble in fifteen cases; neuralgic and nervous troubles in fourteen cases; rheumatism in fourteen cases; kidney troubles in five cases, and in eight cases the health was below par.

Hartzell's (11) conclusions, after a very thorough consideration of oral infections, are as follows:

First, the mouth is the constant habitat of many destructive organisms, and offers the best cultural media possible for their growth. Second, animal passage or the passage of an organism from one living being to another keeps these organisms in a constant state of change, exalting or depressing their pathogenic possibilities, dependent upon whether the living being to which they are transferred is relatively highly immune, or has no immunity. Third, animal passage is being made by these pathogenic bacteria; they gain entrance into the mouth by the following means—the inhalation of the dust of the streets and living rooms, foods, fruits, drinks—milk and water—finger tips, kissing, use of common drinking cups, etc. Fourth, the constant changing reaction of the mouth from alkaline to acid favors transmutation as well as animal passage, in that it inspires exalted activity on the part of the organism. Fifth, oxygen tension is always reduced just in proportion as the organisms find their way into root canals and pyorrhea pockets, thus making possible changes in organisms which induce them to attack one tissue or another. Sixth, clinical observation is responsible for the belief that almost every individual who reaches manhood or womanhood has one or more blind alveolodental abscesses to his or her credit, and that these abscesses and pockets contain streptococci among other organisms. Seventh, ninety per cent. of the whole body politic present lesions which range all the way from a mild gingivitis to deep, blind pyorrhea pockets around their teeth. Eighth, tooth root surface in pyorrhea pockets is always more or less coated with living microorganisms, constantly ready to make incursions, either into pulp chambers or into the tissue surrounding the roots, where entry into the circulation is rapid, easy, and constant. Ninth, it is the constancy of the supply which eventually breaks down immunity.

Mouths apparently healthy may contain organisms possessing sufficient virulence to cause the death of a mouse from streptococcus peritonitis in twenty-four hours.

SHORTCOMINGS OF DENTAL RESTORATIONS.

Some dentists are of the opinion that ninety per cent. of their work is mechanical, and consequently

the brains of the profession have been chiefly concerned with mechanical problems, and too little attention has been given to the septic relationship of the mouth to the body in general, from which it is inseparable. It is an all important duty to prevent or promptly to detect and remove sepsis when present. The evils of improper mastication are well recognized and ably met, but in rendering this great service to the patient, let us not forget the greater good secured by preventing secondary infections.

There is no doubt that many septic teeth have been allowed to remain in the mouth months or years, to the detriment of the patient. On the other hand, the evils due to interference with mastication caused by loss of teeth should not be forgotten, and often the question as to which of the two evils is the greater must be considered.

Ulrich (12), quoted by Leonard, states that 1,000 röntgenograms taken at random indicate that seventy per cent. of artificially filled teeth roots were abscessed; and Leonard corroborated this statement by examining 100 cases in which sixty per cent. of the artificially filled teeth were abscessed.

Bridge work, capped teeth, and other mechanical appliances for aiding mastication sometimes cause suppurative gingivitis, and often favor the accumulation of food and bacteria, which is removable with difficulty or not at all. Physicians view every capped dead or loose tooth as suspicious, because so frequently roots of such teeth have shown apical abscesses. It is easy to understand the impossibility of satisfactorily treating a dead pulp in curved or distorted roots, but it is not easy to understand why apical abscesses should be found so frequently in filled or capped teeth, when a röntgenogram shows roots reasonably straight.

It is now known that a tooth may show no clinical signs of disease, and the x ray show apical abscess. When about to devitalize a tooth, always remember that a dead tooth is a candidate for infection. Unless septic teeth can be cured promptly they must be extracted, and the patient must endure the loss of masticating power.

COOPERATION OF PHYSICIAN AND DENTIST URGED.

In my opinion it is the duty of the dentist promptly to communicate with the physician should a patient show evidence of oral sepsis. The physician, upon discovering evidence of the infection, which he believes may be dental in origin, must depend upon the skill of the dentist to determine the existence or absence of such lesion. The dentist should not be oversensitive when requested to reexamine his own work, or feel that such a request reflects upon his professional skill. He should approach the solution of this problem in a purely scientific spirit, with the sole object of ascertaining the truth. No examination is complete until every tooth, every root, and every mechanical appliance has been thoroughly studied, removing, when necessary, fillings, caps, and mechanical appliances. A röntgenogram is essential to diagnosis. If, in a serious case, dental sepsis exists, and the report of the dentist is negative, important vital organs may be so seriously damaged as eventually to cause the death of the patient.

In advancing destructive disease of vital organs,

such as the heart, vessels, or kidneys, the loss of a tooth should not be given importance. In serious cases, threatening life or causing disability, when the cause is obscure, the physician is sometimes compelled to advise the extraction of suspicious teeth, unless the dentist is absolutely sure that they are normal.

Within the last decade the importance of the tonsils as a source of infection has compelled physicians to request the laryngologists to perform tonsillectomy, even when the tonsils appeared normal; and not infrequently the removed tonsils have shown an abscess which has caused joint and heart disease. The physicians have received from the laryngologists more sympathetic consideration than has been accorded by the dentists.

When an ophthalmologist discovers a retinal hemorrhage with no other symptoms, it is the invariable practice that this information is at once communicated to the attending physician, so that he may determine if Bright's disease exists and safeguard the patient. And in my opinion the dentist should do likewise, whenever mouth infection is discovered.

THE DENTIST'S OPPORTUNITY.

The rapidly increasing importance of dentistry in its various branches, now greatly added to by the problems of secondary infections due to septic foci in the mouth, marks a great epoch in the dental profession, and presents a great opportunity. If it accepts this great responsibility, it is plainly evident that much work must be done, and done quickly. The graduates in dentistry and medicine need instruction. The faculties of medicine and dentistry should each appoint a special instructor upon oral sepsis, to deliver lectures to the students upon this subject. One or more dental surgeons should be on the staff of each of the hospitals and dispensaries of Philadelphia, prepared to do work upon the same basis as the physicians and surgeons.

That the dental profession is awakening to the importance of this great opportunity is shown by the establishment of the Research Institute of the National Dental Association at Cleveland, to which one third of the profession have already contributed \$40,000. The splendid results already obtained by this research institute should be an inspiration to every dentist. Similar research laboratories should be established in each large city where dentistry is taught, which should be supported by the profession and the public.

In conclusion, I earnestly recommend that immediate steps be taken to make dentistry a specialty in surgery, on the same basis as the other specialties in medicine, by so arranging the course of study for the future student of dentistry that he shall receive the degree of Doctor of Medicine, thereby bringing about that close relationship between medicine and dentistry which is so urgently necessary.

BIBLIOGRAPHY.

1. MILLER: *Die Mikroskopien des Mundhöhlen- Oertheiten und anamnestische Untersuchungen, welche durch dieselben herbeigeführt werden*. 2. HALLAND: *Oral Sepsis from the Physician's Standpoint*. Dental Cosmos, Nov., 1912. 3. *Infection as a Cause of No Cerebral Epileptiform*. Paper read before the Philadelphia Clinical Association, Dec. 4, 1914. 4. WHITE: Report of the Minnesota Division of the Scientific Foundation and Research Commission, *Journ. N. D. A.*, ii, 4, Nov., 1915, p. 333. 5. BILLINGS: Chronic Focal Infection as a Contributive Factor in Chronic Arthritis, *Journ. A. M. A.*, i, 1, Sept., 1914, p. 509. 6. HUNTER: Pericoronitis

Anemia, p. 257. 7. ROSENOW: Elective Localization of Streptococci, *Journ. A. M. A.*, lvi, 1915, p. 1687. 8. IDEM: Production of Ulcer of the Stomach by Injection of Streptococci, *Ibidem*, lvi, 22, Nov. 29, 1913, p. 1950. 9. HARTZELL: Report of the Minnesota Division of the Scientific Foundation and Research Commission, *Journ. N. D. A.*, ii, 4, Nov., 1915, p. 333. 10. HENRICI: Report of the Minnesota Division of the Scientific Foundation and Research Commission, *Ibidem*, ii, 4, Nov., 1915, pp. 334 and 335. 11. HARTZELL: Secondary Infections Having Their Primary Origin in the Oral Cavity, *Journ. Allied Dental Societies*, ix, 2, June, 1914, p. 177. 12. ULRICH: Report of the Minnesota Division of the Scientific Foundation and Research Commission, *Journ. N. D. A.*, ii, 4, Nov., 1915, p. 340.

317 SOUTH EIGHTEENTH STREET.

SYPHILIS IN EPILEPSY.*

By WILLIAM T. SHANAHAN, M. D.,

Sonyea, N. Y.,

Superintendent, Craig Colony for Epileptics;

J. F. MUNSON, M. D.,

Sonyea, N. Y.,

Resident Pathologist;

AND A. L. SHAW, M. D.,

Sonyea, N. Y.,

Third Assistant Physician.

In most of the etiological classifications of epilepsy, a definite place is given to epilepsies arising on the basis of a syphilitic infection. A review of the literature shows that the role played by syphilis in this disease is believed by most authors to be greater than ordinary clinical data make evident; that there are many cases of epilepsy in reality due to syphilis, in which clinical evidence of the luetic infection is not obtainable. This is especially true where hereditary infection is suspected.

The failure of specific treatment to cure our cases and the lack of specific lesions in a few cases of supposed syphilitic epilepsy that have come to autopsy, have raised the question in our minds of the real importance of syphilis in the production of epilepsies. The questions we have to answer are:

1. The occurrence of syphilis in epileptics; 2, the etiological relationship of syphilis to epilepsy; 3, the results of treatment; and, 4, the existence of a special type of epilepsy due to syphilis.

I. OCCURRENCE.

First, in order to have a point of view, let us review a few figures on the occurrence of syphilis in the general population, and among the feeble-minded and insane.

Fox (1), quoted by Hazen, found 3.9 per cent. of syphilis among 15,000 whites. Hazen himself found 7.7 per cent. of 3,527 whites syphilitic. Whitney (2) reports 6.9 per cent. of 7,885 cases to be syphilitic. Moore (3) found 13.4 per cent. of syphilis among 418 medical cases. It is naturally difficult to get accurate figures on this subject, but these figures covering almost 27,000 persons give only 5.4 per cent. of syphilis. These figures are influenced by the fact that they are based on an urban population in which the percentage of syphilis is probably higher than in rural communities. The figure for the average population would be lower than those given.

The relation of urban and rural communities is well illustrated by the figures on syphilis in the in-

*Read before Buffalo, N. Y., Academy of Medicine, February 9,

sane, being twenty-two per cent. for the city and eight per cent. for the country insane (4). These figures are also quoted to show the considerable amount of syphilis among the insane.

Captain Vedder, of the Army Medical Corps, estimates that twenty per cent. of the young men of the class from which the army is recruited and five per cent. of college men are syphilitic. He farther suggests that about seventeen per cent. of the recruits were syphilitic previous to their entering the army. Walker and Haller (13) give the incidence of a positive Wassermann reaction among 4,000 general hospital cases as 600 or fifteen per cent.

The general impression is that syphilis plays an active role in the production of defectiveness, including epilepsy, but the findings do not completely substantiate this opinion. Remembering the blighting influence of syphilis on fetal and infantile life, we are not surprised that the actual percentage of positive findings is small. Kassowitz, cited by Hyde, for example, states that one third of all syphilitic fetuses die in utero and that of the remaining, a greater number die during the first six months of life.

In a typical group of feeble-minded (5), 4.5 to five per cent. of about 800 cases showed positive Wassermann reactions; this result is said to correspond closely with the physical findings in this group of cases. Repetition of the work on part of the same cases, however, together with some new ones, gave about the same percentages of Wassermann positives, but this time there were positive physical signs of lues in only about half the Wassermann positive cases.

Reports on the amount of syphilis among epileptics are few, though most writers agree that epilepsy and syphilis are frequently associated as cause and effect.

Veit (6) gives seven per cent. of hereditary lues among the patients of the institution at Wuhlgarten, Germany, and Bratz, from the same institution, found syphilis in the parents of five per cent. of 400 cases. Noguchi (7) reports on fifty-one cases in which syphilis was not ascertainable, finding twenty per cent. of positive and six per cent. of doubtful reactions in the blood serum. In the cerebrospinal fluids of these cases, he obtained four per cent. positive and two per cent. of doubtful reactions. Pleocytosis was absent in all.

Aldren Turner (8) saw only four cases of congenital lues among 1,000 cases of idiopathic epilepsy, and these presented no unusual features. He also saw one case develop during the secondary stage of the disease. Osler (9) says that convulsive seizures due to acquired syphilis of the brain are very common. In the Massachusetts institution for epileptics (10), Wassermann reactions in 535 consecutive cases showed 3.34 per cent. of positives. Walker and Haller (13) found fourteen per cent. of 71 cases of epilepsy without other apparent cause, to give a positive Wassermann. Of their ten positive cases, three have had no attacks for a year after treatment with salvarsan; in the remaining seven, treated with mercury intramuscularly, the attacks were relieved while under observation. In thirty-five of these cases, including the ten positives, the cerebrospinal fluid was Was-

sermann negative and gave a normal cell count. A very sensitive antigen was used. These authors consider that all neurological cases should be tested, but especially all cases of epilepsy.

The clinical material of the Craig Colony for Epileptics amounts to approximately 4,100 cases, and by gathering data from all sources, there appear to be 133 cases in which syphilis was suspected, or 3.2 per cent. There was also available a summary of the admission examinations of a series of 1,216 cases, in which 3.4 per cent. were considered syphilitic; also for a series of 1,005 cases, 2.18 per cent. were considered as due to syphilis.

During the past summer, Wassermann reactions have been done on the blood serums of practically the entire population of the colony. The technic employed did not differ materially from the standard; the hemolytic system used was the anti-sheep and the antigen was the acetone insoluble fraction of the lipoids of calf heart muscle. By combining

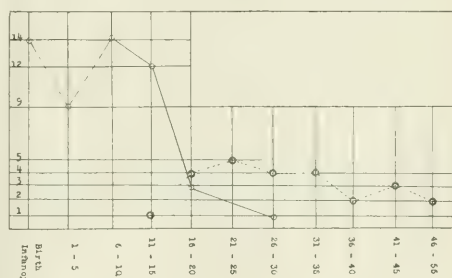


Diagram showing onset age in epilepsies with hereditary syphilis and acquired syphilis. The dotted lines represent the acquired cases, and the unbroken lines the hereditary cases. The vertical lines represent ages at onset by five year periods and the column of figures at the right shows the number of cases.

complement and saline and complement, antigen, and saline in proper proportions, we have been able to add these ingredients in proper doses by only one pipetting, thus saving considerable work. The tests have been carefully controlled and doubtful results rejected unless confirmed by repetition. Our constant attitude has been one of conservatism, always giving the patient the benefit of a negative diagnosis in doubtful cases. We feel this to be very important, since the diagnostic effect of a positive Wassermann is almost impossible for the patient to overcome in the future, when any condition in him comes up for diagnosis. A negative report on the Wassermann can always be changed to positive when the test later justifies this.

Our results were as follows:

	Per cent.
845 males	1.42
628 females	1.76
Total 1,473 cases	1.56

These figures represent an unselected group, made by the accidental fact of being patients at the colony at the time the tests were being made. A few earlier tests, made on suspects and not included in this series, would increase the percentage of positives to about two per cent. This would not be a fair grouping, however.

In a small group of cases tested by luetin (11), totaling only 143 individuals, and made up to a considerable degree of suspects and children, the number of positive reactions was nineteen per cent. If the suspects are eliminated from this series, leaving mostly children and youths, the proportion would be reduced to about twelve per cent. This is probably high for the entire group of epileptics of all ages now under treatment, since the adults tend to show less positive luetins than the young patients. The positive luetin tests we obtained were mostly of the pustular type and only a very few macular reactions were seen. We had only one delayed positive. In one positive case, a second test after some weeks turned out negative; this result we cannot explain.

The Argyll Robertson pupil is believed by many to be an absolute criterion of central nervous system syphilis, though it is also found in extreme alcoholism and in lesions of the corpora quadrigemina (12). Our records at the colony show only four definite Argyll Robertson pupils and three cases of syphilitic eye conditions. These figures are of little numerical value, but show the small number of cases in which syphilitic eye conditions are found in our series.

In 305 brains examined at autopsy, there were syphilitic lesions in only two—both of which were gummas. In additional cases, extending the series to over 600 there have been no farther findings.

Our colony material shows results about as follows:

Syphilis by Wassermann reaction, under 2 per cent.
Syphilis by clinical data, 3.4 per cent.
Syphilis by luetin tests, about 12 per cent.

It thus appears that syphilis occurs in our cases in a proportion not very different from that in the general population.

It must be recognized that the number of positive Wassermann or positive luetin cases do not alone represent the number who have at some time had syphilis. The former, roughly speaking, show active syphilis while the latter show hereditary, late, and latent lues. In the use of both tests, some cases will be missed on account of the fading of the reactive power of the patient through treatment and time.

With the exception of our luetin tests, and of the figures of Noguchi and of Walker and Haller—all of which are based on series of cases too small for generalizations—our figures are in sharp contrast to those found among the insane, which may run as high as thirty per cent. This contrast is of great value when we consider that among the insane, the syphilitic psychoses—mostly general paralysis—stand out as a group with clear cut symptomatology. On the basis of this comparison, we feel that it is safe to say that there is no special type of syphilitic epilepsy—that epilepsy of syphilitic origin does not differ materially from ordinary epilepsy.

This is exactly what should be expected upon the basis of our small knowledge of the organic epilepsies; in these many diverse quantities damage a common mechanism in the brain and naturally the resulting syndrome is of a fairly constant type.

Syphilis at the colony. As stated above, there

were 133 of our 4,100 cases in which syphilis existed or in which there was reasonable ground for suspecting it. These cases group themselves as follows:

	Cases.
Diagnosis doubtful	4
Unknown if hereditary or acquired	33
Hereditary cases	54
Acquired before epilepsy	27
Acquired after epilepsy	6
Relation of syphilis to epilepsy unknown	9

The data on the hereditary cases are unsatisfactory in the extreme, as regards the diagnosis. In many cases the reasons for the diagnosis are not ascertainable. Mostly, the diagnosis rests on the fact that one or both parents had syphilis or a syphilitic disease such as general paralysis, but data are usually lacking to determine the relation of the luetic infection in the parent to the conception of the patient.

Nonne emphasizes the fact that a number of healthy children in a family does not exclude a past lues in the parents and "that not every organic nervous disease in a person infected with syphilis is necessarily of specific origin." He, as well as other writers, has mentioned the theory of a syphilitic virus with a special toxicity for the nervous system, resulting in secondary changes in the brain, such as meningitis, gummatous nodules, or in many cases an infiltration of the bloodvessel walls. He farther states that there may be an attenuation of the specific virus, e. g., in one family there may be first abortion, later premature birth of dead children, still later birth of full term children, who show immediately specific symptoms or later acquire them, and, finally, there may be born children who are healthy at birth and continue so. It should be remembered that the birth of a healthy child may occur between the birth of two syphilitic children.

The actual intrauterine transmission of the treponema from the mother to the child has not been demonstrated, although it is supposed that infection of the fetus results through the placenta. While from the scientific standpoint, both as regards diagnosis and treatment, it is highly desirable to apply specific tests for syphilis to the parents and other near relatives of the young persons suspected of hereditary syphilis, especially in institutions is it difficult and seldom possible to obtain such an opportunity. Observers have maintained that over eighty-five per cent. of mothers of syphilitic children give a positive Wassermann test, practically all of them having been innocently infected by the father. Where positive evidence of syphilis is found in one or both parents, we should ascertain if possible the relation of such infection to the conception of the child. Doctor Chalmers, medical health officer of Glasgow, states that congenital syphilis can exist without any apparent effect on the general health of the child.

If we do no more than to urge the necessity of caution and care in the making of a diagnosis of a hereditary lues, we have served some good purpose.

In these hereditary cases, there are also present many other factors which we regard as of etiological importance in epilepsy as follows:

	Cases.
None	12
Birth injury	11
Trauma	7
Bad heredity	13
Infantile palsy	3
Parental alcohol	14
Various conditions	5
Two or more of these conditions may be included in one case.	

There is no doubt in the minds of many that alcoholism in parents has a somewhat similar effect on the offspring as has syphilis, especially when such alcoholism is maternal. In this connection it should be remembered that alcoholism and syphilis often coexist.

It is interesting that a similar set of conditions are to be found in the cases in which syphilis was acquired before the onset of the epilepsy.

	Cases.
None in	4
Trauma	3
Heredity	18
Alcoholism in patient	5
Loose life	1
Arteriosclerosis	1

Again two or more conditions exist in the same case.

The occurrence of the first seizure in these cases agrees exactly with expectation. The hereditary cases have their onset in early life, while the acquired cases do not appear till after adult life has begun. One exception is a case in which the patient was infected by his nurse. A striking result is obtained by charting the onset ages in these two groups of cases (Fig. 1). The double crested curve thus obtained is parallel in type to that obtained by plotting the onset ages in 2,700 unselected cases of epilepsy (22). It would seem that in our present group of epileptics with syphilis the same factors must have been at work as in the entire group of 2,700 patients. This again suggests that we are not dealing with a special group of syphilitic epilepsies, but simply with epilepsies of specific origin.

All authorities agree that syphilis is an important factor in producing changes in the circulatory system, causing degenerative disturbances in the tissues nourished by the particular vessel or vessels involved. In certain persons, in consequence of these degenerative changes, symptoms classed as epilepsy may appear, especially where there exists an hereditary predisposition. It is to be recalled that the peripheral vessels may be markedly sclerotic without change in the cerebral vessels and vice versa.

The underlying pathology falls into a few groups:

- Cases not themselves syphilitic, but conceived by germ plasma damaged by syphilis.
- Cases infected at conception.
- Cases arising from the effect of toxic products of the syphilitic infection on the central nervous system.
- Cases arising from endarteritis.
- Cases arising from hemorrhage from weakened vessels and from gummata.

It is conceded that *Treponema pallidum* may damage the human germ plasma previous to or at conception or the fetus in utero, to such an extent as to ultimately produce subnormal physical and mental development without its being possible to obtain later evidence of syphilis, such as positive Wassermann and luetin reactions. Children infected with syphilis during infancy by wet nurses or others may as a result of such an infection have an interference

with the development of the brain, and consequently may later manifest feeble-mindedness, epilepsy, or both, whereas in an adult inflammatory change or destruction consequent upon hemorrhage occurs and may likewise produce seizures and mental defect.

Bearing in mind the fact that of the offspring of syphilitic pregnancies a very large percentage succumbs either during fetal life or in early childhood, the number reaching late childhood or early adult period is small. Consequently, in an institution for epileptics or other defectives, or even in the general community, persons showing positive signs of hereditary syphilis would be few. This is emphasized in our series by the infrequency of clinical findings, such as typical teeth, etc.

It might be stated at this point that clinically what has been termed syphilitic epilepsy does not present an entity of symptoms of any diagnostic value, except possibly where apoplexy occurs in a patient during the third or fourth decade of life with perhaps a resulting hemiplegia and recurring convulsions, either local or general in type. It should be remembered that symptoms apparently focal in nature may occur in the so called idiopathic, traumatic, and other forms of epilepsy, as well as in an epilepsy where syphilis as a definite factor may be ascribed as the cause of the disorder; and it is also to be recalled that the convulsions seen in the later stages of paresis may differ in no way from the ordinary grand mal seizures in an epileptic.

One writer states that syphilis of the nervous system consists of an infiltration of granulation material, either into the membranes of the cord, the brain, or the walls of the bloodvessels of the central nervous system, leading to occlusion. In consequence of these, local symptoms result, among which may occur convulsive seizures. While the treponema has been found in the brain of paretics, producing a chronic parenchymatous encephalitis, there has not, so far as we know, been a case of so called syphilitic epilepsy in which a similar finding has occurred. In our acquired syphilis group there is no large number of gross lesions, as represented by paralysis, only seven of twenty-seven acquired cases showing this condition. The remaining cases are probably due to intoxication or endarteritis of the minute cerebral vessels.

While it might seem that in the cases where epilepsy is apparently the result of syphilis, specific treatment would be beneficial, in the majority of these cases material damage has already been done to the brain and its membranes, so that it is ordinarily futile to apply specific treatment with the expectation of effects beneficial to the epilepsy. When the patient is seen soon after the onset of symptoms, and where there is no evidence of marked destruction or impairment of the nervous system, specific treatment should be applied promptly. Our results bear this out. We have used antiluetic treatment, including salvarsan intravenously, in some of our cases, and in no case have we obtained a material result as regards the epilepsy. Some improvement of the general health has been the maximum, but even though the Wassermann reaction has become negative the damage had already been done and the seizures persisted. Salvarsan given either by the Swift-Ellis method, injected into the cerebral ven-

tricles or beneath the pia arachnoid, so as to reach more directly the affected brain tissues, might in conjunction with mercurial treatment result beneficially in selected cases.

Once more the need of early and scientific treatment of syphilis is made evident.

So far, we have not been able to find any characteristic mental picture for the syphilitic cases. The variations in this group are exactly those found in the entire group of the epilepsies.

SUMMARY.

An epileptic with syphilis is not necessarily a patient with syphilitic epilepsy.

The occurrence of syphilis among our patients does not seem to differ much from the occurrence of syphilis among the population as a whole.

Luetin tests show the highest proportion of positive tests in our cases, while the Wassermann positive cases are somewhat below two per cent. Wassermann reactions on the cerebrospinal fluid would probably give a still lower figure.

Treatment is unsatisfactory, owing probably to the lateness of its beginning.

In many cases, the diagnosis is exceedingly doubtful and should be supplemented by examination of the patient's parents, brothers, and sisters, not forgetting the use of the Wassermann and luetin tests.

There is no type of syphilitic epilepsy.

Syphilis is one of the many agencies which produce the disorder we call epilepsy.

CASE REPORTS.¹

CASE VIII (2892). Harry Y., admitted November 4, 1909, aged forty-six years. At the time of admission patient's father was living, aged ninety-four years. Mother stated to have been rheumatic, died at seventy-five years from senility. One brother became acutely insane at twenty-two years of age, but recovered completely after some months. Patient one of nine children, born at full term; development said to have been normal. At thirteen years of age was struck on head by ball bat, unconscious for few minutes, seemingly no subsequent difficulty. At age of thirty-seven years, while riding a bicycle, he fell, receiving an injury to right knee. Stated to have begun to use alcohol at fourteen years, and continued to excess to time of admission to Colony, being frequently intoxicated. At time of first seizure at thirty-three years, he stopped drinking whiskey, but continued beer. For many years, beginning in early life, he chewed tobacco and smoked cigarettes to excess. First seizure at thirty-three years, while in theatre. Physician, who saw him at the time, was inclined to think that he had had previous seizures. Second seizure occurred two months later, then both nocturnal and diurnal attacks. Aura, strange buzzing in head, sensation of gas arising from stomach, felt stupid and sometimes talked purposelessly. Sometimes he had the aura without subsequent seizure; occasionally dizzy and automatic after seizure; memory somewhat impaired. In 1899, while depressed and discouraged on account of his epilepsy, he took two ounces of laudanum with suicidal intent, became unconscious for two hours. Six months later, made similar attempt. Upon admission to Colony fairly well nourished muscular man about forty-five years of age. Height, five feet ten inches; weight, 156 pounds. Beginning arcus senilis. Arms, trunk, and legs, and especially back covered with small slightly depressed circular scars, surrounded by dark brown pigment. Dentition poor. Shoulders sloped. Well marked flat foot. Enlarged cervical glands. Myopia. Pulmonary tuberculosis (?) Admitted having had gonorrhea twice, but denied syphilis. No apparent paralysis. Mental status good. During 1910, twelve grand mal seizures were recorded, during 1911, seven, 1912, eight. Luetin test made in 1915 positive. In this case with a his-

tory of a long continued alcoholism with undoubted venereal exposure was epilepsy due to both alcoholism and syphilis?

CASE X (4288). Mrs. May B., admitted September 1, 1915, married; born March 3, 1892. Father died at thirty-six years of pulmonary tuberculosis; was a painter and paper hanger. Mother died at forty-nine years (heart disease and gallstones). Grandparents dead, cause unknown. Mother was said to have had occasional fainting spells for a number of years after birth of patient and was also subject to periodical headaches; patient an only child. She was stated to have been born at full term, natural delivery. Was unusually small and puny infant. No history of injury at birth. Nursed by mother. Cried a good deal during infancy. Dentition began at one year. Age at which she walked and talked unknown. At about five or six years of age patient walked in her sleep. Began school at six years; stated to have made good (?) progress, reaching fourth grade. Had whooping cough at unknown age and scarlet fever before the age of ten years, both diseases severe in type. Four years ago, had typhoid fever, followed by a "brain fever" (meningoencephalitis?). Had pneumonia at three years and twenty-one years. Three years ago, had ovaries removed at Rochester General Hospital. Was married at age of nineteen years, living with her husband three months, when he deserted her. Patient had one miscarriage at seven months. Age at onset of epilepsy given as eleven years. Alleged cause of epilepsy, frightened by stepfather, who threatened to kill a dog belonging to patient. Subsequent seizures occurred at intervals varying from two to three weeks to as many months. Bit tongue during seizures. Aura, feeling of weakness and blood rushing to the head, with inability to speak. Cut upper lip and forehead during one seizure. Physical examination upon admission: Height, five feet one inch; weight, ninety-one pounds; slightly stooped; pediculus capitis; head small; frontal eminences prominent; mucous membrane pale; tuberculosis right lung (?); rapid pulse; teeth fair; constipation; slight tenderness over gallbladder. Patient had passed artificial menopause. No evidence of paralysis. Superficial and deep reflexes sluggish. Passed Binet test at eleven years. Subsequent to her admission to the colony a positive Wassermann blood serum test was obtained. Was this patient infected with syphilis subsequent to the development of her epilepsy or had she an hereditary infection?

REFERENCES.

- HAZEN: *Journal A. M. A.*, lxiii, p. 463.
- WHITNEY: *Ibidem*, lxxv, p. 1986.
- MOORE: *Ibidem*, lxxv, p. 1986.
- Handbook Mental Hygiene Exhibit*, 1913.
- CHARLES BERNSTEIN, supt. Rome State Custodial Asylum, Rome, N. Y.: *Personal Communication*.
- VEIT: Quoted by Nonne, *Syphilis and the Nervous System*, 1913.
- NOGUCHI: *Serum Diagnosis of Syphilis*, p. 397.
- TURNER: *Idiopathic Epilepsy*, 1907, pp. 55-58.
- OSLER: *Practice*, 1912, p. 1005.
- EVERETT FLOOD, supt. Mass. Hospital for Epileptics, Palmer, Mass.: *Personal Communication*.
- Mullford preparation used.
- JELIFFE WHITE: *Diseases of Nervous System*, 1915, pp. 34-85.
- WALKER and HALLER: *Journal A. M. A.*, lxxvi, p. 488.
- MOTT: *Journal of Mental Science*, lxi, April, 1915.
- REYNOLDS (abstract): *Journal A. M. A.*, lxxv, p. 338.
- E. D. FISHER: *Syphilis of the Nervous System*, *Journal A. M. A.*, lvii, p. 2134.
- STONER and KAISER: *Cleveland Med. Journal*, xi, p. 21.
- HYDE: *Ibidem*, October, 1914.
- BAISCH (abstract): *Journal A. M. A.*, lvii, p. 1412.
- STOLL: *Syphilis in Hypertensive Cardiovascular Disease*, *Am. Jour. Med. Science*, cl, p. 178, 1915.
- ACER: *Brain Syphilis*, *Ibidem*, cl, p. 359, 1915.
- Neurology*, 22, *Medical Record*, Jan. 8, 1910.

THE WAR OF THE METRIC SYSTEM.

By A. L. BENEDICT, A. M., M. D.,

Buffalo.

Although an advocate and user of the metric system, so far as practicable in this country, for nearly thirty years, it amused me to see the present European war thus characterized by an amateur writer for a newspaper. After seeing the same view expressed in one of our critical weekly reviews, the suggestion did not appear so ridiculous.

Offhand, the fact that practically all of the combatant nations use the metric system almost exclusively, with the sole exception of Great Britain, whose entrance into the war is historically an after event, would seem to dispose of the question. But

¹Two cases of syphilis were reported here. In the report of this case, however, the syphilis was not reported.

it must be recognized, first, that the Germans have persistently regarded the war as primarily against England, and while present history taken literally shows this view to be an anachronism, it is only fair for a neutral country to await the subsequent submission of evidence before making a final decision. It may be that the German claim can be shown to be not only persistent but consistent. At any rate, getting behind the immediate cause of precipitation of conflict, which was too far fetched to be an explanation and which has practically been forgotten, there is no question that the essential cause of the state of tension in Europe was the growing power of Germany, economically rather than directly military, up to the point at which the restraint of England became an appreciable factor in limiting its further growth.

Taking this deeper view of the war, its designation as one of the metric system, is quite understandable, and in no such symbolic sense as the War of the Roses, or the cruder and very recent designation of the present war as one of the sausage against the beef steak. In the literal and narrow sense, the adoption of the metric system by Germany was one of the most important minor reasons for the phenomenal industrial and commercial growth whose regrettable result has been the present war, and we need not discuss the question, at present quite academic, whether this result was necessary. In a somewhat figurative and broader sense, the designation, war of the metric system, is still more applicable. It implies prompt and universal adoption, at the cost of temporary inconvenience and contrary to habit, of something that is ultimately desirable and economic. By itself, the adoption of the metric system by Germany would not have been important—no more important, for example, than the change from Gothic print and script to Roman a few years ago, nor the omission of a few silent letters to simplify the spelling, already close to phonetic perfection compared with the almost purely arbitrary spelling of English. But as one of a considerable number of changes, adopted universally in a comparatively brief space of time historically and involving social, educational, economic, industrial, political, military, naval, and other factors in the welfare of a people, it stands out as a type of German achievement rather than as belonging to other countries, even perhaps including that in which it originated. In this sense, it typifies efficiency and far sightedness. Grant that not every one of the changes introduced, at the expense of immediate convenience and with a view to ultimate improvement, has been successful. Grant even that this particular change has been unwise, as most of the readers of this article will, if they think as they practise, and it is still evident that the same spirit of seeking efficiency in details, broadly applied, will, in the aggregate result in superior rate of advancement, unless we assume a general faculty of making unwise decisions.

The metric system typifies German efficiency, civil and military, in quite a different way—convertibility and correlation. This is true in both the literal and the figurative sense. Everything that the army requires that is ponderable, a hypodermic medicine, a loaf of bread, a bullet, a gun; anything

that it secures from ordinary commercial supplies without special preparation in advance, is weighed in some decimal multiple or fraction of a gram. Everything that is measured along a line, the soldier's height, his step, his roads, his blanket, the calibre of weapons, the distance that he travels, and everything that he encounters that is not directly designed for military use but which he may need, is similarly measured by the meter. The sole exception, and this may no longer be true, is that the importation of railroad tracks and rolling stock from England left this form of transportation with the impress of the old miscellaneous units of measurement. The obvious exception of other imports, mostly in bulk, need not be considered as a practical handicap.

Further than this, every branch of the metric system comes together somewhere, with the others; for example, the c. c. and the gram, the solid and the liquid bulk ton. Even the mark, the unit of money value, is practically a six gram weight. It is the same spirit of correlation that has made the immediate adaptation of the railroads and postal service to military requirements possible, that has put the traveling soup wagon, the automobile truck, and a host of other things immediately in the category of military auxiliaries.

As an illustration of the value of the correlative spirit of the metric system, the negative method is the more striking. Ask yourself, for instance, how many pounds there are in a bushel of potatoes, or how much a bushel of water would weigh, or how many cubic inches there are in a gallon. There is an old rhyme to the effect that a pint is a pound. Probably there is some liquid that at some temperature and pressure would weight a pound to the pint, but there is no accurate and simple relation among any of the necessarily diverse methods of mensuration by weight, length, area, and volume, except in the metric system.

Another negative illustration of the value of the metric system may be put in the terms of the logical development of land. It is first mapped out in degrees and minutes, then surveyed by the square mile, roads are run through by the rod, distances are measured by chains and links. The land is farmed by the acre. It becomes valuable for building purposes and is sold by the foot, linear frontage or square, according to local custom, depending largely on value. The building is erected by feet and inches, some of the metal work being in feet and tenths. Feet of lumber, neither linear nor cubic, come into the estimate. The house is ready for occupancy and is supplied with carpets and curtains by yards of varying width, for carpets even the grade and price deciding whether we deal with three quarters or one third fractions if we think in yards or improper fractions, or units if we think in feet. Contrast this with the metric system where, from degree of latitude—obviously the degree of longitude varies—in the original map down to the minutest particular of house furnishing, we are dealing with even multiples of the same unit.

I do not wish to discuss military preparedness further than to say that, so far as the medical profession is concerned, a very important item would be familiarity with the metric system, which is at

least theoretically standard for the existing government services. Without such familiarity, much confusion would result in the military medical service if war came. But military preparedness includes a multitude of items that have nothing directly to do with killing. Nearly every fundamental science which applies to development in peace and equally to war has for some years worked in metric units. This is true, of medicine, of physiology, and chemistry, and of a large number of special scientific branches which can scarcely be termed independent sciences, microscopy, pharmacology, bacteriology, serology, etc. A change of units in passing from the scientific to the practical has its obvious disadvantages. The same statements may be made, with some qualifications, as to the relation of the scientific and the practical in nearly every art and industry of peace. Both in its own field and as an example and incentive to other professions and trades, our profession can perform an important service by furthering the general use of the metric system. This service would be of incalculable value from the peace standpoint; it would do much to avert catastrophe if we are to have war. Let us not forget that this service would be something more than facilitating measurements by substituting the advantages of decimal computations and correlated units. It would be a training in cooperative foresight and initiative to secure efficiency.

228 SUMMER STREET.

PARALYTIC FEET.

A New Operation for Certain Types,

By PERCY WILLARD ROBERTS, M. D.,
New York.

While numerous operations have been devised for improving the function of paralytic feet, the ultimate results frequently leave much to be desired. In every large orthopedic clinic there appear, from time to time, cases of this nature which have undergone several operations and still need further surgical attention, and the number of methods advocated for the relief of severe types of foot instability is of itself evidence that no one of them satisfactorily fulfils its purpose.

In typical danglefoot, astragalectomy, when done according to the technic of Whitman, has given many excellent results, yet in the hands of the average operator it has likewise yielded numerous disappointments. For the milder grades of deformity complete astragalectomy often appears unnecessarily formidable, and therefore arthrodesis, tendon transplantation, or tendon fixation is resorted to with an inevitable trail of failures and relapses. After many years of observation it has seemed to the writer that some procedure less radical than astragalectomy and more efficient than arthrodesis was needed to meet the situation, and as a result of considerable experimentation the method described below has been adopted.

The mechanical problem presented in cases of instability of the foot following paralysis is the restriction of anterior-posterior motion at the tibioastragalal joint and lateral motion between the os calcis and astragalus. Control of either of these

joints without control of the other will yield imperfect results, therefore it is necessary that both be included in any plan to stabilize the foot. If movement at the ankle joint is obliterated, there will still be enough anterior-posterior motion between the os calcis and the astragalus and between the head of the astragalus and the scaphoid to maintain a considerable degree of elasticity in the foot. Hence the operation under consideration aims to efface the astragalotibial joint and to drop the external malleolus down sufficiently to overlap the os calcis, thus blocking lateral motion between this bone and the astragalus.

Proceeding, as is usual in astragalectomy, with a fish hook incision starting over the head of the astragalus, sweeping outward to a point about a third of an inch below the tip of the malleolus, and then curving sharply upward for an inch or more slightly back of the posterior border of the fibula, the fibrous tissue, including the peronei tendons, are exposed and divided until the astragalus can, by forcible inversion of the foot, be dislocated entirely from the

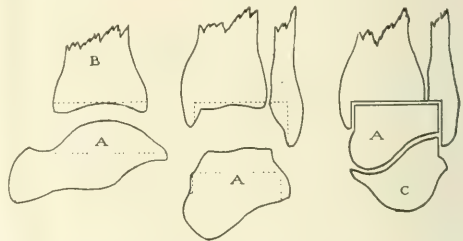


FIG.—Diagrams showing bone incisions, indicated by dotted lines, and assembly of remodeled bones in Robert's operation for paralytic instability of the foot. A, astragalus; B, tibia; C, os calcis.

tibiofibular mortise. The ligamentous attachments between the internal malleolus and the astragalus are also severed, leaving the latter bone entirely free on its superior and lateral surfaces. With a broad, thin chisel, the upper half of the body of the astragalus is now resected in one piece (Fig.), leaving a clean cut surface, flush with or a little lower than the upper border of the neck. The tuberosities on both the inner and outer sides of the bone are then cut away, transforming the body of the astragalus into a rectangular mass with a flat top and straight sides (Fig.). By means of a chisel, the tibiofibular mortise is now squared (Fig.) to fit closely over the block shaped astragalus, the foot displaced slightly backward, and the wound closed. A plaster of Paris dressing applied from the toes to the middle of the thigh with the knee flexed at 90° will hold the foot firmly in position and keep the astragalus from slipping away from the under surface of the tibia. To insure success, it is important that the remodeled parts should fit closely and that enough of the astragalus be cut away to allow the end of the fibula to extend well over the os calcis to prevent the normal inward gliding of the astragalus on the os calcis. It is sometimes necessary to trim the outer side of the latter bone to make a bearing for the malleolus.

At the end of two weeks the first plaster is removed and another substituted which extends only

to the knee. It is important that the foot should be examined at this time to see if its position is satisfactory. Two weeks later the patient may be allowed to bear a moderate amount of weight on the leg. After another period of from four to six weeks, all dressings are removed and the foot is ready for gradual use.

The advantages of this operation over complete astragalectomy lie in the permanency of the results, the shorter period of aftertreatment, the lessening of foot distortion, and the fact that no entire bone is removed which may tend to weaken the foot. As a substitute for arthrodesis or tendon fixation in drop foot or other severe paralytic deformities, it offers a means of improving function without the likelihood of relapse so common after other operations.

40 EAST FORTY-FIRST STREET.

THE ADVANTAGES OF PYELOTOMY IN RENAL CALCULUS.

By HENRI MOYRAND, M. D.,

Grenoble, France,

Ex-intern, Paris Hospitals.

The most serious reproach that can be made against pyelotomy in renal calculus is that the calyces cannot be explored as well as in nephrotomy, but radiography should help us to decide which operation is to be selected. But pyelotomy does allow us to explore the calyces to a considerable extent, likewise the renal papillæ, and Fenwick has twice been able to remove varices of the papillæ by resection through an incision into the renal pelvis.

Nephrotomy is not always free from criticism in this respect, because after incision of the kidney many are the cases in which, in spite of careful digital examination, the calculus has escaped discovery, or by nephrectomy done later on pieces of stone have been found which were left behind.

For a time it was thought that pyelotomy resulted very easily in fistula, but this opinion was greatly exaggerated. Fistula does not occur even when the incision in the renal pelvis is not sutured and when a fistula does follow it is more likely because there is some ureteral obstruction. Now that attention is paid to the patency of the ureteral lumen, these fistulæ have become far less frequent.

Zuckerkindl, who does not usually suture the incision in the renal pelvis, states that he never has met with a fistula, while out of 118 pyelotomies, Blum and Ultzmann (*Zeitsch. für Urologie*, 1909) found only five followed by fistula, in other words, 4.2 per cent. In ten pyelotomies, Garré sutured the pelvis without drainage eight times with five unions *per primam*, the other three giving issue to urine for about two weeks, after which the dressings were dry. Two other cases were drained, one being closed in nine days, the second in fifty days. In two cases under my observation in Bazy's service, there was a slight moistening of the dressings for a few days and then the incision healed. In eight cases, the notes of which were kindly given me by Marion, one gave issue to a small amount of urine for a week, while in another, that of a pyonephrosis in which he regretted not to have removed the kidney in the first place, he was obliged to do a secondary nephrectomy.

Schmieden's statistics are not favorable. Out of a total of fifty-two cases, twelve had fistula.

There are three points, however, which must be fully considered, yet have been neglected in the past. In the first place, I wish to show that, contrary to the generally admitted opinion, large calculi can be removed by incision into the renal pelvis; secondly, the defective points of nephrotomy and hemorrhage in particular; thirdly, the disturbances that renal incision causes in the functional value of the organ.

1. Coral shaped calculi can be removed by pyelotomy. This certainly is not generally admitted. Albarran and Legueu think that these should be extracted by nephrotomy. Zuckerkindl says that pyelotomy is contraindicated in cases of calculi sending off prolongations into the calyces, while Zondek also says that nephrotomy should here be preferred. Israel resorts to pyelotomy only in cases when the stone is limited to the pelvis, and even then exception should be made of those sending off prolongations into the calyces.

Garré says that by pyelotomy it is often impossible to extract a coral shaped calculus, although by extending the incision from the pelvis to the lower pole of the kidney according to the procedure advocated by Zuckerkindl, which the latter calls pyelonephrotomy, he was able to remove an enormous calculus, which is pictured in his *Nierenchirurgie*, p. 245.

At the Association française d'urologie in October, 1910, Pousson stated that in the extraction of large coral shaped calculi by pyelotomy, he feared a fistula might follow and thought nephrotomy preferable, because fragments of the stone would not be left behind in the calyces. But this reasoning is not correct, as many cases show, and when nephrotomy is done in such cases there is, perhaps, more danger of breaking off the prolongations. The objection that in pyelotomy we are more likely to leave bits behind, has certainly some truth, but we can remedy this by an irrigation of the pelvic cavity, which will wash away all detritus.

I do not wish to convey the idea that large arborescent stones fitting snugly into the calyces can be removed by pyelotomy when the body of the calculus does not come into the renal pelvis, and to justify this operation we must be sure that the stone is seated in the pelvis. It is, however, astonishing how much room can be obtained by pushing aside the renal parenchyma.

2. Of hemorrhage following pyelotomy, I know of only one instance, the case reported by Rapin. It is probable that this was an instance of abnormal development of a pelvic vein, and although its rupture was noticed at the time of the operation and the vessel tied, the ligature must have slipped off, resulting in the hemorrhage requiring nephrectomy. This complication cannot be laid at the door of pyelotomy, because it was due to a vascular anomaly and in most cases there is hardly any bleeding at all.

This fact is of importance also because there is less risk of obstruction of the ureter from clot during recovery, a complication which may give rise to retention of urine, thus favoring renal infection.

But the great advantage of pyelotomy over nephrotomy is the absence of secondary hemorrhage. Perineau (*Ann. génito-urinaires*, 11, 1909) collected a total of 131 nephrotomies done by experienced

operators, in which secondary hemorrhage occurred twelve times, or in nine per cent. Nicolich lost a patient on the fourth day from secondary hemorrhage of thirty-six hours' duration, and Kummel and Borelius report similar cases.

Serious injury to the pedicle may occur in nephrotomy requiring nephrectomy, and Nicolich was obliged to do secondary nephrectomy in three cases out of a total of thirty-one aseptic nephrolithotomies on account of hemorrhage from lesions to the pedicle. This surgeon also states that Israel, out of a total of ninety-nine aseptic nephrolithotomies had five deaths from hemorrhage.

Thus, hemorrhage is the great danger in nephrotomy and no variation of the usual incision can in any way avoid this, for the excellent reason, as pointed out by Kummel, that the division of the renal vascular system in man offers great variations. Then there are the arterial anomalies which are frequent, and if an aberrant vessel is cut and ligated, it may result in gangrene of the renal parenchyma on account of the terminal character of these arteries.

The mechanism of these hemorrhages would be an interesting study, but would carry me far beyond the intended limits of this paper. However, Israel's opinion may be mentioned; speaking of one of his fatal cases, he thought that he had made a mistake. Having been obliged to separate the kidney from its capsule, he was of the opinion that from the fact of depriving the gland of this covering it might have caused the hemorrhage. Since making these remarks, Israel has changed his opinion, as pointed out by Neuhauser (*Deutsche med. Woch.*, 1907), and he now insists on the necessity of carefully drawing sutures in the parenchyma exactly together, without too much tension, because a suture that is too tight often causes extensive vascular compression which results in the falling off of the eschars, this elimination being followed by hemorrhage.

It is probable that infection also plays an important part in secondary hemorrhage. Perineau attributes some importance to the mechanical phenomena of respiration in the cases he records, which, when the catgut is absorbed, have a tendency to mobilize the two halves of the kidney, thus separating them, one being adherent to the colon, the other to the lumbar fossa.

3. Pyelotomy does not impair the value of the renal functions, a reproach which has been made to nephrotomy, a question that has given rise to much dispute, based rather on experimental work than on clinical data. The distinction has its importance because laboratory results cannot be compared with clinical findings. In the first case, observation is made on organisms whose renal vascular system is often very different from that of man, and on healthy kidneys that cannot be experimentally rendered lithiasic. On the other hand, clinical study places one in better conditions for observation on account of analysis of the urine before and after the operation.

Leaving aside the older studies of Tupper and Barth on the lesions resulting to the renal parenchyma after nephrotomy, let us consider for a moment the experimental work of Herman (*Deutsche Zeitsch. für Chir.*, 1904) and Langurach (*ibidem*,

1903) carried out on dogs and rabbits. They found that after incision of the kidney important infarcts arose, followed by atrophy of the parenchyma, to such an extent that a quarter or half of the gland was involved.

These experiments were repeated by Wolff (xxxix *German Surg. Congress*) and Wildbotz (*Deutsche Zeitsch. für Chir.*, 1906), and gave different results. The latter observer, in order to avoid urinary fistula, did not incise the kidney down to the pelvis, but stopped at one to two cm. from it. If, as this writer remarks, this way of operating causes no difference in the formation of infarcts, it surely places the wound in the renal parenchyma in better condition for repair, and clinically, aside from rare cases of true parenchymatous calculi, this incision will rarely be employed.

Faltin (*Folia urologica*, 1908) states that each suture forms a focus of necrosis. This has been substantiated clinically by Barth and Kapsammer. Braatz (*Deutsche med. Woch.*, 1900) found in a kidney, four years after nephrotomy, atrophy of the anterior part of the parenchyma to such an extent that the incision made on the convex aspect was united to the pelvis. Greiffenhagen (*Arch. für klin. Chir.*, 1894) examined two kidneys, one five years, the other six months after nephrotomy, and found along the line of incision sprigs of fibrous tissue partially destroying the urinary canaliculi and causing pathological changes in the glomeruli. Eight days after nephrotomy, Zuckerkandl was obliged to remove the kidney for serious secondary hemorrhage and found around each suture an area of anemia with gangrene.

On the other hand, Simmonds (*Münch. med. Woch.*, 1903) and Nicolich (*Folia urologica*, 1909) examined respectively a kidney two years and nine years after nephrotomy, and found little or no changes, while a similar instance is reported by Israel in a kidney two months after incision of the organ.

How can these facts be reconciled? Should they be attributed to chance or to the skill of the operator in incising the organ exactly in the bloodless line, separating the ventral and dorsal vascular territories? I am more of the opinion that this is an error of interpretation based on incomplete records. It appears, in fact, that we have not taken sufficiently into consideration in all this experimental and clinical work that renal lithiasis is a disease which does not manifest itself simply by the presence of calculi. Renal lesions exist, due to the lithiasis, to which some writers have directed attention, and which may have involved the kidney more or less at the time the operation was undertaken.

On the other hand, it is admitted and proved experimentally that a healthy kidney reacts to incision by compensation hypertrophy and even canalicular neoformation, but on the condition that it is not pathologically changed. Thus, in those rare cases where the kidney has not been seriously altered by nephrotomy, it is probable that it was not much involved at the time of the operation. Such an opinion is certainly legitimate, since the only argument against it has not been furnished in the records of the cases to which I make allusion, namely, a careful histochemical analysis of the urine secreted from

each kidney before and after operation. This is the only correct method.

Desnos has pointed out how frequently the functional value of the kidney decreased after nephrotomy, and in the six cases to which he refers it is true that the kidneys were infected, but such results obtained by ureteral catheterization are none the less of great interest. The patients were followed up for several years after the operation and showed that the parenchyma often secreted only a trifling amount of urine, which lost its normal characters, contained no salts, and even in the absence of pus contained a large amount of albumin.

All these facts go to show that incision of the kidney is far from inoffensive and with what reserve we should resort to it when, because of lithiasis the functional value of the parenchyma may be seriously involved. Nephrotomy, in my opinion, should be considered an operation of necessity, to be reserved for cases in which pyelotomy is impossible.

ANORECTAL FISTULA.*

Anatomical Considerations and the Principles Underlying Its Successful Treatment,

BY ARTHUR A. LANDSMAN, M.D.,
New York,

Clinical Assistant, Rectal Department, Post-Graduate Hospital.

An anorectal fistula is a chronic discharging sinus of the anorectal region, the result of a suppurative lesion, situated either above or below the pelvic diaphragm. There may conceivably be a fistula of non-suppurative origin, but if there is no infection, the wound heals kindly, and no sinus remains.

The fistula may open into the rectum or anal canal, or on the skin surface; it may end in a blind pocket internally or externally, or have an opening both internal and external. It may take a straight course between the two openings, or ramify and branch in any direction, burrowing around the gut, or encircling the urinary canal.

Most authorities are agreed that a fistula is produced by an abscess, which in obedience to accepted physical laws, simply gravitates in the direction of least resistance, in most cases the terminal part of the alimentary tube, with its thin fascial covering and soft muscular walls. As this affords insufficient drainage, the tendency is for the pus to work its way out to the skin surface, at the base of the ischio-rectal fossa, but exceptionally in other situations. It may burst through the apex of the fossa, separate the visceral layer of the pelvic fascia over the upper surface of the levator ani, and become an iliac abscess, or break through into the ampulla of the rectum, and discharge its contents into the bowel. It may tunnel anteriorly into the bladder or vagina, or posteriorly into the retrorectal space; or force its way behind the parietal layer of the pelvic fascia and the bone, and reach the buttocks through the great sacrosclastic foramen. The latter are cases with multiple external openings; I saw one in which thirty-six were counted, the gluteal region being honeycombed with tracts arranged in layers.

The teaching has always been, that the external opening may be found anywhere in the circumanal region, but this does not seem to hold when the rupture takes place through the ischio-rectal fossa. It is my contention, that in those instances there is a definite point of election, and I have collected a series of cases of which the external opening in sixty per cent. was in a fairly constant location, the posterolateral angle of the fossa, the result, not of pure chance, but of anatomical conditions, as we shall learn presently. Let us see why.

Anterior to the anal margin, the central tendinous point of the perineum, and at a deeper level, the urogenital diaphragm, limit and, to a great extent, prevent the escape of the pus in front, therefore, we do not often see the external opening in the perineal region. Posterior to the anal margin, the fibres of the coccygeus, levator ani, the tendinous insertion of the sphincter externus to the coccyx, the fibromuscular anococcygeal body, the distal border of the gluteus maximus, and the sacrotuberous ligament, would seem to present an effective barrier in this direction, and as a matter of fact, an opening directly posterior is uncommon. Anterolaterally the ischio-rectal fossa is rather narrow, and is limited on each side by the bony wall of the ischium, covered by the obturator internus muscle, and the parietal layer of the intrapelvic fascia, but posterolaterally the space broadens, because the fossa is triangular, not only in a frontal section, but also in a transverse plane, and the broader part of the triangle is behind. As it is but loosely filled with a soft fat, the exudate would naturally encounter little obstruction in this situation. Hence an abscess discharging its contents into the ischio-rectal fossa, in following the line of least resistance, would of necessity open to one side or other of its posterolateral angle, and discharge its contents through an opening in this region. Transverse sections of the frozen cadaver, at various levels of the pelvis, confirm the statements made in regard to the shape of the fossa, and carry the conviction that an exudate would meet with the least obstruction at its posterolateral angle.

The causative relation of these anatomical facts seems to be borne out by the clinical findings, as stated elsewhere, though the number of cases is still too small to permit of more general deductions.

Similarly, when there is an internal opening, it is likely to be found between the two sphincters, because the weakest part of the lower anal canal is the meeting point of the two muscles. Nature in an effort to reinforce the weak spot, and at the same time to secure that beautiful adjustment of harmony and utility which is the marvel and admiration of the student of anatomy, caused the margins of the muscles to overlap, instead of joining them end to end. There is a further provision for strength, in the insertion of the fibres of the levator ani, between the internal and external sphincters, as though Nature, as an additional precaution, wished to fortify that region. But even this safeguard is sometimes inadequate, when the fibres are poorly developed and the parts subjected to unusual tension. Hence the internal opening of fistula is found in this situation with great constancy.

I have entered rather fully into this subject, be-

*Read before the New York Physicians' Association at a meeting held at the Park Avenue Hotel, January 27, 1916.

cause such data as I have been able to find in books devoted to it are vague, indefinite, or misleading, and pass over some important facts completely, so far as certain features relating to the external openings are concerned.

The point which we must remember regarding the origin of fistula is, then, that it is a localized collection of pus, which does not burrow and tunnel aimlessly, but in seeking its level follows accepted physical laws, and consequently should be found with a fair degree of regularity in certain situations.

What are the specific causes of anorectal fistula? They are traceable to causes of abscess in this region. The mucous membrane of the anal canal is delicate, and is subjected to insults whose daily repetition quite naturally results in abraded and ulcerated areas. Costive stools and habitual constipation are common evils, from which it is but a step to proctitis, cryptitis, fissure, and hemorrhoids. Of rarer occurrence, but still contributing their quota, are tuberculosis, malignant growths, stricture, caries of the vertebrae and the pelvic bones. Traumatism from the nozzle of a syringe, foreign bodies in the feces, the use of rough detergent papers, any of these may be the starting point of a colon or streptococcus infection; the causes assigned are many, but the real one is infection from an area which has lost its covering of protective mucous membrane.

Why does abscess of the anorectal region result in fistula? Mostly because it is neglected by the patient, who dreads the only kind of help most likely to cure him. Were it possible in every case to reach the focus early, drain it, and treat it along proper lines, there is hardly any doubt that surgery would show the same brilliant results we are accustomed to look for in other surgical affections. But patients will use salves and poultices, and in many of these cases the abscess ruptures into the gut. Further than that, the rectum is poorly supplied with sensory fibres, and pain from any cause does not manifest itself as a prominent symptom in a lesion high up, hence the patient may be actually unaware, for a time, of the nature of his trouble until a lot of mischief is done and it is too late to practise prophylactic surgery. Another important factor is the difficulty of securing absolute rest (an essential condition in wound repair) on account of the normal physiological activity of the parts, and the spasmodic condition of the sphincter in the presence of any lesion of the anal canal. The latter may be really regarded as an effort on the part of the natural forces to prevent function and assure rest; it is comparable to the rigidity of the abdominal muscles in the presence of peritoneal irritation. We must also bear in mind that the healing process is retarded by the inability of the patient and physician to keep the parts clean.

In other words, it is difficult to provide favorable conditions, and especially early and effective drainage; when we do provide them, our results are favorable in the majority of cases. There is nothing inherent in ischio-rectal abscess which goes for the making of fistula; indeed the process may be regarded, to some extent, as an effort on the part of the organism to restore normal conditions by the expulsion of the infective agent.

When we come to examine the problem, why fistula is so frequently uncured, we must go back to the principles of surgery and pathology for our answer. If we would have favorable surgical results, we must provide favorable surgical conditions, such as are recognized as essential in the treatment of infections elsewhere, whether in the abdominal cavity or in the big toe. We should not expect an ulcer situated in any other part of the body to heal promptly, if its walls were infiltrated with thickened fibrous connective tissue, which prevented the growth of granulations, or choked them off when they did grow. Then why should we expect it here? For that is just what we shall find in an old fistulous tract, whose walls are so much infiltrated that we may actually feel them through the overlying tissues, by palpating the soft parts over the tract. In fact this is a very good way to find an old fistulous sinus or a blind internal fistula.

We should not be astonished if an abscess cavity in any other region of the body failed to close, if we did not provide free and effective drainage, either because the opening through which we drained was too small, obstructed by epidermis, soiled by fecal discharges, or undrained in its most dependent part, so that pockets formed in which pus could accumulate.

As these are the very conditions which might be present in an unhealed fistula, it would be folly to expect satisfactory results, until we had remedied them, with such measures as, I am sure, must suggest themselves to us all.

Waste no time on bismuth paste, the injection of irritating substances, or any other half way measures; they will not cure fistula, despite anything said or written to the contrary. Right angled division of the sphincter, free incision of the tract and all of its branches, thorough excision of the objectionable scar tissue, and proper postoperative care, constitute the most important elements in the successful treatment of fistula.

Incision of the sphincter at right angles to the direction of its fibres causes better approximation of the muscle ends, and diminishes the liability of fecal incontinence. Experience teaches that the chances of incontinence are further increased in direct ratio to the number of times the sphincter is divided; try to unite all the external openings, in order to avoid cutting the muscle more than once. Statements that multiple incisions of the sphincter may be made with impunity, without any danger of incontinence, are to be looked upon with suspicion.

Any description of the treatment of anorectal fistula is incomplete which does not give the after-treatment the important place it deserves. Any material may be used for dressings, according to our preference, provided that the packing is done lightly after the first treatment and reaches the bottom of the sinus. Tight packing retards the growth of granulations, interferes with the blood supply, and prevents drainage. We do not allow the tissues to bridge over the top of the wound, but break them up with knife or scissors. Epidermis which shows a tendency to grow into the wound should be cut away or burned down, under local anesthesia if necessary.

Lastly, it must not be forgotten that every case

has a patient behind it, and that the man needs treatment as well as his fistula. A person recovering from abscess or fistula should be placed under the most favorable dietetic, hygienic, and sanitary surroundings, but it is astonishing how quickly the system responds when the source of the infection is removed.

748 FIFTH STREET.

UROLOGICAL DIAGNOSIS.

The Newer Methods and the Family Physician,

By JOSEPH WITTENBERG, M. D.,
New York,

Attending Genitourinary Surgeon, Bedford Dispensary and Hospital;
Attending Genitourinary Surgeon and Dermatologist,
Brooklyn City Dispensary.

The value of cystoscopy, of catheterization of the ureters, and of the functional tests of the kidneys in their present state of efficiency, is not appreciated by the physician. The possibilities of these as valuable aids in diagnosis seem to be largely unknown. They certainly are not used to any considerable extent in fields where their use will either confirm and so make certain a given diagnosis or dispose of it. The efficiency of these modern measures may be compared to the precision of the laboratory methods against the doubtfulness of a diagnosis made by judging from symptoms, which after all may be due to one or more of several causes. Of course, these methods are not invariably correct; neither is the x ray nor the reading of microscopic findings. The percentage of failure of these methods or of the incorrect interpretation of their results is so small that there is no excuse for the physician not taking advantage of them.

The kidney functional tests should be used generally in the so called "surgical" diseases of the kidney; it is advisable to use them as a routine measure in every case of suspected kidney disease. They can do no harm and are often invaluable in correcting a diagnosis, to which the symptoms seem to point.

As an example, may be mentioned a series of experiments in cases that were or appeared to be renal disease (*Journal A. M. A.*, Jan. 15, 1910). One hundred and fourteen cases, which included hydro-nephrosis, pyonephrosis, tuberculous kidneys, malignant growths, renal calculi, interstitial and parenchymatous nephritis, were subjected to the phloridzin glycosuria and the color tests for renal function. In fifty-seven of the patients diagnosis of interstitial or of parenchymatous nephritis had been made by highly skilled physicians. Nine cases of apparent interstitial and four of apparent parenchymatous nephritis gave a normal reaction to the tests. The question arose whether the symptoms were interpreted correctly or whether the tests of the function of the kidneys were correct. Of the thirteen patients, five (two of supposed interstitial and three of supposed parenchymatous nephritis) died of various causes. Ten sections were taken from each kidney and carefully studied with the microscope. No structural changes were found in any. In these cases the symptoms, while apparently typical of nephritis, were certainly due to other causes.

Another series of cases with a similar bearing was observed and reported at the same time. The urine of patients who were under treatment for conditions other than kidney disease was examined as a routine measure. Of forty cases which showed albuminuria without casts, the kidney function tests gave a normal reaction in thirty-eight and an imperfect reaction in two. Of twenty patients who had both albuminuria and casts, twelve showed a normal, and eight an imperfect reaction.

In many cases of renal disease it is necessary to know to what extent each kidney is affected. In "medical" disease of the kidney there is at times a considerable difference in the condition of the two organs. In "surgical" diseases of the kidneys and in conditions which are at certain stages of medical and at others, of surgical interest, difference in the state of the two kidneys is both usual and marked.

The following reports of examinations of specimens of urine drawn simultaneously from the individual kidneys, taken from a standard book on genitourinary surgery (Thomson Walker) are illuminating. Every genitourinary surgeon can duplicate them.

A CASE OF TUBERCULOSIS OF THE LEFT KIDNEY.

	Right Kidney.	Left Kidney.
Quantity in a given time.....	3 ounces	8 ounces
Specific gravity.....	1.018	1.006
Urea.....	1.4 per cent.	0.3 per cent.
Phloridzin glycosuria.....	2.81 grams	Absent
Tubercle bacilli.....	Absent	Present

AN ADVANCED CASE OF CALCULUS OF THE RIGHT KIDNEY.

	Right Kidney.	Left Kidney.
Quantity in a given time.....	206.5 c. c.	107 c. c.
Specific gravity.....	1.004	1.011
Freezing point.....	-0.4	-0.2
Color.....	Pale, limpid	Fairly colored
Urea.....	0.4 per cent.	1.3 per cent.
Methylene blue test.....	No change in color	Green color appeared in 1 hour and 50 minutes
Chromogen.....	Faint green in 25 minutes	Deep green in 25 minutes
Phloridzin glycosuria.....	0.39 gram	1.623 grams

The urine from both kidneys in either of the foregoing cases, if mixed, would show renal disease, but would not show which of the kidneys was affected. It is never easy, in fact it is usually difficult to decide which kidney is diseased, and it is always impossible to know the condition of the other kidney without ureter catheterization. The kidney that is most painful and tender is not necessarily the most diseased. A kidney that is acutely inflamed or is the seat of a colic may yet be in fair condition, while its nonpainful fellow may have been converted by previous disease into a closed pus sac or may consist solely of a fibrous covering about a large mass of calculi. A functional test will promptly show the relative value of each.

In cases of hematuria or pyuria, we want to know if the blood or pus originates in the bladder or is from a kidney, and if from a kidney, from which one. The cystoscope will readily tell.

Frequent and painful urination is commonly due to a simple cystitis. It is sometimes due, however, to some reflex irritation from the kidney, as is so common in tuberculous and in calculous kidneys, even while the bladder shows not the slightest sign of disease. These symptoms may also be due to inflammation or ulceration of the trigone, to inflam-

mation of the posterior urethra, or to some slight growth there. Proper use of the proper instruments will promptly reveal the cause and relieve the physician of much worry and the patient of much suffering.

591 WILLOUGHBY AVENUE, BROOKLYN.

TEACHERS' VITALITY AS INDICATED BY THE BLOOD PTOSIS TEST.*

By I. H. GOLDBERGER, M. D.,

New York,

Assistant Director, Educational Hygiene, Department of Education.

Many methods have been devised to measure fatigue and recuperation, and in many instances these tests have been found either unreliable or incomplete. In the belief that there can be no natural tire of muscles which does not to a certain degree fatigue the brain, and that no brain fatigue can be induced which does not likewise fatigue the muscles, many investigators have attempted to determine a decrease in physical efficiency by continued periods of mental work, and to regard decrease as an index of fatigue. Prominent among these writers are Kraepelin, Griesbach, Schuyten, Ebbinghaus, Thorndike (1), and Winch (2). Crampton has stated that "it is possible to measure the result of long continued energy producing activities, such as physical training, gymnastics, play, athletics, and good ventilation on the one hand, and the fatigue producing activities, such as school life of various kinds, on the other hand, by noting the increase or decrease of incidence of disease, absence from school, increase in height and weight, and the percentage of hemoglobin," etc. (3). These tests are difficult to control for obvious reasons.

Fatigue is essentially a general condition, due to the formation of certain chemical products, known as fatigue products. They are toxic when thrown into the circulation, and if they accumulate faster than they can be eliminated by the lungs, skin, and kidneys, they will, in a way, poison all parts of the body. This poisoning results in the subjective expression of fatigue, i. e., the feeling of being tired. Weichardt, of Germany, who has succeeded in injecting into an unwearied animal a substance called kenoctoxin extracted by him from the muscles of a tired animal, has observed in the former all the characteristic signs of fatigue. To overcome this experimentally produced fatigue, he then used an antibody, which he injected into the animal. Lorenz, in Berlin, has proved that the spraying of an antikenotoxin in the air of the schoolroom diminished fatigue in the pupils.

It is the writer's belief that these toxic fatigue products act upon the vasoconstrictor nerves of the sympathetic nervous system, which supply the circular muscles of the splanchnic system. A systemic intoxication from the fatigue products weakens the vasoconstrictors and a general fall in vasomotor results, depending upon the degree of poisoning. This blood ptosis can be compared to the vasotone par-

alysis that occurs in systemic poisoning from infectious diseases. Vasotone is a function essential to life, and is an important indication of the condition and vitality of the whole body.

Employing the blood ptosis test devised by Crampton (4), the writer conducted a series of vitality tests on teachers in the elementary schools of the city of New York, in an endeavor to establish a test of some body function which will show rapidly and accurately by its variations, the beneficial or depressive effect of various conditions supposed to affect health. Crampton's blood ptosis test seemed to fulfill these conditions. In brief, it may be described as follows: The subject is placed in a horizontal position, and the systolic pressure is taken (preferably by auscultation) in the brachial artery. The heart rate is counted by quarter minutes until two successive quarter minutes are the same. This is multiplied by four and recorded. The subject is then required to stand, and without removing the cuff, the blood pressure and pulse rate are taken in a vertical position. The differences are calculated and reference is made to the following scale:

TABLE I.—PERCENTAGE SCALE, VASOMOTOR TONE.

Blood Pressure.											
Height increase.	Increase			0			Decrease				
	+10	+5	+0	+5	+0	+0	+5	+0	+0	+5	+10
0 to 4	100	95	90	85	80	75	70	65	60	55	50
5 to 8	95	90	85	80	75	70	65	60	55	50	45
9 to 12	90	85	80	75	70	65	60	55	50	45	40
13 to 16	85	80	75	70	65	60	55	50	45	40	35
17 to 20	80	75	70	65	60	55	50	45	40	35	30
21 to 24	75	70	65	60	55	50	45	40	35	30	25
25 to 28	70	65	60	55	50	45	40	35	30	25	20
29 to 32	65	60	55	50	45	40	35	30	25	20	15
33 to 36	60	55	50	45	40	35	30	25	20	15	10
37 to 40	55	50	45	40	35	30	25	20	15	10	5
41 to 44	50	45	40	35	30	25	20	15	10	5	0

NOTE.—In case of increase in pressure higher than +10 add 5 per cent. to the +10 column for each 2 mm. in excess of 10.

In a perfectly strong and vigorous subject, the splanchnic vasotone will increase and the blood pressure will be found raised about ten mm. Hg., but the heart rate remains unchanged on standing. In an individual weakened by dissipation, overwork, lack of sleep, or by the incidence of disease, the blood pressure will tend not to rise, but to fall, while the heart rate increases as much as forty-four or more beats a minute.

Tests were conducted to determine the fatigue, *a*, in one school day; *b*, in one school week; *c*, as the school term goes on. Second, tests were made to determine the recuperation, *a*, during the Saturday and Sunday week end; *b*, during a slightly longer vacation, namely, Easter week; and *c*, during the summer vacation of ten weeks.

TABLE II.—FATIGUE IN ONE SCHOOL DAY.

Case No.	Vasotone		Pulse		Fatigue	
	Pre-day	Post-day	Pre-day	Post-day	Pre-day	Post-day
1	80	85	75	70	100	95
2	80	85	75	70	100	95
3	80	85	75	70	100	95
4	80	85	75	70	100	95
5	80	85	75	70	100	95
6	80	85	75	70	100	95
7	80	85	75	70	100	95
8	80	85	75	70	100	95
9	80	85	75	70	100	95
10	80	85	75	70	100	95
11	80	85	75	70	100	95
12	80	85	75	70	100	95
13	80	85	75	70	100	95

It is of interest to note that one school day caused an average fatigue amounting to 0.3 per cent. In

*From the Bureau of Educational Hygiene, Department of Education, New York.

other words, seventy per cent. of the teachers were less efficient physically at the end of the school day than at the beginning of the morning session.

TABLE III.—RECUPEARATION DURING WEEK END.

Case No.	Vasotone Friday a. m., Jan. 22, 1915.	Vasotone Monday a. m., Jan. 24, 1915.	Fatigue— Recuperation + No change ±
1.....	70	102.5	-7.5
2.....	60	80	+20
3.....	87.5	77.5	-10
4.....	90	80	-10
5.....	90	77	-15
6.....	105	65	-40
7.....	87.5	95	+7.5
8.....	82.5	87.5	0
9.....	62.5	100	+37.5
10.....	70	87.5	+17.5
11.....	87.5	100	+12.5
12.....	100	90	-10
13.....	70	80	+10

It is of further interest to note that fifty-five per cent. of this group showed a recuperation of 1.7 per cent. after the Saturday and Sunday week end.

TABLE IV.—RECUPEARATION DURING EASTER HOLIDAYS (TEN DAYS).

Case No.	(Easter vacation— Before a. m., Mar. 3, 1915.	(Easter vacation— After April 5, 1915. Absent	Fatigue— Recuperation + No change ±	Statements of activities during Easter Week.
1.....	75	Absent	0	
2.....	100	62.5	-37.5	Crop of boils on body. Painful.
3.....	50	82.5	+32.5	No night school work during vacation. Restful week.
4.....	75	60	-15	Indoors all week. Worried; wife ill. Disturbed sleep at night.
5.....	Absent	Absent	0	
6.....	67.5	87.5	+20	Restful week.
7.....	75	55	-20	Very nervous and worn out owing to two deaths in family during the week.
8.....	70	Absent	0	
9.....	72.5	80	+7.5	Restful week. Satisfied vacation did her good.
10.....	70	82.5	+12.5	Very restful vacation.
11.....	80	85	+5	Restful week at Asbury Park.
12.....	75	Absent	0	
13.....	62.5	90	+27.5	Restful week. Spent time out of doors.

During the ten days of the Easter vacation, sixty-seven per cent. of the teachers showed a recuperation in physical efficiency amounting to 3.6 per cent. It is interesting to note that the longer rest resulted in twice as much recuperation (1.6 per cent. over the week end compared to 3.6 per cent. for the Easter holidays). Attention is called to Cases 2, 4, and 7, as illustrations of the accuracy with which the blood ptosis test measures the efficiency of the splanchnic vasotone, and that this is an important indication of the efficiency of the body, and related closely to vitality.

TABLE V.—DEPRECIATION IN PHYSICAL EFFICIENCY FROM JANUARY, 1915, TO APRIL, 1915.

Case No.	Vasotone Jan. 22, 1915, a. m.	Vasotone March 25, 1915, a. m.	Fatigue— Recuperation + No change ±
1.....	60	100	+40
2.....	87.5	70	-17.5
3.....	90	75	-15
4.....	90	Absent	0
5.....	90	Absent	0
6.....	105	75	-30
7.....	87.5	70	-17.5
8.....	82.5	70	-12.5
9.....	62.5	70	+7.5
10.....	70	70	0
11.....	87.5	80	-7.5
12.....	100	75	-25
13.....	70	62.5	-7.5

Seventy-three per cent. of the teachers under observation showed a depreciation in physical effi-

ciency from January 22, 1915, to March 25, 1915, amounting to 7.3 per cent.

TABLE VI.—BEFORE AND AFTER SUMMER VACATION.

Case No.	Vasotone Sept. 13, 1915.	Vasotone Sept. 13, 1915.	Fatigue— Recuperation + No change ±	Remarks.
1.....	60	70	+10	Away for 10 weeks.
2.....	80	55	-25	Instructor in summer camp. Instructor in summer camp.
3.....	70	75	+5	In camp all summer.
4.....	75	90	+15	Instructor in summer camp. Tiresome auto ride back to city last 2 days.
5.....	60	65	+5	Vacation centre for 7 weeks.
6.....	87.5	55	-32.5	Traveled from place to place last 3 weeks. Danced a great deal.
7.....	75	95	+20	Away for 10 weeks in Maine woods.
8.....	100	90	-10	Rested in city entire 10 weeks.
9.....	100	80	-20	Last 4 weeks in the country.
10.....	45	40	-5	Away the entire 10 weeks.
11.....	82.5	Absent	0	Away last 2 weeks.
12.....	85	100	+15	Away from city first 5 weeks.
13.....	80	75	-5	Away last 4 weeks.
14.....	55	90	+35	Away the entire summer.
15.....	92.5	17	-75.5	Away for last 5 1/2 weeks.
16.....	70	100	+30	Away for 9 weeks. Home last week.
17.....	0	50	+50	Vacation first 2 weeks.
18.....	70	50	-20	Rested at home remainder of vacation.
19.....	65	55	-10	Bronchitis in past 2 weeks. Does not feel well. Vacation for first 3 weeks.
20.....	95	85	-10	Ill last 6 weeks of vacation. Away for first 2 weeks.
21.....	80	80	0	Camping all summer.
22.....	75	Absent	0	Away all summer.
23.....	70	90	+20	Away for first 8 weeks; home last week.
24.....	82.5	100	+17.5	Away all summer.
25.....	60	85	+25	Away all summer.
26.....	67.5	60	-7.5	Dysentery the entire 10 weeks.
27.....	80	90	+10	Away for first 8 weeks; home last week.
28.....	90	100	+10	Away all summer.
29.....	70	80	+10	Away all summer.
30.....	100	100	0	Away all summer.
31.....	90	100	+10	Away all summer.
32.....	70	95	+25	In country.
33.....	90	37.5	-52.5	Lingual tonsils removed, first 2 weeks of vacation. Boils for 1 month. Third crop at present.
34.....	60	77	+17	Menstr.
35.....	70	100	+30	Delightful athletic summer.
36.....	15	90	+75	Away during August.
37.....	120	117.5	-2.5	In city during summer.
38.....	100	95	-5	In charge of playground for 8 weeks.
39.....	70	87.5	+17.5	In city all summer.
40.....	30	100	+70	Ten weeks' vacation.
41.....	20	100	+80	In country for 3 weeks; rested.
42.....	90	100	+10	Away during August.
43.....	70	82.5	+12.5	Menstr. third day.
44.....	67.5	100	+32.5	Away for 1 month.
45.....	90	92.5	+2.5	Away for 1 month.
46.....	70	82.5	+12.5	Country 6-7 weeks. Menstr. due in 4 days.
47.....	50	77.5	+27.5	Country 6-7 weeks.
48.....	60	60	0	Very heavy influenza for past 4 days.
49.....	47.5	60	+12.5	Away for 5 weeks.
50.....	60	102.5	+42.5	In country 3 weeks.
51.....	80	90	+10	In country 4 weeks.
52.....	55	55	0	Away all summer.
53.....	70	72.5	+2.5	Illness in family. Very trying summer. Not in country at all. Felt tired. Nervous.

Seventy per cent. of the teachers in this group showed an increased efficiency of 12.3 per cent., seven times the amount of recuperation gained during the short week end (1.7 per cent.), and three and one half times the efficiency gained during the ten days Easter vacation (3.6 per cent.). It is important to note, also, that those teachers who spent their vacation out of town from nine to ten weeks,

showed an increased vitality of 13.7 per cent.; those away four to eight weeks showed a gain of 14.3 per cent.; those away from one to four weeks gained 8.3 per cent. The last two groups were composed of teachers who were in wretched condition at the close of the school year and who, with room for improvement in health, showed the greater gain in vitality with a shorter vacation. Those teachers who continued scholastic work in the summer schools, vacation playgrounds, or other school work, showed a loss of vitality of 20.8 per cent.; those who were ill during part or whole of the summer lost 16.7 per cent.

CONCLUSIONS.

1. The efficiency of the vasomotor system depends upon the presence or absence of fatigue products.
2. Fatigue products act upon the nerve fibres of the sympathetic nervous system, paralyzing the vasoconstrictors, and resulting in a relative failure of vasomotor tone.
3. The blood ptosis test will measure with reasonable accuracy the efficiency of the splanchnic vasotone, and this is an important indication of the efficiency of the body and related closely to vitality.
4. The school day is fatiguing to teachers (9.3 per cent.), and the work of the school year is equally so.
5. Long vacations are more beneficial to teachers (12.1 per cent.) than short vacations like week ends (1.7 per cent.), Easter holidays (3.6 per cent.), etc.
6. Teachers who went away for their vacation gained in efficiency (12.1 per cent.).
7. Teachers who worked in the summer schools or vacation centres showed a loss of efficiency (20.8 per cent.).

The writer is indebted to his associate, Dr. Frances Cohen, assistant director of educational hygiene, who made some of the tests described in this report. He desires also to thank Mr. Frederick J. Reilly, principal, and Miss Nellie Goodwin, assistant principal, and the teachers of Public School No. 33, Bronx, who willingly cooperated in this study.

REFERENCES.

1. *Journal of Ed. Psychology*, Feb. 11, 1911.
2. *British Journal of Psychology*, 4, pp. 317-341.
3. CRAMPTON: *Proceedings of the Society for Experimental Physiology and Medicine*, 20, 1915, p. 119-122.
4. *IDEM*: *NEW YORK MEDICAL JOURNAL*, November 8, 1913.

1066 CLAY AVENUE.

MEDICAL QUESTIONS IN THE PENNSYLVANIA COMPENSATION ACT.*

By HARRY A. MACKEY,
Philadelphia,

**Lectures at the Workmen's Compensation Board.*

(Concluded from page 796.)

Chairman F. M. Williams, of the Fifth Congressional District of the State of Connecticut, contributes a very interesting letter under date of January 24, 1916, as follows:

I am enclosing you herewith a copy of our statute, the provisions of which are very much like the provisions of your statute in the particular matter referred to by you. I very thoroughly believe that this is a wise provision of law. We would call your attention to the case of the City of Milwaukee vs. Miller, 144 N. W. 188, S. C. 4th N. C. & C. A., page 149. I particularly want to call your attention to some language used by the court on pages 161 and 162 of the

volume last referred to. "As a rule an employer is more competent to judge the efficiency of the doctor employed and to provide efficient medical and surgical treatment. 2. It is to the interests of the employer to furnish the very best medical and surgical treatment so as to minimize the result of the injury and to secure as early a recovery as possible. The more serious the result of the injury, the more the employer must pay. Also by this means you obtain a complete knowledge of the exact condition of the injured employee." In practice I find that there are additional reasons why this provision is a wise one. I assume that you have in your city, as we have here, a large class of foreign workmen who speak English very imperfectly. They understand enough to buy their groceries and collect their pay, but when they get hurt or are sick they like to go to a doctor who can talk their language and very often select a physician who would not be anything like as competent as the physician selected by the employer.

In case the employer undertakes to hire some incompetent doctor with some false idea of economy you will soon discover this fact and then you can send the injured man to some competent physician and make the employer pay the bill.

Chairman Pillsbury of the Industrial Accident Commission of California, under date of January 24th, writes:

Our law is similar to your own, in that it provides that the medical, surgical, and hospital treatment, including nursing, medicines, medical and surgical supplies, crutches including artificial members, shall be furnished for a period of ninety days if necessary, and the commission is given power to extend that period when necessary to cover cases where treatment is required after the ninety day period has expired. The employer or the insurance carrier is liable for this in addition to the disability indemnity, unless the injured employee refuses to accept the treatment tendered, in which case the only penalty is that he must pay for it himself.

Our law, like your own, goes on the hypothesis that the man who is to pay the bill is the man who is to arrange for the treatment. There are many things which can be accomplished through the friendly influence of the commission, exerted upon employers and insurance carriers, to have the right thing done. Our advice to them is this: If it doesn't make any particular difference to you who treats your men if injured, and if it does make a good deal of difference to your men, let them make their own selection, provided that you find they are in competent hands. Further to safeguard the employer in thus waiving his prerogative, we have arranged a schedule of minimum charges which physicians now make. This has been done through our efforts with the State Medical Society and it now has the sanction of practically all the surgeons of the better quality in the State. We have found it greatly to the advantage of our commission to get in touch with and invite the cooperation of the leading surgeons of the State. We took them into our confidence and consulted with them before the act was drafted and have kept in close relation with them ever since, to the great advantage of ourselves and the injured person.

I would suggest to your commission the following course:

1. Invite conferences of your best surgeons and physicians to talk over the situation.
2. Get in touch with the leaders of your best medical colleges to the same end.
3. Secure the services of a competent and tactful medical director who enjoys the confidence of his brother surgeons and has the faculty of securing their cooperation.
4. Prepare a reasonable schedule of charges based on what would be fair if the injured man himself had to pay the bill and if on an earning capacity of \$500 to \$1,000 a year. You can assure the medical fraternity that, whereas, under the old system, they treated many impecunious persons and received no pay, under the present condition, although the schedule will be relatively lower, they will be paid.

Our law and commission go upon the hypothesis that the best compensation that an injured workman can receive is the best surgical and hospital treatment. If I had to choose between full medical treatment and disability indemnity I should choose full medical treatment, and I think that your law should be amended at the first opportunity to allow full medical treatment.

Chairman Pillsbury had also observed in his letter that if our medical treatment is to be furnished only during fourteen days, our law is all wrong. He wrote:

You will have many cases where the medical treatment would be required for months, and to cut the man off from medical treatment after fourteen days, will in many cases be almost fully inadequate to meet his requirements.

Secretary Young of the Iowa Industrial Commission, speaking of the clause in the act in that State which is almost identical with ours, says:

It is natural to suppose that the employer will furnish the most efficient medical and surgical services that can be obtained. If he has a pecuniary interest in the matter he is anxious to hasten the recovery of the injured employee by giving the best services and thereby shorten the period for which he will have to pay compensation. It is sometimes found in practice that an employee is injured under circumstances necessitating medical attention before the employer can be notified of the injury, or the request be made upon him. These cases are not frequent. They must be treated in the same way as are unexceptional and extraordinary cases not falling strictly within other laws. It is seen to assume that common humanness will control in these cases and the interest of the employee will be strictly conserved.

I believe that an intelligent résumé of our law as to the doctor can be gathered by repeating a few questions that were addressed to us by a very prominent physician connected with hospital service in the State of Pennsylvania, and attaching the answers that were authorized by our board to be forwarded to this physician by our chief counsel. They are:

Question 1. Does the amount allowed for the first fourteen days (namely twenty-five dollars, or in case of surgical operation seventy-five dollars), go to the hospital or to the attending physician or surgeon?

Answer. The act allows no amount for the first fourteen days of services. It obliges the employer to give the services but the employer is free to make what arrangement he pleases for the rendering of these services to his injured employee.

Therefore, a hospital or physician who gives such services at the employee's request during the first fourteen days, would not have any right to recover the same against the employer. If the employer refused upon request to give the employee medical attention, the employee is free to engage his own physician and the employer is bound under the act to reimburse the employee for the sum spent by the employee for medical services. But, here again, the physician's claim would be against the employee. He has no status as a claimant under the terms of the compensation act, nor does the act provide any lien for these services upon the amount recovered by the employee. Therefore, I should answer your first question by saying that this would entirely depend upon the arrangement between the hospital and the employer, and upon the arrangement between the hospital and its physician.

Question 2. Are corporations liable for any hospital care, or is the injured employee individually liable?

Answer. The liability of a corporation is the same as the liability of an individual employer. My answer to the second question is therefore the same as my answer to the first.

Question 3. In case of an employee so seriously injured that he must remain in the hospital for more than two weeks, who is liable for payment of hospital bills, also who is liable for the bills for surgical attention?

Answer. In such cases the employee would be liable unless the employer chooses to make an arrangement for a longer treatment than two weeks, at his, the employer's expense. In many cases, insurance companies and individual employers are glad to make such arrangement in order that by proper treatment an injured employee shall be speedily cured, so as to shorten his period of disability.

Question 4. Is an injured employee permitted to give an order on the employer to have hospital bills and surgeon's

bills deducted from the amount due him under the compensation law?

Answer. It is especially provided that such claims for payments due under this article shall not be assignable, and therefore, an order for the employer to have hospital shares deducted from all compensation dues, would in all probability be void.

Question 5. If the employee is not permitted to give such an order and he or his friends cannot pay the hospital, how is the hospital to obtain its bill? Must the hospital authorities swear out an order of relief and have the bill paid by overseers of the poor, or whoever handles the poor fund of the city, borough, or county?

Answer. The hospital must obtain its bill from the employee exactly as it would from any other man whose financial position was uncertain.

Question 6. How are the bills of the surgeon provided for? Must he obtain his pay from the employees, or from the employer?

Answer. The bills of a surgeon are provided for exactly in the same way, no more nor less than the bills of the physician or the hospital. The surgeon must make his arrangement with the physician or hospital or the employer, otherwise he must trust to recover the value of his services from the employee, as he would recover them before the act went into effect.

I am explaining the provisions of the law as they affect the medical profession; not to amend it nor to apologize for it. The fact that this legislation was being considered by the last legislature was known to every citizen of the State. The employers did not overlook the fact and they saw to it that they were well represented, not only before the commission that had been working on this law for several years, but also before the committees that considered the legislation primarily before it was reported out, and its terms were thoroughly discussed by them with each member of the legislature. Therefore the legislators had the advantage of the employer's viewpoint. The same observations are particularly true as to representatives of labor. If the medical men feel that the Pennsylvania act is somewhat restrictive upon their profession it might be well for them to remember that probably they did not take the same care of their interests that the employer and the employee did at a time when their advice would have been very welcome and most instructive. But we are in a period of experimentation, and if the next twelve months' experience with this law proves that the medical profession has any real grievance, the board will feel itself especially commissioned to present those results to the next legislature for the purpose of correction. I may be pardoned, however, for the observation that the medical profession as a whole is just beginning to realize that the greatest corporations and the largest employers of labor in our State were on the ground with the "safety first" propaganda and installed means of first aid to their injured employees and centralized their medical service and adopted some form of compensation for those injured, long before this act was even considered by our legislature. And now many of the members of the medical profession, busily engaged in their practice during the last few years, unmindful of the tendency in this respect on the part of the employers and the advances they have made in this particular, now feel as though this preparedness on the part of the employers is due entirely to this act. This is not the case. This act is the product of modern thought. It was created neither by the legislators who voted it into law, nor by the original commis-

sion that was appointed to study the provisions of the laws of other countries. They were merely the instruments of assembling various wise provisions that were the product of the humane tendency of the present day. Each legislature merely indited a form of compensation and placed it upon our statute books, which was the verdict of society at large. The employers are always keen to scent public opinion. They are always alive to their own interests. They realized that the care and attention to the health and welfare of their employees was a great business asset and therefore our Workmen's Compensation Law really followed the great employers of our State and this explains the unanimity of approval with which it has been received by every element within our Commonwealth.

One of the rulings of our board particularly interesting to the medical profession and one which perhaps has excited more criticism at the hands of the legal profession than any other is as follows: "*Ruling No. 7.* Charitable corporations, colleges, hospitals, etc., being corporations not for profit, are employers within the meaning of the act, and if they do not give to their employees the notice as provided in Section 302, they are liable for compensation under Article III. The board declines to give a ruling under Article III, as this question is one for the determination of the courts and not for the board."

It seems to us that in view of the trend of modern thought and of the particular purposes of these charitable institutions to relieve suffering, to furnish medication, and to improve generally the physical status of the entire community, that there ought not be any hesitation in accepting Article III by charities and by the expenditure of a very small sum of money to insure the risk, thus placing the laborer who gives his time and energy toward the carrying out of these trusts in the same relative position under this law as is the ordinary day laborer in any industry. But, in view of the case of *Fire Insurance Patrol vs. Boyd*, 120 Pa. State Reports, page 624, those given over to technical interpretation of law, and who are always reactionaries when it comes to assimilating the theories of modern legislation, particularly those which undertake to solve the various social problems, have indulged in long theses based upon this decision of our Supreme Court, loudly proclaiming against the legality of this ruling. They are forgetful that the case of the *Insurance Patrol vs. Boyd* was one affecting a third person occupying no relationship to the charity. It was where the plaintiff's husband had been killed by being struck by a bundle of tarpaulins thrown out of a window of a building where there had been a fire. The plaintiff's husband was a passerby. One of the employees of the *Insurance Patrol* had thrown the bundle which struck him and caused his death. In this case the questions raised were:

1. Whether the *Insurance Patrol* was a public charity;

2. Whether the funds of a public charity were answerable in damages in an action of trespass.

Our Supreme Court decided that the *Insurance Patrol* was a public charity, and that such funds, under the particular facts at least, were not liable

in damages for trespass, and sustained the lower court in entering a nonsuit. And the Supreme Court indulged in certain language in the decision that might be construed, if this opinion stood by itself and if the Supreme Court would be guided by the same conditions in the year 1915 that were in vogue in 1888, to decide that the language was comprehensive enough to cover even all this compensation thought and humane legislation of the present day. The Court said:

The *Insurance Patrol* is a public charity; it has no property or funds which have not been contributed for the purposes of charity, and it would be against all law and all equity to take those trust funds, so contributed for a special charitable purpose, to compensate injuries inflicted or occasioned by the negligence of the agents or servants of the patrol. It would be carrying the doctrine of respondent superior to an unreasonable and dangerous length. That doctrine is at best—as I once before observed—a hard rule. I trust and believe it will never be extended to the sweeping away of public charities; to the misapplication of funds specially contributed for a charitable purpose, to objects not contemplated by the donors. I think it may be safely assumed that private trustees, having the control of money contributed for a specific charity, could not in case of a tort committed by one of their members, apply the funds in their hands to the payment of a judgment recovered therefor. A public charity, whether incorporated or not, is but a trustee, and is bound to apply its funds in furtherance of the charity and not otherwise. This doctrine is hoary with antiquity and prevails alike in this country and in England, where it originated as early as the reign of Edward V and it was announced in the *Year Book* of that period.

Our board, zealous to conform to the spirit of modern legislation, not unmindful of the sacredness of the recorded decisions of our Supreme Court, but believing that the time had come when our act should be translated in terms of modern humanity, made this ruling; and then, like a great many lawyers, having conformed our opinion to what we considered common sense and good morals, instructed our lawyers to indulge in an unlimited research for judicial decisions in States having compensation laws, to determine whether or not we were in the line of modern thought. We have been furnished an opinion by one of our attorneys which, to my mind, is conclusive on the point and shows that our rule is perfectly right and ought to be sustained by the highest courts of our State. I will quote in part from the researches of this attorney:

There is no case in Pennsylvania, so far as we have been able to discover, which directly decides that a charitable corporation is not liable for injuries suffered by its employees by reason of its negligence. Employees stand in a different relationship to a charitable corporation than recipients of the charity or even third persons. They are essential to carrying on the work of the charity. If there were no nurses or attendants or other employees, it would be impossible to conduct a hospital or other charitable institution. If the power to employ, and the necessity of employment exist, it appears anomalous that the liabilities and duties which, under the law, necessarily thus power and this necessity should not also exist. The reason given for the exemption is that trust funds must be "used in furtherance of the charity and not otherwise." But is the use of trust funds for the payment of injuries suffered by an employee through the negligence of the charity, a use of the funds otherwise than "in furtherance of the charity?" In conducting an ordinary business all expenses, including the charges for liability insurance, are included in the cost of production. The dispensing of charity is a business, and the cost of conducting a charitable institution includes all the expenses incident to any other business, except the cost of compensating those who have been injured through its negligence. It would seem that this exception is ill founded. If a charity takes care of those who are injured, it

should also be required to compensate those injured in its employ and through its negligence. Its funds should be regarded as being no more sacred for the one purpose than for the other. If to relieve the want and suffering of those who apply to it, with no other claim than the fact that they are in need, may be construed as the application of funds "in furtherance of the charity," it would seem logical to conclude that those who were injured in the employ of the charity, and through the negligence of the charity, had a much stronger claim upon the charitable funds than the ordinary recipient. It was said in *Hewett vs. Women's Hospital Aid Association*, 64 Alt. (N. H.).

Experience shows that negligence—the failure to exercise ordinary care—is to be expected when men engage in industrial pursuits. It may not inappropriately be said to be necessarily incidental in the accomplishment of most practical results through the agency of man. The donors of the defendant's property for hospital purposes were not ignorant of this fact, and are presumed to have given the trust property knowing that it might be required for the liquidation of claims in tort, as well as for claims in contract, incurred in carrying out the purposes of the corporation. Indeed, its conceded authority to contract for the employment of nurses and other necessary agents would seem to include power to respond in damages for all breaches of such contracts, one essential or incidental element of which is its duty to exercise care as well as its duty to pay the stipulated compensation.

To relieve a charitable corporation from all liability for its negligence would be to put a premium on carelessness, and the charity would legally feel no hesitancy about employing careless servants. The installation of guards and safety appliances could safely be neglected, and, indeed, it would be somewhat questionable whether the cost of their installation would not be regarded as an unlawful diversion of the charitable funds—if the rule set forth in *Fire Insurance Patrol vs. Boyd*, should be invoked. Nonliability should not give a charitable corporation practical license to conduct its business in utter disregard of the safety of its employees, and no negligence of the employer would be culpable enough to secure them compensation for injury, if the funds of the charity would be necessary for such purpose. It is within the limits of probability that a carelessly managed or ill equipped charitable institution might easily create as many subjects for charity as it relieves. In *McInerney vs. St. Luke's Hospital Association of Duluth*, 141 N. W. 387 (Minn.) Brown C. J. said:

Our view is that the duty created by law for the protection of servants is absolute, and no employer should be exempt therefrom, except by action of the Legislature. No public good can come from permitting one charitable corporation by the failure of a duty imposed by law, to maim and disfigure its servants and employees, when depending upon the nature of the injury, their future welfare must of necessity be looked after by some other charitable association, public or private, or by already overburdened or poverty stricken relatives and friends. No such situation should be brought about by an arbitrary rule of immunity from liability, applicable only to one class of persons, unless deemed by the Legislature necessary to the existence and life of charitable association.

Pennsylvania is nearly alone in flatly holding to the non-liability of a charitable corporation for its negligence, on the trust fund theory. The tendency of the latter decisions appear to be to make charities liable as other corporations are liable. There has been a decided change in public and legislative thought within the last decade with reference to the liability of employers to their employees for injuries received by them while in the course of their employment. We do not believe that, in the absence of distinct legislative enactment, any court should or would now hold that the employees of a charitable corporation should be placed in a class by themselves, denuded of all redress against their employers in case of injury, even though that injury was caused by the employer's negligence. In neither *Fire Insurance Patrol vs. Boyd*, *supra*, or *Gable vs. Sisters of St. Francis*, 227 Pa. 254, was the question one of liability between the employer and employee. Whether the decision in *Fire Insurance Patrol vs. Boyd* can be extended or construed to relieve charitable corporations from liability for injuries suffered by their employees, through the employer's negligence, is doubtful. We do not believe that they are or ought to be relieved. In support of our opinion we cite the following authorities:

In *Basabo vs. Salvation Army*, 85 Atl. 120 (R. I.), it was held that a charitable corporation is liable like any other corporation for injuries to third parties caused by the negligence of its servants. In his opinion, Parkhurst, J., says:

Among all the cases heretofore referred to, where charitable corporations have been held to be immune from liability, we find only one clear case which declares such immunity in relation to injury

suffered by a third party by reason of the negligence of its servants. This case is *Fire Insurance Patrol vs. Boyd*, 120 Pa. 624. . . . This case is, to some extent, offset by the case of *Newcomb vs. Boston Protective Department*, 151 Mass. 216. . . . The Massachusetts court held that the defendant was a private corporation, not a charity, and attempted to distinguish the defendant from the *Fire Insurance Patrol* in the previous case, but we think the distinction is not well made out. In the *Newcomb* case the plaintiff was held entitled to recover. We are of the opinion that the *Newcomb* case, in holding that the defendant was not a charity, is a better reasoned case than that of *Fire Insurance Patrol vs. Boyd* *supra*.

In *Hewett vs. Women's Hospital Aid Association*, et al., 64 Atlantic (N. H.) 190, it was said:

That a charitable institution has certain duties to perform toward those with whom it is associated which it cannot violate with impunity, in the absence of some express exemption of a legislative character, is not debatable. The sanctity of its general trust fund or property, or more may be made that result necessary or, on grounds of public policy, undesirable.

In *Bruce vs. Central M. E. Church* 110 N. W. 951 (Mich.), it was held that a religious corporation is liable for injuries to one engaging in repairing its property, through the negligence of its servant in furnishing an unsafe scaffolding. *Carpenter, C. J.*, said:

Nor can I conceive any ground upon which a court can hold that effect can be given to that will when it relates to property devised or conveyed for the purpose of a charitable trust. Such a holding must rest upon the argument that the advantages reaped by the public from such trusts justify the exemption; that is, as applied in this case, the advantages to the public justify defendant's exemptions from liability for wrongs done to individuals. If this argument is sound—and its soundness may be questioned, for there are those who will deny that the advantages to the public justify the wrong to the individual—it should be addressed to the legislature, and not to the judicial department of the government. It is our duty as judges to apply the law. We have no authority to create exemptions or to declare immunity.

In *Horden vs. Salvation Army* (109 N. Y. 233; 92 N. E. 626), it was held that where a journeyman mechanic was engaged in making repairs on a boiler on the premises of the Salvation Army, the latter was not relieved from liability for negligence of its agents and servants on the theory that the rule of respondent superior does not apply to such corporations. In this case *Hewett vs. Women's Hospital*, 73 N. H. 556 (64 Atl. 190) and *Bruce vs. Central Methodist Episcopal Church*, 147 Mich. 230 (110 N. W. 951) were cited by Cullen, C. J., with approval.

A charitable corporation cannot escape liability for a tort against a stranger, because it holds its property in trust to be applied to purposes of charity. *Kellogg vs. Church Charity Foundation*, 66 N. E. 406 (203 N. Y. 191).

A hospital, though maintained as a charitable institution, is liable to persons other than patients for the torts of its employees within the line of their employment. *Schloendorff vs. Society of New York Hospital*, 105 N. E. 92 (211 N. Y. 25).

The rule that charitable institutions are liable for damages to an employee reaffirmed in *Hotel Dieu vs. Armendariz*, 167 S. W. 181.

In *Thomas vs. German General Benevolence Society*, 141 P. 1186 (Cal.), it was said by Henshaw, J.: "A final contention of appellant is that it is in no way responsible, by reason of the fact that it is a charitable institution, and that an action against it, such as this, will not lie. Such was the doctrine of some of the earlier cases. We need not enter into an elaborate discussion of the question. All of the authorities, pro and con, have been elaborately collated and learnedly reviewed in *Basabo vs. Salvation Army*, 35 R. I. 22, 85 Atl. 120, 42 L. R. A. (N. S.) 1144.

"With the conclusion there reached we are in accord. That conclusion is that the true doctrine amounts to this: That where one accepts the benefits of a public or of a private charity, one exempts by implied contract the benefactor from liability for the negligence of the servants in administering the charity, if the benefactor has used due care in the selection of those servants."

In *Hospital of St. Vincent of Paul vs. Thompson*, 81 S. E. 13 (Va.), it was held that where a plaintiff accompanied a sick friend to a hospital, a charitable institution, and was injured by falling into an elevator shaft negligently left unprotected by defendant, she could recover, since she was not a beneficiary of the charity, but a stranger; a charitable institution not being exempt from torts against strangers, because it holds its property in trust to be applied to the purpose of charity.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

THE ESSENTIAL FACTORS IN A SUCCESSFUL DIET.

By E. V. McCOLLUM,

Department of Agricultural Chemistry, University of Wisconsin.

Much has been written in recent years about nutrition and dietetics by persons whose qualifications for discussing these subjects have varied greatly, and as a result it is impossible for anyone who has not been a close student of the subject, and has not had close personal contact with experimental work, to decide what information is reliable. Certain investigators whose names have appeared in the literature frequently enough to cause them to be referred to as "authorities" are still debating the values of different types of iron and phosphorus compounds for promoting growth or convalescence. Others are still discussing the most satisfactory plane of protein intake without appreciating that there exist numerous proteins having widely different biological values. Just now the "deficiency diseases" and the "vitamines," whose absence or shortage causes, and whose administration relieves the disorders, are the subject of much debate. It should be of interest at this time to point out the really essential factors which must operate in an adequate diet. Our knowledge of this subject has come through persistent experimenting with rations made up of purified food stuffs. With such diets, employing rats as experimental animals, the writer has now had a continuous experience covering nine years. The evidence appears to be convincing that we are now in possession of an adequate theory concerning what constitutes a successful diet.

If a young rat is placed upon a diet consisting of purified protein, carbohydrate, a vegetable fat such as olive oil, and an inorganic salt mixture made up in imitation of the mineral content of some ration of ordinary food stuffs with which normal nutrition has been secured, no growth can take place. The reason for this is that this mixture, although it contains all the food principles which are ordinarily laid down in textbooks on nutrition, still lacks two chemical factors which are essential for growth or prolonged well being. The evidence for this assumption is as follows:

Suppose we prepare and add to this ration a water or alcoholic extract of some natural food stuff such as peas, rice polishings or wheat, which has been found effective in the cure of beriberi, and which therefore contains what Funk and his coworkers have designated vitamin¹. Even with this addition no growth can be secured. The extract may be tested with a pigeon which has been brought into the polyneuritic condition by feeding with a diet exclusively of polished rice, and may be found highly active, causing complete recovery of the bird within a few hours, but even such an extract will not render a mixture of purified food stuffs efficient.

If however, we add to this mixture of purified protein, carbohydrate, vegetable fat, and salt mixture, both the extract described above and four or five per cent. of butter fat, the food mixture becomes adequate for growth from weaning time to the normal adult size, and supports reproduction and the rearing of young. Certain other fats may be substituted for the butter fat, viz., egg yolk fats or fats from the cells of animal organs, but thus far no vegetable fats have been found which contain enough of the unknown something to induce growth at the normal rate. It is present in certain vegetable foods, especially in the leaves of plants, and therefore in that part consumed in large amounts by the herbivora, but to much less degree by other animals. The corn and wheat kernels contain some of it, but the amount is too low for normal growth, while the oat kernel seems to have less than the other two named. In none of the cereal grains have we found a content of this substance sufficient to meet the demands of a growing animal.

The chemical natures of both these things are unknown. Since butter fat contains but an insignificant amount of nitrogen or phosphorus, it seems highly probable that the active substance which differentiates butter fat from certain other fats does not contain either of these elements. For this reason it is undesirable to class it as an amine, which would be connoted if we were to call it vitamin. Since, furthermore, it is by no means demonstrated that the water soluble unknown, which appears to be the same as Funk's vitamin, actually contains an aminogroup, I have suggested that, until more data are available regarding the chemical natures of these substances, they be termed the fat soluble A and water soluble B. These terms will automatically fall into disuse when we possess definite information which will make possible their chemical classification.

The water soluble B is widely distributed in liberal amounts in our naturally occurring food stuffs, but is not present in starch, cane sugar, polished rice, or in any of the fats of either animal or plant origin.

Now let us consider what such experimental results mean. If an animal can grow to maturity, reproduce, and rear young on a monotonous diet of purified protein, carbohydrate, butter fat, and salt mixture, to which a little water or alcoholic extract of a grain is added to furnish the water soluble B, it is evident that all the complexes essential for complete nutrition are present in the mixture. There is abundant experience to prove that the protein of the ration may be a phosphorus-containing one such as casein from milk or it may be a phosphorus-free protein as edestin from the hemp seed, or albumin of egg. The young animal can draw all the phosphorus needed for the formation of the lecithin and other phosphatides of its nervous system and for its nuclear as well as its skeletal formation from

simple inorganic phosphates, which are furnished in the salt mixture added to its food. In the course of many trials I have never seen growth enhanced by the addition of organic phosphorus compounds.

All the iron for the construction of the hemoglobin can likewise be drawn from inorganic forms of iron, since in the diets employed in our work, the iron was supplied only in the form of citrate or lactate, i.e., in forms which give the reactions of the Fe ion.

These diets, consisting, aside from the small amount of substances contained in the extracts added to supply the water soluble B of purified food stuffs, contain nothing in the nature of purins or pyrimidines, substances of highly complex chemical structure, essential as constituents of the nucleic acids. These complexes must therefore be formed by the animal cell from the aminoacids derived from the proteins. This power is in marked contrast to the inability of the animal to produce any extensive transformation of the aminoacids derived from the food proteins into each other. Most of these complexes must be furnished preformed in the diet.

We must, in the light of experiments of this kind, credit the growing animal with the synthetic mechanisms which render it independent of a supply of lecithins, glycerophosphoric acid or proteins containing "masked" phosphorus, and independent of the form of combination of its iron supply in a high degree. It is for the physician to reflect and decide for himself, until such time if ever, experimental proof is available to show whether situations arise when masked phosphorus and iron preparations are of value.

It should be emphasized that proteins are by no means of equivalent values as sources of nitrogen. These differ widely in their yields of the seventeen or eighteen known digestion products, the aminoacids. Certain of the latter cannot be dispensed with in the diet if growth is to proceed. There are some proteins which, if taken singly, are insufficient as sole sources of nitrogen for a growing animal.

Persistent experimenting with rations made up of purified food stuffs, supplemented in various ways with simple additions, has shown beyond question, not only the dispensableness of a number of organic complexes hitherto postulated as essential components of a successful diet, but have revealed the existence of two indispensable dietary factors not hitherto recognized.

DIET IN INTERNAL DISEASES.

By OTTO LERCH, A. M., Ph. D., M. D.,

New Orleans,

Professor of Medical Diagnosis and Treatment, Tulane University of Louisiana, Postgraduate Department.

(Concluded from page 744.)

Gout, a disease of faulty metabolism. The dietetic treatment of an attack of gout differs little from the regimen in the acute infectious diseases, though meat, meat extracts, and alcohol must not be allowed during this time, unless heart disease or weakening of this organ is a complication. In such a case, alcohol may be given in small quantities,

especially to patients that have been accustomed to its use. Small and frequent meals, consisting of milk, milk soups, jellies, and the tender vegetables in purée form, free from condiments, form the diet.

The treatment of the chronic form of gout differs materially and we have to consider many factors in the selection of a suitable diet. A feature of the disease is thought by many to be an excess of uric acid in the blood serum, which through some unknown cause, perhaps a ferment, is precipitated, giving rise to the many well known symptoms. This foreign irritating substance in the blood, constantly eliminated by the kidneys, affects these organs in the course of years, and finally causes arteriosclerosis, interstitial nephritis, and the precipitation of gravel and calculi, hypertrophy, and dilatation of the heart. A diet similar to that indicated in kidney and heart diseases will be prophylactic and curative in most cases.

The elimination of uric acid must be aided by the increase of liquids in forms of milk, water, and diluted fruit juices, to be given at regular intervals, the quantity to be determined by the state of heart and kidneys. Uric acid formation has to be reduced to a minimum by the exclusion of meat and meat extracts, especially of the viscera, which contain large amounts of nuclein. Whether it is advisable to depend entirely on a vegetable and fruit diet to increase the formation of alkali, and to give an abundance of alkaline waters, is still under discussion. To avoid an excess of alkali seems to be correct. These patients usually have been heavy meat eaters and to withdraw meat entirely is irrational. Meat, if allowed, ought to be given in the less injurious forms of boiled meats and fish, and a more liberal use of eggs, milk, and vegetable albumin may serve as a substitute.

There is no contraindication to fats and carbohydrates; they have no influence on the formation of uric acid and may be given as indicated in each case. The condiments, salt and pepper, have to be used in great moderation; they tax the kidneys, and it is especially these organs upon which we depend for elimination, and which we have to protect as far as possible from injury.

The fruit juice cure, the orange cure of California, the grape cure of Meran, the strawberry and cherry cure of other places are not borne out by recent scientific investigations. Their success, however, shows that a liberal addition of fruit to the diet is advisable in gout.

The disease is inherited and acquired. The usual cause of it is excess in eating and drinking. It must be the object of the family practitioner not to be satisfied by treating the parent, but to form the habits of the child entrusted to his care. Early impressions are lasting and the habits formed during childhood remain during life.

Diabetes mellitus. The selection of a suitable diet is the most important therapeutic measure in this disease, the main symptoms of which are an excess of sugar in the blood and its excretion by way of the kidneys. The physician's resources are taxed to conduct the treatment. Not only has he to consider the various factors that govern the dietary treatment of other diseases, the climate, the seasons, the state of

nutrition, the occupation, the severity of the disease, and the many complications that on account of the condition of the blood accompany diabetes mellitus, but it becomes especially difficult, as the dietary measures have to be severe and deprive the patient largely or entirely of man's main article of food, bread, and carbohydrates in other forms. The complications due to the blood condition are numerous; there is not an organ in the body that may not become affected. Disturbances of the gastrointestinal tract are constant. Tuberculosis is a frequent accompaniment, also arteriosclerosis, myocarditis, diseases of the pancreas, liver, and kidneys, of the nervous system in the form of peripheral neuritis, neuralgias, and pruritus of the skin in forms of furunculosis and carbuncles, disease of the eye, such as cataract. The etiology has to be considered, whether the disease is due to gout, is of nervous origin, or is due to an excessive ingestion of starches and sugars.

In every case of nervous origin, the pancreas, liver, and muscles are involved. The heredity of the disease and the influence of traumatic and psychic causes are readily explained; they indicate a weakness of the nervous system, inherited or acquired or temporarily weakened by toxic substances. If due to tumor or abscess of the brain, surgical interference is called for.

If the disease runs in families, the therapist must regulate the habits of the children and reduce the amounts of carbohydrates. It is well to remember that the descendants of syphilitics, the gouty, the neuropathic, and the obese often become victims of diabetes in later life.

To facilitate study and treatment, the disease has been divided into two large groups, one gradually passing into the other; a light form and a severe form. The former is characterized by the entire disappearance of sugar from the urine after a diet free from carbohydrates for three or four days. The disease is classified as severe, when a reduction of albumin has to be made in the diet to cause the sugar to disappear, and according to the amount of albuminous food that has to be withdrawn. Various subdivisions have been recognized by different authors. The object of the treatment of any form of diabetes is to free the blood from noxious substances, especially from sugar, to prevent an acidosis, and to keep the patient in as good a state of nutrition as possible.

Before the treatment can be begun the tolerance to carbohydrates has to be established. If after a test diet containing 100 grams of wheat bread, given in three or four portions during the day, sugar is still found in the urine, a further reduction and an entire withdrawal of carbohydrates may become necessary, and if after eight or ten days, the urine still contains sugar, the disease is to be classed as severe. If, on the other hand, no sugar is excreted after 100 grams of wheat bread, the amount is gradually increased till the first sugar reappears.

It is not only necessary in every case of diabetes to test the tolerance of the patient in general to carbohydrates, and to albuminous food in the severe forms, to find out whether the urine can be freed of sugar with a restricted diet, but also to test in a

similar way his tolerance to the different carbohydrates. Tolerance depends on the form and quantity in which carbohydrates are allowed at a time. In general, it may be said, that they are best given frequently and in small quantities, in the form of vegetables. Cellulose encloses starch granules and causes slow absorption. Of the sugars, levulose is best borne and may be used in moderation in many cases. The quantity in which the food can be given is of importance. A diabetic does not need more than a healthy person, and even less in some cases, to keep his weight and his strength.

The regular diet in severe cases of diabetes is to be made up of albumin and fat, with an occasional interruption of vegetable days, with water, wine, tea, and coffee added, or the liquids alone, to obtain improvement. To prevent acidosis, alkalies have to be given in large doses, and butter has to be kneaded with water to extract the lower fatty acids that might induce it.

If such a strict diet after several weeks is insufficient to prevent sugar excretion, the albumin, or, if necessary, the whole quantity of food must be reduced, or days of starvation introduced. If this regimen fails, carbohydrates may be added and not rarely a portion is assimilated, and the patient gains in strength and weight. Alimentary albuminurias are occasionally met with; they disappear with the disappearance of the sugar from the urine.

A number of authors have recommended a milk diet. Such a diet is of advantage in selected cases for a certain length of time; it is bland and non-irritating; it saves the organs, increases elimination, and its nutritious value can be enhanced by condensing it and adding cream. Before use, tolerance has to be tested. It does not diminish sugar excretion in all cases, but increases it in some. The amount of carbohydrates contained in buttermilk is but little less than those contained in sweet milk.

A diet consisting entirely of vegetables has also been recommended and has its advantages under certain conditions. It contains the carbohydrates in a form that resists rapid absorption. It relieves obstinate constipation, it replaces the distressing sensation of hunger by serving as a filler, contains a large amount of alkalies, counteracts acidosis, and the chlorophyll exerts, according to some authors, a beneficial influence on the disease. The rice cure of v. Düring, which was formerly frequently used, and consists of a diet made up of rice, with an addition of fruit, milk, and claret, has been abandoned. Masso's potato cure and von Noorden's oatmeal cure have taken its place; the latter has been found especially favorable. Von Noorden limited its application to the most severe cases of diabetes with acidosis, and warns against adopting it as a routine treatment. It consists of the administration of oatmeal gruel every two hours. The average quantity per diem is 250 grams of oatmeal with an addition of 100 grams of egg and plant albumin, and 300 grams of butter. The greatest objection is the aversion of the patient to the diet, and it should be discontinued at once if he loses weight and strength.

The oatmeal days are preceded by a few days of strict diet and one or two vegetable days. The best

results are obtained in the severe cases of children and young adults.

The craving for bread and potatoes is so great that in no case can these articles be permanently dispensed with, and it is advisable to give bread in small quantities, on certain days, in order to satisfy the craving. Some patients refuse to take bread in any form other than that to which they have been accustomed in health. Others still take it in forms that have been especially prepared. All contain more or less carbohydrates and the amount ought to be known; the patient as a rule is under the impression that he can take any quantity of the so called diabetic bread without harm. Potatoes contain only twenty-four per cent. of carbohydrates and can be given in larger quantities.

The different forms of albuminous foods influence the disease but little. The slower their digestion and absorption, the better their influence on sugar excretion, so that egg and plant albumin deserve some preference. One hundred to 140 grams of albuminous foods are sufficient in the lighter forms of the disease. The diet can be made up of mutton, beef, game, birds, and fish in any form. Eggs, poached, soft boiled, fried as omelet and omelet soufflé, oysters, broiled and raw, the various cheeses, cream, and milk, if not contraindicated by the test for tolerance, crabs and lobsters, the various wine and meat jellies, sauces prepared without flour, anchovies, tomatoes, Worcester sauce, catsup, red snapper and other fish, meat and vegetables, soups with the addition of butter or wine. Of vegetables and fruit, we have a large variety to select from, spinach, turnip greens, mustard greens, beet tops, cauliflower, green cabbage, snap beans, asparagus, tomatoes, lettuce, cress, celery, and many more. They must be well prepared and seasoned; all have the great advantage of serving as fat carriers. The acid juicy fruits are specially desirable; they are refreshing and allay thirst; lemon, grapefruit, sour oranges and apples, cranberries, olives, nuts, including almonds. Fruits may be used raw or stewed and sweetened with saccharin. The condiments are necessary when the appetite fails, which is often the case in a one sided diet. Alcohol in some form, especially in severe cases, is to assist fat digestion and improve the appetite. It never should be entirely withdrawn from the aged and from patients that have been accustomed to it. It is best given in forms of dry wines, Moselle, Rhine wine, and claret, or as cognac and whiskey in small doses. Beer is contraindicated in diabetes. A good and sufficient variety of food can be obtained even with the strictest regimen. A careful selection must be made in considering complications.

If coma threatens, carbohydrates must be added to the diet. Milk and levulose in lemonades, and the daily amount of alkalies must be increased.

If the patient is in a stuporous or comatose condition, rectal injections of sodium bicarbonate and sugar of milk, or intravenous injections of physiological salt solution or levulose, in strength from five to ten per cent., often give good results. If, on account of the severity of the disease, a strict diet has to be adopted, a quantity of carbohydrates must be allowed greater than the tolerance test per-

mits. Periods of a strict diet to free the blood for a certain length of time from sugar are to be followed by a more liberal diet period. The length of these periods, as well as their frequency, depends on the severity of the case, the general condition of the patient, and on complications. The final object to be obtained is to restore the patient to health or keep him in a good state of nutrition.

Obesity. To treat this disease according to a fixed plan is incorrect, yet a number of cures have been tried, of which Banting's has been popular. The habitus of the patient and the overactivity or underactivity of thyroid, thymus, ovaries, and testicles must be considered; the condition of the internal secretion glands increases or decreases the craving for food and affects its assimilation; an excessive use of salt, pepper, and other condiments, which stimulate people to eat under any conditions, has to be corrected.

Obesity has its complications; diabetes, gout, and lithiasis are quite common. In the later stages, all organs are more or less affected, and the fatty heart is a constant sequel. There are three stages in the life of the obese. The first when firm of flesh and robust in appearance, he is envied by his friends. The next is the Falstaffian age, when he becomes the object of ridicule; and the third, when suffering from edemas, cough, and dyspnea, he arouses sympathy. It is generally one of the later stages we are called upon to treat, unless fashion dictates a slender figure, and women flock to the physician's office to be "reduced."

It is a serious disease that disables the patient and shortens life, though lightly taken, till a severe pain and symptoms of a breaking down of the heart cause fright. As a rule, the obese love to eat and to drink, and if the disease is inherited, the taste for high living goes with it. They know that diet and exercise make up the treatment and they are reluctant to give up their habits, the more so as the organs gradually accustom themselves to carry the increasing weight and activity becomes less in proportion. A number tell us they do not eat anything, but if we inquire into their habits and the amount of food they take, we usually find that it is out of proportion to the daily exercise. In some cases, thyroid, ovaries, testicles, and other glands are at fault. The first and more rapid loss of weight is due to loss of water, of which these patients possess more than the usual amount. All liquids have to be reduced. The first reduction in weight is easy; but progress slows when it comes to fat combustion. The co-operation of the patient must be secured, and he must understand the work he has to do, the sacrifices he has to make, and the length of time it will take to secure permanent results. If he does not suffer much, he will not readily give up habits that have become dear to him and change a life that has become a second nature.

To restore the patient to health, he must lose fat and make muscle; exercise is necessary for fat combustion and to cause muscular growth. The fundamental principle of all treatment is to guard the body albumin from loss, to give nitrogenous food in sufficient quantity, as well as for increased assimilation. The average amount for an adult will hardly

ever be less than 120 grams in the twenty-four hours. It is desirable to reduce the number of calories and keep up as far as possible the accustomed volume of the food. The increase of firmness and bulk of muscle and loss of weight furnish sufficient data to gauge the amount of food.

Whether we adopt a plan of rapid or slow reduction, must depend on the state of the patient. Rapid reduction is best carried out in a sanatorium to prevent complications. The latter has the preference; it allows the patient a more liberal diet and trains him to form healthy habits. It is best to interrupt a continued treatment, by intervals of a more liberal diet, during which time he has to keep the weight stationary. Fat and carbohydrates are fat producers, and as a rule it is best to reduce both, being guided by the habits of the patient and the result of the treatment. Some authors recommend a great reduction of fat, others of carbohydrates. It is best to determine this in each case; fat is more readily assimilated, and it takes work by the organism to convert carbohydrates into fat.

Albumin is best given as lean meats, though eggs may be added in various forms to assure variety in the diet, although the yolk contains a larger amount of fat; lean fish, oysters, lobsters, and crabs may be added. Green vegetables, well cooked and well prepared with meat juice to make them palatable, and the acid and juicy fruits help to produce a voluminous diet poor in calories. The amount of fats and carbohydrates to be permitted in each case must be determined and changed according to varying conditions. Black bread, graham bread, and the specially prepared bread for the diabetic being poor in calories, deserve preference. The cereals, grits, hominy, oatmeal, and rice, are either entirely to be struck from the diet or allowed only occasionally. Potatoes may be given in larger quantities; they contain from twenty to twenty-four per cent. of carbohydrates. Saccharin and similar preparations can be used to sweeten; one tablet corresponds to a large lump of cane sugar.

Three meals a day are usually sufficient during the treatment. However, a soft boiled egg, some fruit, a cup of tea, and the like, may be allowed if patients feel faint between meals. As a severe restricted diet, a pure milk diet may be adopted for a short time; one quart a day, a cupful every two hours.

Rosenfeld has introduced the potato cure and believes that it gives some good results. He allows large quantities of potatoes and cold water with the object of reducing the appetite. This is a severe treatment, is not liked by the patient, and taxes his digestive organs. If the treatment is conducted with skill, it is possible to obtain permanent results in most cases without having the patient suffer.

CONCLUSION.

The object of the dietetic treatment is to produce blood as far as possible free from impurities, containing in sufficient quantity the elements to produce heat and energy as needed and replace the burnt up body albumin and fat. Though it forms only one item in the treatment of disease, it is of great importance. With a fair knowledge of the physiology of digestion and the value of food stuffs, it is not

difficult to prescribe a diet, provided that a correct diagnosis is made. As has been pointed out, an often neglected factor in prescribing a diet is the consideration of climate, season, and occupation, which may increase or decrease the need of food. People enjoy eating and wish to procure the pleasure it gives. This leads sometimes to an excessive use of condiments, alcoholic stimulants, pepper and salt, which have to be withdrawn before we can ascertain the normal appetite and thirst.

The patient ought not to eat when fatigued, nor eat anything he has found to disagree, nor anything he does not like. He has to be taught to like what is good for him. These are valuable rules.

POISONOUS PROTEINS.*

A Series of Five Lectures,

BY VICTOR C. VAUGHAN, M.D.

Dean of the Department of Medicine and Surgery, University of Michigan.

LECTURE IV.

Doctor Vaughan opened his fourth lecture on the poisonous proteins by expressing his belief that there were three possible manners of disposition of such proteins which found their way into the blood or tissue; first, they might be eliminated by the kidneys unchanged, second, they might be passed into the alimentary canal and there digested and the digestive products absorbed, and, third, they might be digested in the blood or tissue, or in other words, parenterally.

The literature concerning the renal elimination of foreign proteins was voluminous, but often contradictory. The occurrence and extent of this form of disposal varied with the kind of protein, the quantity, the rapidity of introduction, the species and individuality of the animal, and probably upon many unknown conditions. It had been definitely shown that all the protein passing through the kidney after parenteral introduction did not consist of that introduced. In Doctor Vaughan's laboratory it was shown some years ago that in the urine of rabbits, after the parenteral introduction of egg white, both egg white and blood protein appeared and guineapigs were sensitized to both with the urine. This gave no indication of the proportion in which they were present. Foreign protein injected into the blood soon disappeared from the circulating fluid and carried with it an appreciable amount of the proteins of the blood. Chiray was apparently the only one who had made frequent observations of the effects of the parenteral administration of proteins in man, and he frequently induced albuminuria in this way. Doctor Vaughan had found that the foreign protein was more likely to appear in the urine when the rate of injection was high; large amounts could be slowly introduced into the abdominal cavity or into an ear vein without any detectable trace being present in the urine.

Heterologous proteins injected into the blood

*An abstract of this "Objections to the Lecture" of the "Gauguin" (Lectures, 1900) was published by the author separately in the New York Medical Journal, New York, 1900, p. 100. The abstract of this "Objections" was published in the New York Medical Journal, New York, 1900, p. 100.

found their way into the intestinal lumen. They were poured in with the bile and passed into the abdominal cavity and through the intestinal walls. Poisons introduced into the blood were eliminated, at least in part, into the alimentary canal. In 1753, Sproegel showed that gastric lesions might be due to arsenic absorbed from wounds and since that time they had been induced in animals by the hypodermic administration of neutral solutions of arsenic. Mercury when employed by inunction was poured into the alimentary canal and its destructive action might be seen in almost any part from the mouth to the rectum. It had long been known that peptic ulcer was frequently associated with chronic appendicitis, and the recent brilliant work of Rosenow had called attention to the probable relation between peptic ulcer and pyorrhea. In case of a nidus of infection of any part of the body poisonous proteins were being poured into the circulation and carried to the walls of the intestine for the evident purpose of elimination. Here they accumulated, and in their reaction with the body cells the latter were more or less injured. The elimination of proteins from the blood into the alimentary canal held for both living and dead, formed and unformed proteins.

Blood serum, like living cells, was highly resistant to proteolytic enzymes; furthermore, the presence of blood serum retarded both peptic and pancreatic digestion, from which it had been generally inferred that blood serum contained an antiproteolytic ferment designated as antitrypsin. Delezenne and Pozerski first showed that chloroform removed from blood serum the antiproteolytic body; they found that blood serum had no digestive action on gelatin under ordinary conditions, but that blood serum which had been extracted with chloroform promptly digested gelatin. It had been shown by Jobling and others that when the unsaturated fatty acids were removed from blood serum by extraction with chloroform or ether, it became highly poisonous, even for the species from which it was derived. The significance of the Abderhalden test could not be considered as finally settled, but it seemed from the evidence now at hand that the placental tissue absorbed the antiferments and the unopposed proteases of the serum digested the protein constituents of this fluid.

The weight of evidence today discarded the idea of specific proteases in blood serum and favored the idea that certain antibodies existed in the serum, and when these were reduced in amount, the nonspecific protease of the blood serum acted upon its own protein constituents. However, the present view did not exclude the necessity of regarding protein digestion in the blood as specific, in some instances at least, which Doctor Vaughan offered in explanation of the success of vaccination. The vaccine virus was introduced into the arm; the proteins of which the virus was composed were distributed in the body and sensitized certain cells, which meant that the cells developed a ferment which destroyed the vaccine virus, and the new function developed in these cells by their first experience with the smallpox protein in its attenuated form, continued in the possession of the cell for years.

Doctor Vaughan was not yet ready to give up the theory of the formation of specific proteases, but he wished to proceed without being influenced by preconceived ideas, and he repeated that the idea of a nonspecific protein digestion, in anaphylactic shock especially, had much in its favor. The poison developed in anaphylactic shock might not come from the protein of the reinjection, and the protease developed in sensitization might not be specific. The problem of specificity had only been transferred from the development of a specific enzyme to the specific uncovering of a nonspecific enzyme. It remained true that an animal sensitized to one protein was not sensitized to other and unlike proteins.

The blood seemed to be a fluid in which ferments and antiferments were nicely and delicately balanced, and a slight disturbance in this equilibrium led to marked effects. From one gram of casein enough protein poison had been obtained to kill 800 guineapigs when injected intravenously. That casein, the chief protein constituent of the food of all mammalian young, should be found to contain a body so highly poisonous when introduced intravenously, was a surprising thing. However, the surprise did not disappear on going further and finding that a similar poison might be obtained, not only from all the proteins we eat, but also from those that make up the tissues of our own bodies. There were other interesting things about this protein poison beside its potency. When amounts of it even smaller than the lethal dose were incubated with blood serum *in vitro*, the serum, in itself inert, became fatally poisonous.

In these studies a curious phenomenon had been observed; the incubating serum containing the poison might be fatally active at the expiration of a given time, then later wholly without effect, and later still fatally active. This wave of appearing, disappearing, reappearing toxicity had been frequently observed. Friedberger had observed this and believed that when the first injection was made, the ferments had split off the poison; when the second injection was made, the poison had been split up into the nonpoisonous substance.

Doctor Vaughan again stated that he was not ready to give up the idea that the parenteral introduction of foreign proteins produced specific alterations in the blood, as long as evidence was supplied by the specificity of agglutination and precipitin reactions. Pfeiffer found that the serums of guineapigs digested for about forty days after sensitization the protein to which the animal had been sensitized; also that the blood serum of a sensitized animal had a more marked digestive action on the specific anaphylactogen than had the serum of a nonsensitized animal. Doctor Vaughan had repeatedly found that the blood serum showed sensitization for a relatively short time, while the animal remained in a sensitized condition much longer, which convinced him that protein sensitization was accompanied by, and was due, in some instances at least, to a profound and lasting impression made on the cells of the body. Protein sensitization was cellular.

Doctor Vaughan did not believe there was any justification for using tuberculin in the treatment

of tuberculosis. After twenty-five years' experience with this poison, he did not believe anyone could produce evidence that it had accomplished any great good in the treatment of this disease; he was quite sure, on the other hand, that evidence that it had done harm was easily available. A great deal of harm was being done by the indiscriminate, unfortunate, and unjustified injections of all kinds of poisons into the body.

Contemporary Notes.

A School for Lip Reading.—An editorial article in the *Long Island Medical Journal* for March, 1916, calls attention to two communications in that issue which mention an institution in Brooklyn apparently but little known to the medical profession in the vicinity, viz., the Evening School for the Deaf, where lip reading may be acquired. The intimation that this school may be discontinued because of lack of interest is a decided surprise. There are many excellent institutions like it that have hid their light under a bushel and only come into public notice when disaster is about to overtake them. The knowledge that there is such an institution available for those deaf or partly deaf patients who are unable to pay the large fees asked by private instructors in lip reading, should be welcome news to a generous number of physicians who have patients in need of just such instruction. It should be possible for the medical profession of Brooklyn to keep the school well supplied with pupils.

Medical Ethics—for Whom?—In the recent discussion of medical ethics in the daily press, observes the *Journal of the Missouri State Medical Association* for April, 1916, the attitude taken by the writers of various editorial articles exhibits a large amount of misinformation of the meaning of medical ethics. The idea prevailed with such writers that the code is a whip which the medical organization holds over the profession in order to keep all physicians from discussing "trade secrets"; to prevent the members of the society, good or bad, from letting the world know of their achievements, and to keep the laymen on the "outside" while the medical man is on the "inside."

But what are the facts? In the *Principles of Medical Ethics* we read: "A profession has for its prime object the service it can render humanity. Reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals." What are its ideals can only be known when this code of ethics, as adopted by the American Medical Association, is read and studied. While we know that rules and codes do not make an individual better, the observance of them certainly will not make him worse.

In a recent incident the question which interested the lay press and the community seemed to be not so much a matter of professional conduct (ethics), but

one of supposed persecution, without going into the merits of the individual case. The public, whose sympathy is usually with the "under dog," attacked the code of ethics and the medical profession instead of attacking individuals or societies for incorrectly interpreting the code of ethics.

We feel that it is important, in fairness to the medical organization, to direct the attention of the public to the high standard which our code stands for and to emphasize the point that the principles of medical ethics are primarily for the protection of the public. Their enforcement should receive the endorsement, not the condemnation of the community.

Keeping Up Appearances.—According to the *Atlanta Journal-Record of Medicine* for February, 1916, the time is at hand when the young man who has completed his college and hospital career will be making ready for his work and setting up his own office for the first time. Very likely past expenditures are marked with due bills, and financial obligations weigh upon him depressingly. Fortunately, indeed, is the man whose patrimony extends through this period and enables him to contemplate the waiting time without worry and to furnish his office correctly as a matter of investment.

We well know the fears and doubts of the young man who faces first a rental charge that is all outgo from the day he enters his office. . . . We sympathize with him when agents of all sorts attempt to sell him apparatus and show him what successes his rivals are having with the latest \$250 machine or how he cannot expect to keep up with the times unless he has this encyclopedia or that set of journals. . . .

The medical society dues loom large, the social gathering expenses incite an agony of suspense, and the laundry man seems to be a potential ogre who may never return with the shirts that link the young man to gentility unless more money is forthcoming from an unknown source; yet all these simply must be attended to and with them there is the great duty of making a good showing. . . .

The best backing a beginner can have when he is starting by himself is a well equipped and prosperous appearing, comfortable and clean office. Nothing will give a patient or visitor a sharper impression of a man's attitude toward life than a tasteful and substantial waiting room where his visitor will be welcomed, and then a consultation room that is correct. There is no greater handicap than makeshift furnishings in either place, and the correct ones should be secured at any sacrifice a gentleman can make. When he thinks of all the years of preparation he has spent in order to go to the public on his own hook, he should never let go the idea that he must meet the public as he wants the public to meet him. His office should show cleanliness, correctness, simplicity, and dignity in all its furnishings from the very beginning. The reaction of these will be potent upon not only the visitors but upon himself. That is about the only kind of backing and about the only approximation to bluff that we know of as successful in medicine and this works only to replace timidity with a normal self confidence.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOU, M.D., LL.D., Sc.D.
CLAUDE L. WHEELER, A.B., M.D.Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.Subscription Price:
Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, APRIL 29, 1916.

EFFICIENCY AGAIN.

Some years ago, when the idea of efficiency began to agitate the industrial world, we pointed out editorially how the means advocated apparently violated one of the simple laws of nature. We expressed our belief that in handiwork the necessary movements were made in curves, and that efficiency, briefly stated, consisted in reducing these curves to straight lines. Speed in this manner is no doubt greatly enhanced, but at the cost of much exhaustion to the worker, who wears out sooner and has to be replaced by a younger or stronger man.

The publication in England of several pamphlets on the health of munition workers has recalled these theories; three booklets in particular have been seriously considered by the most important British medical weeklies: *Industrial Fatigue and Its Causes*; *Special Industrial Diseases*; and *Ventilation and Lighting of Munition Factories and Workshops*. The committee which published these pamphlets for the Minister of Munitions expresses the hope, in the first one, that what is now being learned of fatigue and industrial management will prove of lasting benefit on the return of peace. Of the speeding up process the committee remarks, that earlier recognition of the need for a weekly rest would have prevented a large part of the diminished capacity that

has been allowed to appear, and would have averted much costly and wasteful expenditure upon imperfect work. In many cases, perhaps in all in which staleness has been noted, or has even advanced to sickness, a single day off might, if given at the right time, have avoided much wasteful reduction of capacity, and in the worst cases the total loss of many days of work. It seems to us that these conclusions corroborate our own, for it is pseudo-efficiency, with its direct methods, which is giving rise to the hitherto unknown superexhaustion. As the committee remarks, the introduction of new labor and of employees unaccustomed to the process concerned, particularly in conjunction with the need for speed and pressure, overtime, and night work, with the consequent fatigue, inevitably leads to greater risk of accident.

Taking up other aspects of the munition question, the committee mention that operatives working in trinitrotoluol are affected with drowsiness, frontal headache, eczema, and loss of appetite. At first the symptoms are usually slight, but if the exposure is continued, the symptoms become rapidly intensified, a profound jaundice supervenes, and even death has resulted. Tetrachlorethane, a nonflammable liquid, smells in vapor form like chloroform and is a powerful, even a fatal anesthetic. It is an ingredient of the varnish used on aeroplanes. It is pointed out that there is a varnish which does not contain this dangerous chemical, but the difficulty of securing its other ingredients has rendered its manufacture almost impossible.

Advice is given in the pamphlets on the dangers of long hours of work, faulty positions at the bench, muscular overstrain, prolonged standing, machinery accidents, the air supply, lighting, the handling of explosives, etc., and managers, foremen, and operatives are invited to cooperate in the reforms advocated, preferably by the appointment of committees of workmen. Similar publications would undoubtedly be most useful here, where the manufacture of munitions is rapidly becoming an enormous industry.

THE CELL, DIET, AND CANCER.

It takes new ideas some time to soak deeply through our many strata of older notions, and, while the cell as an entity has been known for two centuries and more, we do not yet appreciate the full significance of its relation to the body as a whole. Our physiology, while fully recognizing the existence of the cell, is still overshadowed by the existence and activities of organs. As in the study of history, we too often forget that the character and doings of a nation depend upon the persons of which it is composed, so in the study of physiology

we forget that the action of an organ depends, from moment to moment, upon the condition of the cells of which it is but the aggregate. If we lose sight of the cell on which the integrity of the body depends, we forget even more the environment of that cell, the atmosphere of body fluid by which it is surrounded and on which its health and life depend. This is, in fact, a matter of far more moment to us than is the cell itself, for we cannot bring cells into existence, but we can influence their environment and through it the cell itself.

We make something—none too much—of the immediate surroundings of the body as a whole; we pay some attention, of the spasmodic sort, to ventilation, to exercise, to clothing, etc.; but we have hardly begun to appreciate to the full the significance of these external conditions of the body as modifying the external conditions of the centres of vitality—the cells. The atmosphere of the cell is at once changed, with disastrous results, by the introduction of opium or alcohol or other poison, but in practice, at least, from long habit, we usually consider that when it comes to the food taken, the blood and lymph are miraculously dealt with, so that the taking to excess, or even the mere use of ill assorted combinations of foods has no effect upon the fluid environment of the cell, and, therefore, no effect upon its health and longevity. Doubtless for a long time the organs that regulate the character of the blood do work in a marvelous manner to keep it harmless for the cell, but it is impossible that they themselves should not suffer from overwork if the unbalanced or abnormally large diet is kept up, and that, far earlier than we suspect, the atmosphere of the individual cells everywhere becomes unhealthy and depressing. It needs no absorption of foreign poisons, nor of poisons of intestinal fermentation, to account for many chronic diseases and for abbreviation of the life of the cell and, therefore, of the organ. There is, far oftener than we think, chronic cell poisoning going on from the taking of the best cuts of beef, the best varieties of candy, the best bakings of beans, and the finest products of the pastry cook—of things, never labeled poisons, taken not because they are demanded by hunger, but because they are so palatable.

It is along these lines, many investigators believe, that the problem of the origin and prevention of cancer will be worked out. We ought to expect almost anything from a cell which is constantly subjected for years to an unsanitary atmosphere, and if it should become insane to the extent of reversion to primitive habits of proliferation, what wonder? Parasites and bacteria and other sources of local injury may act as a last straw or secondary cause, but by no means be the essential cause of the disease

process. Misplaced islands of germinal cells may be the centres from which tumors start; but, if these exist, they cannot be peculiar to the person in whom cancer develops, and there must, therefore, be a good reason why tumors do not develop in all of us. Among many white mice inoculated with cancer cells, only in those whose general health has been affected by some other means do cancers develop. A diminution of general health is preceded by a change in the environment of the cells. It needs, however, no experimental evidence to realize what must be the results of daily and yearly abnormal modifications of the cellular atmosphere. We should ponder the cell and its surroundings as being the real centres of organic and general health. We ought to consider the matter of diet and nutrition more seriously than we have as yet thought of doing; and the NEW YORK MEDICAL JOURNAL is glad to be a pioneer in exciting therein the direct interest of the family physician.

IMPROVING OUR PRESERVED FOODS.

Preservation of food products is a matter of direct concern to the physician. The most important means of preserving food are by drying, refrigeration, and by canning, the first using heat, the second cold to repress fermentation, and the third applying live steam to effect sterilization. An indirect but important result of the Pure Food Act of 1906 was the formation of the National Canners' Association and State associations for the purpose of establishing standards of workmanship for the trade; they also conduct perfectly equipped research laboratories for the benefit of members. These laboratories collaborate with the United States Bureau of Standards in establishing standards for the industry throughout the United States. These laboratories try to show association members how these standards can be met and even surpassed by doing practical work in the canners' plants. Directly and indirectly, they are contributing notably to the health of the nation. It is estimated that four billion cans of food are sold annually in the United States. Divided among twenty million families, the amount would be 200 cans a year for each family, or over one half a can to a family every day. At the recent annual meeting at Rochester, N. Y., of the New York Canners' Association, leaders in the good work, Mr. George W. Cobb, a sales manager of an important can company, spoke forcibly of the relation of the medical profession to the canning industry, saying: "Undoubtedly the most influential class of people in the country are the doctors. They come into intimate association with our home and

our family life, and what the doctor thinks, goes. Does the doctor know what canned foods are? Have you taken the time, at his convenience, to tell him some of the true things of canned foods? How interested he would be, because it vitally concerns his life vocation." So many slurs have properly been cast upon canning methods in the past that we feel that it certainly would be advantageous for the medical profession and the laity to share a knowledge of the high standards and scientific methods now employed in general in the canning industry. The initiative, however, rests with the canners.

TRENCH NEPHRITIS.

The war in Europe, regarded from a medical standpoint, has presented some curious features. Epidemics, on a large scale, have been conspicuous by their absence and in France have scarcely shown themselves. Usually dysentery and typhoid fever, especially the latter, have dogged most large campaigns and the present European war is the only one in which typhoid fever has not been rampant. The comparative absence of the fevers belonging to the typhoid group is undoubtedly a great triumph for preventive medicine. Efficient sanitation and hygiene, conjoined with the efficacy of antityphoid inoculation, appears to have robbed that scourge of armies in the field of most of its terrors. Throughout the campaigns on all fronts which have now been going on from a year to a year and a half, there has been relatively little disease.

As might be expected, however, the methods of fighting chiefly practised and the use of new means of offense and destruction, have brought out conditions and disorders hitherto almost unknown in warfare. At the beginning of the war in France and during the first few months, tetanus and gas gangrene were rife. When the fighting resolved itself into trench warfare, these diseases became rarer, and a novel crop of conditions of ill health sprang up. Trench foot was one of these, and now what is known as trench nephritis is frequent.

In civil life acute nephritis is not common, neither has it been in former wars. The subject was discussed at the Royal Society of Medicine in London recently, and in introducing the discussion Dr. Langdon Brown (*Medical Press*, February 23, 1916) recalled that in the American Civil War there was a considerable outbreak of nephritis, which assumed epidemic proportions between March, 1862, and March, 1863, and it is interesting to note that the military conditions resembled those of the present war. There was the forward dash of the Confederates, which was checked and followed by pro-

longed trench warfare. With regard to the causes of these epidemics, exposure was negated by the climatic experiences of former campaigns, and a climatic cause would not explain an epidemic such as that in the Civil War, which lasted twelve months and did not recur in subsequent years of the war. Other causes suggested, such as water supply, intestinal toxemia, and acidosis, could be excluded, while only a few cases could be explained as due to an exacerbation of chronic nephritis.

French army surgeons suggested that the epidemic might be due to a suppressed form of scarlet fever. This explanation would not stand the test of close analysis. Chemical examination showed that as in a nephritis of infective origin, trench nephritis was glomerulotubular in distribution, and this had been confirmed by post mortem examination in some of the few fatal cases. As a rule, the cases speedily ended in recovery, but if this did not happen, the duration might be prolonged for weeks or even months.

Langdon Brown believed that the epidemic was due to a specific infection, probably resembling but not identical with the organism causing scarlet fever. The urinary and pathological changes in trench nephritis and scarlatinal nephritis were found to be closely similar. Brown thought that animal inoculation experiments with material from recent cases were advisable, and suggested that much might be learned as to the mode of infection by the preparation of maps showing the exact distribution of the cases.

Doctor Abercrombie, at the discussion referred to, held by the Royal Society of Medicine, said that his wide experience of the disease led him to assume that it was infective in origin and epidemic in distribution, but the infecting agent, presumably a microbe, remained undiscovered.

A GERMAN TREATMENT OF TYPHOID FEVER AND DYSENTERY.

Dr. F. Meyer, of Berlin, according to the *British Medical Journal* for March 25, 1916, recently praised digitalis in the treatment of typhoid fever. In every case, whether there was an immediate need for cardiac stimulants or not, digitalis was given as a routine measure, and since this treatment had been adopted systematically there had been a great reduction in the frequency of cardiac complications. The administration of killed and sensitized bacilli had never in his experience provoked a further rise of temperature; in many cases the fever fell rapidly. Inoculation late in the course of the disease averted relapses. In very severe cases he had given injections of twenty to thirty c. c. of blood taken from persons whose fever had ceased and whose acquired immunity to typhoid was raised. He had

never seen ill effects from this treatment, which often brought the fever down rapidly. In dysentery he had learnt to rely principally on castor oil and polyvalent serum. Liberal doses of castor oil were most efficacious. He had never seen disaster follow the administration of serum, but he had sometimes found it inert. This was because he did not at first always use a polyvalent serum, and as his material included cases infected with the Shiga-Kruse bacillus, as well as with the Y bacillus, it was clear that only a polyvalent serum would meet the needs of every case. Among his severe cases the mortality was only three per cent., and among severe and light cases together it was only 1.2 per cent.

THE FUTURE OF SARATOGA.

Saratoga Springs has natural advantages as to character and variety of water and scenic beauty which are equalled by few if any, European spas. It has now become the property of the State, and at the last session of the Legislature its supervision was placed in the hands of the Commissioner of Conservation, Mr. George D. Pratt, of Brooklyn. The future of the Springs depends largely on his wisdom in the choice of a superintendent. If a man is selected who combines the qualities of a successful amusement manager, a skillful hotel keeper, an original and efficient advertising man, and an honest and economical administrator, we may confidently look forward to the development of the Saratoga Springs into a spa which would rival the best of the European resorts in popularity, and bring into the State thousands of health seekers from all over the world. It is essentially a business proposition which confronts the superintendent of the Saratoga reservation, and it is to be hoped that Commissioner Pratt will follow the advice given him in a recent editorial article in the *New York Sun*, which, in commenting on our note on this subject, urged the appointment of a business man rather than a physician to this important post.

News Items.

Changes of Address.—Dr. Daniel F. Crowley, to Suite 500-501 Fleming Building, Des Moines, Iowa.

Dr. R. Berendsohn, to 1328 Seventy-third Street, Brooklyn, N. Y.

The Alumni Association of St. Mark's Hospital of New York City will hold a meeting on Friday, May 12th, at 4 p. m., at the hospital, 177 179th Street Avenue Dr. Julius Ferber is secretary.

Harvey Society Lectures.—The last lecture in the course will be given Saturday evening, April 29th, by Dr. William H. Welch, of Johns Hopkins University, on Medical Education in the United States. Following the lecture, a supper will be given at Sherry's in honor of Doctor Welch.

A Low Death Rate in New York Last Week.—Figures prepared by the Department of Health show that during the week ending April 22d 1,515 persons died in the city of New York, compared with 1,748 during the corresponding week of last year, the respective rates being 14.15 and 16.68 per thousand of population. The diseases showing important decreases in mortality were measles, scarlet fever, diphtheria, cerebrospinal meningitis, diseases of digestive organs (other than diarrhoea), influenza, lobar pneumonia, bronchopneumonia, and pulmonary tuberculosis.

The American Association of Industrial Surgeons will hold its first annual meeting in Detroit, at the time of the annual meeting of the American Medical Association. Dr. J. E. Mead is chairman of the local committee of arrangements.

The State Hospitals' Medical Association of the State Hospitals of Illinois will meet in annual session at the Anna State Hospital, Anna, Ill., May 25th and 26th. Dr. R. R. McCarthy, of the Chicago State Hospital, Dunning, secretary, will be glad to furnish full information regarding the meeting. All physicians are cordially invited.

Kansas Medical Society.—The fiftieth annual meeting of this society will be held in Topeka, Wednesday, Thursday, and Friday, May 3d, 4th, and 5th, under the presidency of Dr. O. D. Walker, of Salina. Among those who will present papers are Dr. George W. Crile, of Cleveland, Dr. Fred H. Albee, of New York, and Dr. Bransford Lewis, of St. Louis.

Special Pediatric Clinics During Baby Week.—In connection with the activities of the Mayor's Baby Week Committee, arrangements have been made for conducting a large number of pediatric clinics in the various child-caring institutions in New York. The list of these clinics is published in the April 29th issue of the *Weekly Bulletin* of the Department of Health of the City of New York.

Doctor White Wills Brain to Science.—In accordance with the will of Dr. J. William White, who died in Philadelphia on Monday, April 24th, his brain has been removed and taken to the Wistar Institute of Anatomy of the University of Pennsylvania, where it will be kept in the laboratory for scientific study. In this laboratory are the brains of other scientists, including those of Dr. Joseph Leidy and Dr. William Pepper.

A Site for the Rice Memorial Hospital.—Mrs. Isaac L. Rice has purchased the John Webber estate at North Tarrytown, N. Y., as a site for the proposed memorial hospital. It consists of about twenty-four acres, with a large mansion and outbuildings. Mrs. Rice recently bought the Guiteau estate at Irvington for this purpose, but resold it on account of opposition on the part of owners of adjoining property to the establishment of the hospital.

The American Gastroenterologist Association will hold its nineteenth annual meeting in Washington, D. C., Monday and Tuesday, May 8th and 9th, under the presidency of Dr. Charles G. Stockton, of Buffalo. The New Willard Hotel will be headquarters for the association, all the sessions being held there. Dr. Franklin W. White, 322 Marlboro Street, Boston, secretary of the association, will be glad to furnish full information regarding the meeting. The profession is cordially invited to attend.

Industrial Accidents in New York.—According to the annual report to the State Industrial Commission by Deputy Commissioner William C. Archer, who is in charge of the Bureau of Workmen's Compensation, at least 683 industrial accidents occurred in New York State on every working day from July 1, 1914, to January 1, 1916. During that time a total of 337,500 industrial accidents were reported to the commission. Of those, 56,374 were cases in which claimants were entitled to disability awards.

Unmuzzled Dogs in New York.—Over 7,000 unmuzzled dogs at large on the streets of New York, were counted on April 20th, in utter defiance of Section 17 of the Sanitary Code. The count was made under orders from Health Commissioner Emerson, by all the employees of the department of health. As a result of the flagrant disregard of law thus exhibited by the people of this city, instructions have been issued by the Police Commissioner to arrest or summon to court all who hereafter violate the dog muzzling ordinance.

Texas State Medical Association.—The fiftieth annual meeting of this association will be held in Galveston on May 9th, 10th, and 11th. An excellent program has been prepared. Tremont Hotel will be the association's headquarters, and all meetings will be held there or in the immediate neighborhood. Officers of the association are: President, Dr. G. H. Moody, of San Antonio; president-elect, Dr. J. M. Inge, of Denton; vice-presidents, Dr. M. F. Bledsoe, of Port Arthur, Dr. H. C. Black, of Waco, and Dr. T. D. Frizzell, of Quanah; secretary, Dr. Holman Taylor, of Fort Worth; treasurer, Dr. W. L. Allison, of Fort Worth.

Books on Health in Public Libraries.—Dr. Hermann M. Biggs, Commissioner of Health of the State of New York, has prepared three lists of books on health matters which he believes should be placed in public libraries. One of these lists contains twenty-four books and pamphlets, the cost of which is \$10, and is intended for small libraries. A second list numbers thirty volumes, at a cost of \$25, and includes several valuable reference works. The third list, at \$50, numbers forty-eight volumes, and covers the wide subject of public health in a comprehensive manner. All selections have been made with a view of providing the general public with easily understandable books. Technical works have been avoided so far as possible, so that not only physicians, but all people may familiarize themselves with the general principles involved in preserving the public health.

Morbidity Statistics.—The Department of Health of the City of New York calls attention to the absence, in this country at least, of reliable morbidity statistics. Although the division of statistical research of the department has always urged the compilation of such statistics, the lack of sufficient appropriation has made it impossible to make much headway in that direction. One of the most important activities planned for 1916 is a study of illness among the employees of the city departments of health, police, fire, and street cleaning, which employ medical examiners, and of several large business organizations in the city, which operate welfare bureaus. At the present time morbidity statistics of this character do not exist in any city of this country, if, indeed, in any city of the world. If sufficient funds can be provided, the department of health will undertake also the collection and tabulation of uniform hospital morbidity statistics.

For the Study of the Internal Secretions.—It has been suggested recently that it might be well to form an Association for the Study of the Internal Secretions; it is desired to know whether there is sufficient interest in this matter to warrant its further consideration. A few of the advantages of such an association would be: 1, The assembling of those with a mutual fellowship of interest in this subject; 2, facilitating the exchange of ideas, inquiries, and reprints on the internal secretions; 3, enabling those who are interested, but have not the facilities to keep in touch with the instructive articles now frequently appearing, but in scattered and inaccessible periodicals—perhaps a monthly list of these articles with a brief résumé of their contents eventually might be prepared; 4, facilitating concerted clinical study of the subject and the measures being brought forward in organotherapy.

No effort has yet been made to form such an association; but physicians who would welcome the establishment of a community of interest embracing some or all of the points just mentioned, as well as others which cannot be enumerated for lack of space, are requested to send their names and addresses on a postal card to Henry R. Harrower, M. D., at 715-19 Baker-Detwiler Building, Los Angeles, Cal.

National Association for the Study and Prevention of Tuberculosis.—A preliminary program has been issued for the twelfth annual meeting of this association, which will be held in Washington, D. C., May 11th and 12th, under the presidency of Dr. E. R. Baldwin, of Saranac Lake, N. Y. All sessions will be held in the New Willard Hotel. There are three sections; clinical, of which Dr. Thomas McCrae, of Philadelphia, is chairman, pathological, of which Dr. Gerald B. Webb, of Colorado Springs, is chairman, and sociological, of which Dr. Seymour H. Stone, of Boston, is chairman. At a special session of the Advisory Council, which will be held on Thursday evening, the subject selected for discussion is *Tuberculosis in Its Relation to Tuberculosis*. The chairman of the council is Dr. Livingston Farrand, formerly executive secretary of the association, and the National Housing Association will be represented in the discussion by its secretary, Mr. Lawrence Veiller. The officers of the association are: President, Dr. E. R. Baldwin, of Saranac Lake; vice-president, Dr. Christen Quevli, of Tacoma, Wash.; secretary, Dr. Henry Barton Jacobs, of Baltimore; treasurer, Mr. William H. Baldwin, of Washington, D. C. Dr. Charles J. Hatfield, 105 East Twenty-second Street, New York, executive secretary of the association, will furnish programs to all who are interested in the meeting.

American Gynecological Society.—The forty-first annual meeting of this society will be held in Washington, D. C., May 9th, 10th, and 11th, under the presidency of Dr. J. Wesley Bovee, of Washington, with headquarters at the Shoreham Hotel. Among the subjects to be discussed are Syphilis in Its Relation to Obstetrical and Gynecological Practice, Present Methods of Treatment of Cancer of the Uterus, and Painless Labor, Its Production by other means than that of the morphine-scopolamine method. The officers of the society are: President, Dr. J. Wesley Bovee, of Washington; Vice-presidents, Dr. Robert L. Rickinson, of Brooklyn, and Dr. George Gellhorn, of St. Louis; secretary, Dr. Le Roy Brown, of New York; treasurer, Dr. Brooke M. Anspach, of Philadelphia.

Use of Second Hand Material in Mattresses.—The Legislature of Illinois last year passed a law prohibiting the use of second hand material in mattresses, bed comforters, and quilts which were manufactured for sale, and requiring that when these articles were remade or renovated for the use of the owners they must be sterilized. The Illinois Supreme Court decided that the prohibition of the use of second hand material for this purpose was not necessary for the protection of the public health, as the desired result could be obtained by sterilization, and the court declared this part of the law to be unconstitutional. The court, however, said that the provision of the law which required the sterilization of all mattresses, bed comforters, and quilts when remade or renovated for the use of the owners was reasonable and proper.

Personal.—Dr. Edwin B. Miller has been appointed otologist, rhinologist, and laryngologist to Roosevelt Hospital, Philadelphia.

Dr. Robert Retzler has resigned as dean of the Creighton University Medical College.

Dr. William E. Jonah, of Atlantic City, N. J., announces that he has resumed the practice of medicine at 1710 Pacific Avenue.

Dr. William H. Steers, of Brooklyn, has been appointed a major in the medical corps of the New York National Guard.

Dr. Adam Miller, of Jordanville, N. Y., is ninety-six years of age and is still actively engaged in the practice of medicine. He graduated from the Geneva Medical College in 1844 and in the same year settled in Jordanville, where he has practised medicine ever since.

Dr. Richard P. Strong, of Boston, who is a member of the Serbian Distress Fund Committee, will sail for Europe in a few days for the purpose of making a satisfactory arrangement for relieving the distress of native civilians, who have been unable to leave Serbia. A fund will be raised for this relief and also for that of the Serbians who have left.

Dr. Samuel A. Brown, for twenty years a member of the faculty of the University and Bellevue Hospital Medical College, has been appointed dean, to succeed Dr. William H. Park who resigned recently.

Dr. Leland E. Cofer, formerly assistant surgeon of the United States Public Health Service, assumed the duties of Health Officer of the Port of New York on April 22d. He appointed as his deputy Dr. William F. Mathews, who has been acting health officer since the death of Doctor O'Connell.

Dr. Maurice Ostheimer, of Philadelphia, has been appointed a member of the visiting staff of the Philadelphia Hospital for Contagious Diseases, and Dr. Frank C. Hammond and Dr. F. Hurst Maier have been appointed gynecologists to the same institution.

Dr. H. H. Mitchell has been appointed epidemiologist to the Indiana State Board of Health.

Dr. Oscar T. Schultz, professor of bacteriology and pathology at the University of Nebraska, has been made director of the Nelson Morris Memorial Institute for Medical Research, at Chicago.

Dr. Anna Manning Comfort, of New York, was the guest of honor at a banquet given at Delmonico's, on the evening of April 8th, to celebrate the fiftieth anniversary of her graduation from the New York Medical College and Hospital for Women. Doctor Comfort is the sole surviving member of the first class graduated from this institution.

Dr. J. S. Cox, of Silverton, Colo., has been made a member of the Royal Army Medical Corps of Great Britain.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.
Department of Biology, Olivet College.
Seventeenth Communication.

PHYSOSTIGMINE.

Probably every abdominal surgeon of considerable experience has had more than one unhappy encounter with intestinal atony following operative procedures. Especially might such an unfortunate sequel supervene if, in the surgical accomplishment of calculated measures, the breaking up of intestinal adhesions became necessary. Even handling the bowels sufficiently to gain needed leeway for important excisions is enough to produce prolonged enterostasis in some highly sensitive subjects. This condition of atony is one that becomes rapidly serious if relief is not soon obtained, since the remaining uninjured portion of the bowel may early develop reversed peristalsis with a quickly ensuing toxemia.

In the search for some agent that might prevent, or possibly alleviate this dire trouble, much attention has been given to eserine, or physostigmine, the principal alkaloid of physostigma; and this drug has been found of much value in cases in which the reflex depression was not too profound.

Eserine acts on the musculature of the alimentary tract by irritating and stimulating the myoneural terminations, thereby tending to reestablish an inhibited peristalsis or to accentuate a present one. Its activity in this respect has been adequately demonstrated in the laboratory when a normal splanchnic mechanism was brought under the influence of the drug. In the hospital, however, results have not been so brilliant, chiefly perhaps because the effective mechanism had previously been thrown more or less out of physiological gear; or else, to change somewhat the metaphor, somewhere in the physiological circuit the lines were partially or completely blocked. In such a case muscular response to eserine action may be either too slow or else quite inadequate. At the same time the remarkably stimulating effect of physostigmine on the secretory glands, especially of the upper uninjured part of the bowel, produces an excessive exudation. This abundant secretion will be forced back toward the stomach by reversed peristalsis unless a downward path becomes established. The surgeon, in his aftertreatment, is thus placed between painful alternatives; but the logic of the situation probably justifies him in making a prayerful test.

The many other reactions to this drug make its use as a general developer of increased peristalsis rather undesirable. Eserine produces considerable depression of the spinal cord and medulla, a secondary slowing and weakening of respiration, an

elevation of blood pressure, and a slowing of the heart from both centric and local action. There are also some as yet unexplained disturbances of the voluntary muscle system. These ulterior effects of eserine rather preclude its use except in undoubted cases where more serious symptoms would probably arise in its absence than the drug itself would produce. As in all therapeutics we have here carefully to estimate relative values, choosing finally that which, to the best of our knowledge and belief, will conduce most surely to the welfare of the patient. Life brings a continual making of decisions; in times of peace, those of the judge and physician are especially momentous in that they concern primarily the happiness of others. The use of eserine points its own moral in the domain of therapeutics.

Simple Method of Draining Empyema.—In order to provide free escape for empyema fluid without the possibility of ingress of air and collapse of the lung, several rather complicated methods have been devised, employing chiefly the principle of siphonage with the lower end of the tube dipping below a layer of fluid. Joseph Ransohoff (*Journal A. M. A.*, April 15, 1916) suggests a simpler yet effective plan. A stiff, heavy walled drainage tube is prepared for insertion into the chest opening, where it must be fitted air tight. Over the free end is slipped a short length of very thin walled collapsible tubing, such as is used for cigarette drains, its free end extending a short way beyond the outer end of the thick tube. With expiratory efforts the empyema fluid is forced out of both tubes and may be caught in suitable absorbent dressings. During inspiration the opening into the chest is closed by the walls of the collapsible tube falling together and acting like a valve.

Pellagra.—The treatment of pellagra may be considered under two heads, dietetic and medicinal, according to John Fletcher Yarbrough (*Southern Med. Jour.*, April). Too much stress cannot be placed upon the necessity of immediately eliminating all carbohydrate or alcoholic material from the diet. The proteids to be substituted should be selected with the greatest care. So long as there is nausea, vomiting, or diarrhea, it should be restricted to milk, meat broth, and fresh fruit juices, preferably orange. After these symptoms have subsided the whole list of proteids may be allowed ad libitum, fresh fruits and vegetables to be preferred. Diet alone, however, is not sufficient. A mild case of recent origin may be relieved in this way. The writer relies mainly on twenty to thirty drops of dilute nitric acid in a glass of water, an hour before meals. Nitric acid is used for two reasons: The saliva, stools, and urine are extremely acid, and no drug is more dependable to render conditions alkaline. The nausea and vomiting not infrequently subside

after the first or second dose, if there is no gastric ulceration, the diarrhea disappears in three or four days if there is no ulcerative ileocolitis, and the salivation will have disappeared within a week. The other, and probably more important reason is that the blood is acid. The hemoglobin of an acid blood carries little if any oxygen, and acute progressive anemia quickly follows an attack of pellagra. Nitric acid renders the blood quickly and positively alkaline, when it assumes at once its normal function of carrying oxygen and the anemia disappears. He believes that pellagra will never be successfully treated by the general practitioner, because he cannot have absolute dietetic control of the patient, and that the only way in which it will ever be eradicated is through treatment in sanatoriums.

The Optochin Treatment of Pneumonia.—A. Loeb (*Berliner klin. Wochenschr.*, Oct. 25, 1915) treated six cases of pneumonia expectantly and lost two. In the same epidemic he treated twenty-four cases with optochin and all ended in recovery. In every case optochin was begun during the first forty-eight hours of the disease and doses of 0.25 gram of either the salicylate or the hydrochloride were administered orally every four hours day and night, making a total daily dose of 1.5 gram. The maximum total dose to any patient during his illness was six grams in four days; the minimum, three grams in two days. In the majority of instances by the second day of treatment the fever fell, the more intense symptoms declined, such as headache, hebetude, etc., and the general condition was greatly improved. He observed no effect from the drug on the physical signs of the disease, which ran their usual course. The septic symptoms alone were favorably influenced by the optochin. The only side actions were tinnitus, slight visual disturbance, and diarrhea. All such disturbances improved when the drug was omitted for twelve hours.

Active Immunization in Hay Fever.—O. Berghausen (*Lancet-Clinic*, April 1, 1916) points out that whereas patients suffering from autumnal catarrh are susceptible to the pollen of various dicotyledons, such as the ragweed, those suffering from the so called "June cold" are especially affected by the pollen of grasses. Frequently patients, questioned as to their previous attacks, state that they are susceptible to both the grasses and dicotyledons. Recent experience has convinced Berghausen that carefully graduated injections of the pollen responsible in the individual case, suspended in glycerin-phenol-salt solution, may materially alleviate the symptoms. While the injections should preferably begin a month or two in advance, patients treated last summer only after the first symptoms had appeared, suffered less than usual from asthmatic manifestations. Expert use of the method requires a thorough study of the prevailing causes of the catarrhs in the community dwelt in. Proper selection of the extracts to be used should be made and skin tests performed. At first, only minimal doses should be employed, till the needs of the individual patient have been determined. Where, as is not unusual, there is sensitiveness to a variety of pollens, a mixed extract should be used, or at least the one

to which response has been greatest. Berghausen usually administers the individual vaccine injections on different days, or in different parts of the body, to determine, if possible, the general and local effects separately. Only freshly prepared extracts should be employed, lest proteolysis render them markedly toxic. When the mucous membranes have become irritated, microorganismal activity complicates the clinical picture. Autogenous vaccines should then be used. They often yield as much subjective improvement as the pollen extracts. Free use of alkalies during the period of increased bacterial activity was not found of much value. Certain patients afflicted in the north found relief in the south during the height of the season.

The Diphtheria Toxin Skin Reaction.—Henry Koplik and Lester J. Unger (*Journal A. M. A.*, April 15, 1916) call attention to several disadvantages inherent in the Schick test as usually carried out, including technical difficulties and a considerable proportion of pseudopositive reactions due to the amount of fluid injected. To obviate these several objections the authors devised a needle, bent to an angle of 170° one quarter inch from its point, and mounted so as to leave exposed only the portion distal to the bend. This needle, when dipped into pure diphtheria toxin and immediately thrust endodermally, carries with it an almost immeasurable amount of fluid—about 0.00014 c. c. An extensive series of parallel observations were made with this simplified technic and the accepted Schick technic, and the new method was either positive or negative, respectively, in each case in which the original was either positive or negative. Traumatic pseudopositive reactions were entirely absent with the simplified technic and three quarters of the so called anaphylactic pseudopositive reactions were eliminated.

Intraspinal Treatment of Syphilis of the Central Nervous System.—R. Dexter and C. L. Cummer (*Archives of Internal Medicine*, January, 1916) report their experiences with this treatment in ten cases, most of which were followed up for a period after the direct action of the treatment had been observed. Altogether fifty-nine intraspinal injections of autosalvarsanized serum were given. The technic of Swift-Ellis was carefully followed, and accurate adherence to it was considered essential to good results. The results amply sustained the assertion of the originators that the procedure is a valuable adjunct in syphilitic involvement of the central nervous system, as far as tabes dorsalis and cerebrospinal syphilis were concerned. In six cases symptomatic improvement was so marked that the economic efficiency of the patients was restored. In tabes the best results are obtained in early and moderately advanced cases. The procedure is not essential in all cases, but when carefully applied and controlled will cause definite betterment in the symptoms and laboratory signs where other methods have failed. No untoward symptoms followed the treatment in any case, though when gastric crises or lancing pains existed, the authors learned to expect an attack of pain two to four hours after the injections. The patients who showed these painful reactions were more markedly and rapidly improved by the treatment than the others.

Treatment of Hemorrhage after Operations on the Nose and Throat.—Francis J. Quinlan (*Medical Record*, April 15, 1916) divides the treatment into local, constitutional, and endocrine. Local measures include cold applications and pressure. In tonsillar operations suture of the pillars may be required or in extreme cases ligation of the common carotid artery. Precipitated blood serums may be used locally as styptics or as prophylactics by injection. As to constitutional hemostatic measures, Quinlan gives ten grain doses of potassium iodide daily for a week before operation, while serotherapy is especially indicated in hemophilia, and calcium lactate given by mouth is also of service. Endocrine medication is employed in the form of adrenalin, thyroline, and pituitrin. Pituitrin is best given in the dose of one c. c. fifteen minutes before operation, and repeated after the operation if necessary; its action is more lasting than that of adrenalin.

Treatment of Acute Syphilitic Nephritis.—John H. Stokes (*Journal A. M. A.*, April 15, 1916) reviews the literature bearing on diagnosis and treatment. The most important features are the proof of an early syphilitic infection; very high albumin content in the urine; the presence in the urine of double refractive bodies of lipoidal nature as demonstrated with the polarizing microscope; and the therapeutic tests. The Wassermann test should be carried out, but is often negative, and spirochetes should be sought in the urine. When the condition is encountered its treatment should consist of salvarsan or arsenobenzol and mercury. The salvarsan should be given in small doses, beginning with 0.15 gram, slowly increasing until 0.4 is reached. With such small doses the results are usually good and there is no danger of renal irritation. After the disappearance of albumin, mercury should be begun, either in the form of inunctions or injections of the salicylate, the latter being preferable. Rest during the early part of treatment is important.

Pott's Disease Treated by the Bone Graft.—Fred H. Albee (*American Journal Orthoped. Surg.*, March, 1916) in his series of cases had 460 which showed arrest of disease, fifty-nine which showed improvement, and twenty which showed no improvement; or eighty-five per cent. of cases with arrest of disease. The ages of the patients varied from twenty months to sixty-five years; duration of disease varied up to twenty-six years. Albee advises the presence of a demonstrable lesion by x ray, etc., before resorting to bone transplantation.

Botulism.—Botulism literally is sausage poisoning, but as the word is used by Ernest C. Dickson (*California State Jour. of Med.*, April), he apparently means ptomaine poisoning. As regards treatment, he says this is of little benefit in the more severe cases, but should be instituted as soon as possible, because recovery occurs in so large a proportion. The stomach and the colon should be washed out to remove any toxin that may remain, active purgation should be induced, if possible, preferably with castor oil or epsom salts, and the patient should be supported as much as possible. Strychnine seems to be of benefit in improving the action of the paralyzed muscles, and other stimulants

should be given as indicated. The patient should be kept absolutely quiet and given plenty of water and simple food. The danger of insufflation pneumonia should be kept in mind, and it may be better to give the water by rectum or hypodermoclysis, than by mouth. Specific serums have been prepared, and their use in laboratory experiments has been satisfactory, but they need to be given early. There is apparently some difference in the specific action of the various strains of the bacillus, so that polyvalent serums are preferable. At present there seems to be no supply of these serums in this country.

Treatment of Summer Diarrhea.—No food for twenty-four hours or while the child is vomiting, recommends the *Charlotte Med. Jour.* for March, 1916. The child should nurse only half as much as the usual quantity; between the nursings barley water, albumin water, or some of the especially prepared foods. Cow's milk should be used sparingly, if at all. Calomel, grain $\frac{1}{4}$, every hour for six to eight doses; followed in six hours by castor oil. The fewer drugs, the better. Dover's powder, paregoric, and deodorized tincture of opium may be used; stimulation when necessary.

Potassium Chlorate Poisoning.—The case of an infant four and a half months old is reported in the *British Medical Journal* (March 25, 1916) by E. W. Squire, who first saw the infant when in a condition of prostration with great pallor, cyanosis, cold extremities, and rapid, shallow breathing. The temperature was normal and the pulse rate 204. Some brownish black material was passed with the urine, which was greenish yellow in color. Death resulted and an autopsy showed chocolate colored clots in the vessels and heart; the liver, spleen, and kidneys were of a similar chocolate color, and the ureters and bladder were filled with a soft brownish material. Careful investigation revealed the fact that the material thought to have been lactose, which was used in the infant's feedings, was potassium chlorate.

Improvements in the Technic of Intravenous Injection.—Rosenthal (*Paris médical*, February 19, 1916) calls attention to the difficulties sometimes experienced when, in giving an intravenous injection, the needle, already introduced in the vein, it being connected with the syringe. At this point in the procedure, the least movement by the physician displaces the needle, which either recedes from the vessel or passes through its wall, often causing a hematoma or irritation of the tissues by the drug to be injected. These difficulties are entirely obviated in the following procedure: A needle three or four cm. long with a short bevel and of a suitable calibre (0.8 to 1.1 mm.) is used, and is fastened to a piece of small, soft, and flexible piece of rubber tubing four cm. long. Into the other extremity of the latter is attached a metallic ring, into which the mouth of the syringe can be adapted. Silk thread is used to fasten the tubing at its extremities. The whole can be easily boiled or otherwise sterilized. The tubing is too short to permit of coagulation of the blood. In inserting the needle, an additional improvement over the usual method is effected by passing the needle, before it enters the vein, for a distance of one cm. between the skin and vein. This

insures fixation of the needle during the critical stage of the procedure, which, as a whole, is thus rendered correspondingly easier and safer.

Treatment of Diphtheria Carriers.—Most satisfactory results, by H. O. Ruh, M. J. Miller, and R. G. Perkins (*Journal A. M. A.*, March 25, 1916), were secured by removal of the tonsils and adenoid tissues. No unfavorable results followed this procedure, in spite of the fact that virulent bacilli were present in the throats of the patients.

Therapy of Typhus Fever.—As a result of experiences during an epidemic of typhus, P. Neukirch and Th. Zlocisti (*Medizinische Klinik*, March 5, 1916) were unable to see curative effects from the injection of blood of thirty-eight convalescent patients. The therapy of typhus fever in these and other cases was largely symptomatic and included caffeine, camphor, and epinephrine subcutaneously, to combat the cardiac weakness.

Treatment of Exophthalmic Goitre by the X Ray.—George E. Pfahler and J. D. Zulick (*American Journal of Röntgenology*) state that the x ray causes a diminution in the pulse rate and an increase in weight. The nervous symptoms show a marked improvement. In about one half of the cases the size of the goitre is reduced. In cases of short duration it is better to give one third to one half of the full dose and then wait two weeks before beginning active treatment. It is a good plan to treat the thymic area in all cases in addition to treating the goitre. Redness of the skin should never be produced. Treatment must not be prolonged or hyperthyroidism will result.

Tethelin.—Tethelin is a substance isolated in relatively pure form from the anterior lobes of ox pituitary by T. Brailsford Robertson (*Journal A. M. A.*, April 1, 1916). When given to animals this substance was found to retard early growth, and markedly to accelerate postadolescent growth. The animals which received this substance were smaller but heavier than normal controls and showed favorable effects on their skins. Animals deprived of food for a time and then given unlimited food, regained weight more rapidly when given tethelin than normal controls. Comparative observations in animals also showed that tethelin stimulated and accelerated the healing of wounds. This substance has marked powers of influencing the growth of tissue. The substance was administered both orally and hypodermically with the same results.

Treatment of Malaria Relative to Its Eradication.—T. E. Wright (*Southern Med. Jour.*, April) presents the following conclusions: Intensive treatment of malarial patients must be employed if we are to decrease the number of carriers. The intravenous use of quinine, administered with proper care, in doses of ten grains properly diluted, repeated in from eight to ten hours once or oftener according to the case, is a type of intensive treatment that more nearly sterilizes the blood in malaria than any method heretofore employed, and is followed by fewer recurrences. The discomfort to the patient is slight, of short duration, not lasting over five or six minutes; no unfavorable effect has been noted upon kidneys, circulation, nervous system, eyes, or

gastrointestinal tract; no vomiting is noted except in high temperature. The ebolic effect is sufficiently pronounced for pregnancy to be a contraindication. Urticarial and vomiting idiosyncrasies do not appear to be evidenced. No hemoglobinuria has followed its use. The technic is simple, but requires care in aseptis.—K. H. von Ezdorf believes that the intravenous use of quinine should be limited to the treatment of complicated and pernicious forms of malaria, and that equally good results can be obtained by quinine in solution given by mouth. If fever is not controlled after five days of treatment with quinine, given properly, the case probably is not one of malaria.

Intravenous Injection of Collargol in Articular Rheumatism.—Wick (*Münch. med. Wochenschr.*, March 7th) gives a two per cent. solution of collargol, and the dose is two c. c. injected into the median basilic vein. Three injections are given at three day intervals. One hour later there is usually an increase in temperature. The pain disappears for a short time, but returns, only reaching the severity of the pain existing before the injection after several days. The results of this treatment are very satisfactory.

Treatment of Gonorrhea with Optochin.—Six injections daily of a one per cent. solution of optochin produced rapid disappearance of the organisms, change from purulent to clear secretion, and relief of pain. Levy (*Berliner klin. Wochenschr.*, Oct. 18, 1915) states these as the results of his own experience in twenty-five cases. The acute forms gave less favorable results than the subacute, and in a small proportion of the cases complete cure was impossible with optochin alone, resort to instillations of protargol being required to abolish the infection.

Simple Method of Enterocolysis.—Alanson Weeks (*Journal A. M. A.*, April 1, 1916) modifies the Murphy drip by breaking the closed system of tubing and inserting a funnel, into which the reservoir delivers the fluid at the desired rate. The funnel should be adjusted at the level of the patient's abdomen. It permits the escape of gas, provides a means of rectal siphonage by simply lowering the funnel, and can be used for flushing the bowel, all without the removal of the rectal tube. The avoidance of distention and gas pains permits the absorption of much larger amounts of solution than is ordinarily accomplished.

Chaparro amargosa in Amebic Dysentery.—P. I. Nixon (*Journal A. M. A.*, March 25, 1916) records excellent results from the daily administration of four glasses of fresh infusion of chaparro amargosa and rectal injection of a quart. He has had little need for emetine on account of the results obtained with chaparro.

Changes in the Blood Following Treatment with Mesothorium.—Bernhard Schweitzer (*Münchener Medizin. Wochenschr.*, March 7, 1916) gives results based on twenty consecutive cases, all inoperable cervical carcinomata, with the exception of one vaginal carcinoma. The examinations were made in the morning and under the same conditions. The erythrocytes showed an increase coincident with the improvement in the carcinoma. The amount of

hemoglobin was not materially changed. As a general rule the number of leucocytes was increased at first and then decreased after treatment. There seemed to be an increase in the lymphocytes and a decrease in the percentage of polymorphonuclears as treatment advanced. The primary leucocytosis may be the result of the irritation of the bone marrow produced by the rays. The changes in the blood were not permanent.

Pure Hydrogen Peroxide in Pyorrhea.—In addition to general dental treatment, including the removal of tartar, the pockets should be injected every four or five days with a pure solution of perhydrol. The injection causes pain, which soon passes off and leaves the gums red and slightly swollen for a couple of days. Under this treatment the pyorrhea is cured in a number of weeks. Such has been the experience of E. Kuhn (*Medizinische Klinik*, Feb. 20, 1916).

Intestinal Indigestion in Children.—First empty the bowels as completely as possible, observes the *Charlotte Medical Journal* for March, 1916. This can be done by calomel and sodium bicarbonate followed in six hours by castor oil. All food should be withheld for twenty-four hours. If prostration is great, stimulation is required. The best stimulants are strychnine and brandy. After the bowel is empty, Dover's powder in quarter grain doses after each stool for a child a year old will suffice.

The Aftertreatment of Fractures.—S. B. Rosenzweig (*Medical Adviser*, February, 1916) advises great care in the aftertreatment of fractures, massage and baling being the easiest and simplest measures. Daily applications of dry heat at 300° F. to 350° F. for a half hour, followed by massage and motion, give remarkable results. These measures may be instituted four or five days after reduction of the fracture, and of course the presence of a plaster cast is no impediment. Perfect x ray results may be very poor functional results if immobilization is too prolonged.

New Method of Treating Tuberculous and Other Sinuses.—W. O. Smeek (*Interstate Medical Journal*, March, 1916) describes a method whereby air passed through rectified spirits of resin and subjected to an electric arc becomes a strongly germicidal gas, which is of value when applied to sinuses, especially those of a tuberculous nature. This gas is nonirritant when fresh and has no destructive action on tissue cells. Germicidal action is complete in twenty minutes with the fresh product and in three to five minutes with the aged product. In addition to its use in chronic sinuses, it has proved of value in fresh and infected wounds.

Magnesium Hypochlorite as an Antiseptic.—Charles Mayer (*Paris médical*, February 19, 1916) highly recommends the use of magnesium hypochlorite as a nonirritant substitute for sodium hypochlorite, the caustic property of which has interfered with its popularity as an antiseptic, in spite of the addition to its solution of such substances as boric acid, to neutralize the excess of alkalinity. The solution used by him was prepared by bringing

together 190 grams of magnesium sulphate and 100 grams of calcium chloride, each previously dissolved in two litres of water, and filtering the resulting mixture to remove the precipitated calcium sulphate. To secure an absolutely clear solution, complete deposition of the precipitate must be awaited and the overlying clear fluid decanted. In experiments with bacterial cultures, seven to nine per cent. more of magnesium than of sodium hypochlorite was required for germicidal effects; but as the magnesium salt is perfectly tolerated by the tissues, solutions of it twice as concentrated as those of sodium hypochlorite generally employed can be used, without fear of causing wound irritation. The excess of magnesia in the solution is of no unfavorable significance, and no addition of boric acid is required. In general, with the magnesium hypochlorite solution healing of infected wounds takes place as rapidly as under the best possible conditions with the use of other antiseptics; in fact, even as rapidly as after aseptic operative treatment.

Thymobenzene in Bilharziosis.—In a letter to the *Lancet* (March 25, 1916) William Robertson states that he has obtained the most favorable results from the administration of a solution of thymol in benzene. The dose was two grains of thymol dissolved in half a dram of benzene. By the third day of treatment the ova are found in great numbers in slide preparations and the subjective symptoms of the disease begin to subside. Sleep returns, pain is diminished, vertigo passes off, the anemia improves, weight and strength begin to be regained, and the urine soon returns to normal.

Treatment of Vincent's Angina.—Dr. Ray Karchmer Daily (*Texas Medical Journal*, April, 1916) advises a treatment which is principally local and symptomatic. Fifty per cent. silver nitrate as a local application and potassium chlorate gargles are very effective. Salvarsan has been employed, both locally and intravenously. This has cured when all other remedies have failed.

Pneumothorax in Interlobar Empyema.—Alvis E. Greer (*Journal A. M. A.*, April 1, 1916) reports that several injections of nitrogen led to the emptying and healing of the empyema and ultimate perfect restoration of the lung.

Etiology and Treatment of Rat Bite Fever.—Wilder Tileston (*Journal A. M. A.*, April 1, 1916) describes an organism found in the blood, which resembled that described by Blake and by Schottmüller, apparently a type of streptothrix. The treatment was immediately successful, the paroxysms being checked at once by an ordinary dose of salvarsan.

Treatment of Conjunctivitis.—Frederick Jefferson and W. E. M. Armstrong (*British Med. Jour.*, March 4, 1916) tried several measures, including vaccines. The administration of staphylococcus vaccine proved serviceable in conjunctivitis accompanied with styes. In conjunctivitis in general the most satisfactory treatment proved to be irrigation with a very dilute solution of eusol three times daily. This reduced the duration of conjunctivitis to about six days compared with nine days in a series of control cases.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

October 25, 1915.

Viscosity of the Urine, by C. Posner.—The effort was made to determine whether viscosity played any part in the factors which influenced the excretion of the urine. In normal urine it was found that viscosity often increased with an increase in the specific gravity, or concentration, but there was no constancy or parallelism in the relation of the two characters. Albumin in the urine did not alter its viscosity, and similar results were found relative to sugar and cystin. The presence of formed elements such as red or white blood cells, pus, cylindroids, and casts increased the viscosity materially and more or less in proportion to their abundance. Since concentration of the urine was shown to increase viscosity in the majority of cases, and since an increase in viscosity is known to produce a delay in the rate of flow of fluids, such a change would tend to the formation of calculi. When the urine was alkaline and contained albumin, its viscosity was found to be much increased, but if the alkali was present in excess the opposite condition was found, namely, a reduction in viscosity. This offered a logical explanation of the beneficial effects of the use of potassium iodide and the alkaline mineral waters in many conditions known to be associated with concentrated urine. The same fact explained their beneficial action in other respects than that involving urinary excretion, since the alkalies would also tend to a reduction in the viscosity of the blood and other tissue fluids, and thereby hasten the processes of metabolism.

MEDIZINISCHE KLINIK

March 20, 1916.

Comparative Blood Pressure Readings, by Paul Horn.—From careful comparison the conclusion is reached that the auscultatory method is the most accurate and most readily executed. Systolic readings taken on 100 persons in health and disease by both palpatory and auscultatory methods showed that in seventy-one per cent. the auscultatory reading was the higher, in fourteen per cent. the lower, and in fifteen per cent. palpatory and auscultatory were the same. In forty-one cases in the first group the difference was one to five mm., in twenty-four it was six to ten, and in six from eleven to fifteen mm. Hg. In the third group the differences ranged from one to thirty-two mm. Higher palpatory readings than auscultatory were found most commonly among persons with marked arteriosclerosis. It was observed that emotion caused an elevation of ten to twenty mm. in the systolic pressure. The readings taken immediately after adjustment of the cuff were often as much as twenty mm. too high, therefore a few moments of rest should be allowed to intervene before the readings are taken. In the determination of the diastolic pressure the two methods showed complete agreement in only fifteen per cent. of instances and in eighty per cent. of the cases the diastolic pressure was lower by from one to fifteen mm. with the auscultatory method. In a similar proportion of cases the pulse pressure was found to be greater with the

auscultatory method than with the palpatory. Abnormally high pulse pressures were commonly found among those with arteriosclerosis, contracted kidney, and functional neurosis.

Gastrogenic Diarrhea, by Sigismund v. Dziembowski.—An exhaustive analysis of the causative relation of gastric disorders to certain forms of diarrhea is given. Achylia gastrica produces diarrhea through several influences. In the first place the absence of hydrochloric acid from the stomach prevents the disinfection of the contents or the inhibition of bacterial growth and activity. It therefore permits various forms of fermentation to go on both in the stomach and the intestine with the liberation of irritant products. The normal stimulus for pyloric closure is absent and food passes through the stomach too rapidly, without digestion. The lack of gastric digestion leads to the entrance into the intestine of the foodstuffs in a form in which they resist the pancreatic and intestinal juices. Thus the protein membrane covering both fats and carbohydrates is resistant to attack by the enteric ferments, and these foods largely pass through the gut undigested. The same is true to a less extent of meat fibre, the connective tissue of which is normally destroyed by the gastric juice. The treatment of gastrogenic diarrhea, therefore, should become the treatment of achylia gastrica, since the absence of normal gastric secretion seems to be the immediate cause of intestinal disturbance, the intestinal manifestations being altogether secondary.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

February 22, 1916.

The Wassermann Reaction in Chronic Diseases, by M. Letulle and A. Bergeron.—The results of applying this reaction in over 600 cases of nervous, circulatory, hepatic, or renal disease are reported. From the data given it becomes increasingly clear that syphilis is the most active cause of sclerosis and senile changes in internal organs, and in particular, that it is capable, as much as or even more than the so called "constitutional diatheses" and the residue of infections and intoxications, of causing slow impairment, separately or in combination, of the kidneys, the liver, and the cardiovascular and nervous systems.

Gastric and Auricular Forms of Vertigo, by G. Linossier.—Reference is made to a recent tendency to restrict greatly or entirely eliminate the form of vertigo attributed to gastric disorders (*vertige stomacal*), originally described by Trouseau and since held by many to be of frequent occurrence. Linossier sets apart three groups of cases in this connection: 1. Cases of vertigo wholly of labyrinthine origin, in which the stomach takes no part (auricular vertigo); 2, cases of vertigo of purely dyspeptic origin, occurring in subjects free of labyrinthine or vestibular disorder (gastric vertigo); 3, cases of vertigo associated with labyrinthine trouble, but manifested, or becoming much more marked, only under the influence of gastric disturbance (auriculogastric vertigo). In the latter group belong most of the cases hitherto classed as gastric vertigo, and likewise a few of those considered purely auricular. In the type of vertigo unassociated with rotatory sensations, similar considerations apply, nervous as well as gastric disturbances being

often simultaneously responsible. The same subdivisions may be made in vertigo of pneumogastric, cardiac, laryngeal, or intestinal origin, the last named type being considered by Mathieu even more frequent than gastric vertigo. In all cases of Ménière's disease the stomach should be examined; whenever dyspeptic trouble is noted, the hope may be entertained that, by appropriate gastric measures, an otherwise discouragingly obstinate ailment may be improved.

PRESSE MÉDICALE.

March 2, 1916.

Diagnosis of Complete Section of Large Nerve Trunks in the Extremities, by Déjerine, Déjerine, and J. Mouzon.—In previous articles the import of muscular atrophy, disturbed electric reactions of the muscles and nerves, disturbed mechanical reactions of the muscles to percussion, and disturbances of the tendon articular, and bony reflexes in this connection was discussed. In the present paper several additional differential factors are mentioned, e. g., complete paralysis of all the muscles innervated exclusively by the injured nerve below the level of its injury. To appreciate such paralysis properly, it is necessary to examine directly each muscle at the points where its belly and tendon are most readily visible or palpable, either during active efforts to move them or during contraction of the opposing muscles. Atrophy of these same muscles, manifest especially in the resting attitudes, is also of significance, as is likewise an absence of sensitiveness to palpation of the muscles and the nerve below the site of injury, tenderness nearly always being present when a nerve is merely in a state of compression or irritation. Finally, disturbances of cutaneous, osseous, and articular sensitiveness, together with disorders of sweating, are also of diagnostic import, varying only between certain definite limits in complete interruption of a nerve at a given level. The authors give a minute description of the examination for these various signs in section of the musculospiral, median, and ulnar nerves at various levels. Careful examination along these lines is of great value in supplying exact information as to the requirements concerning surgical treatment in the individual case. The actual functional value of a nerve is known to the surgeon before he begins. Without this help it is often difficult for the surgeon, even after exposing the nerve, to decide what mode of treatment it should receive.

RIFORMA MEDICA.

March 27, 1916.

Partial Hepatoptosis from Interposition, by Felice Perussia.—This condition is shown by radiography to be an interposition, transitory and partial in nature, of intestinal coils filled with gas between the liver and the diaphragm. It is frequently coincident with organic alteration of the gastrointestinal canal, especially gastrectasis with pyloric stenosis, anomalies of form and position of the colon, and stenosis and torsion of the omentum. This partial hepatoptosis is quite distinct from the floating liver of Cantani and from Glénard's hepatoposis.

REVISTA DE MEDICINA Y CIRUGIA PRACTICAS.

March 28, 1916.

Treatment with Autogenous Vaccines, by A. T. Fernandez.—Two cases are reported where excellent results were obtained with autogenous vaccines. One was a case of a double suppurative otitis media in a child which had resisted the classical treatment of such cases, and the other was a case of diabetes in a man with infection of the left foot. In this latter case a staphylococcus was isolated and a vaccine prepared therefrom which quickly curbed the infection which had begun to attack the metatarsal bones.

LANCET.

March 25, 1916.

Camp Jaundice, by A. Sarrailhé and J. Clunet.—For some weeks preceding the epidemic of camp jaundice there was an epidemic of febrile gastric disorders which the authors believe to have been of the same nature as the jaundice itself. The epidemic of jaundice then gradually developed, while that of the gastric disturbances declined. Blood cultures and cultures from the urine and stools revealed a type of paratyphoid organism which differed in several biological features from the common types described. It seemed probable that the jaundice was due to a gradual diminution in the virulence of the organism with the development of hepatic localization. The immunity conferred by vaccination against typhoid, paratyphoid A, and paratyphoid B did not seem to extend to this modified strain of paratyphoid, which was called paratyphoid D.

Pain in Renal and Vesical Lesions, by David Newman.—The nerve supply of the urinary tract is set forth with the aid of diagrams and provides the explanation of the wide area in which pain from disease of a portion of this tract may be found. The localization of pain in regions apart from the kidney has often led to errors in diagnosis, and it requires careful examination to determine the cause. When the pain is dull and persistent in the renal region, it is usually indicative of a slow and steady change in the size and condition of the renal parenchyma or in the pelvis of the ureter, due possibly to tuberculosis, nephritis, tumor, etc. When the pain in the renal area is acute, the condition is usually associated with obstruction to the outflow of urine through the ureter, as calculus, pyelitis, ureteritis, or some mechanical obstruction. One of the most important referred pains is that in the region of the unaffected kidney. Of almost equal importance and frequency is pain referred to the ovarian region, or to the region of the appendix.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

April 8, 1916.

Etiology of Stuttering, by John M. Fletcher.—By stuttering the author means that form of speech defect which is intermittent, is not associated with organic lesions, and is associated with certain mental states and emotions. Its symptoms include the physiological, the psychophysical, and the mental. It is concluded that its cause is mental and is associated with conditions of fear, anxiety, uneasiness, and self-distrust. Treatment should be educational rather than medical.

Spinal Anesthesia, by L. L. Stanley.—This method of anesthesia has proved of great value in the hands of the author in 280 cases. Where the abdominal viscera are not to be handled, no general hypnotic is given. Lumbar puncture is made with a suitably large needle in the region of the second to fourth lumbar spines and twenty-five minims of fluid is withdrawn into a glass syringe. This is detached and an equal amount of fluid is collected for Wassermann examination. Using the first fluid as the solvent, one and a half grain of tropacocaine, which is kept in sealed sterilized ampoules, is dissolved, and the fluid is reinjected. The patient is placed in the Trendelenburg position at an angle of ten to twelve degrees, with the head alone elevated on a pillow. Anesthesia is complete in about seven minutes. The method here outlined provides satisfactory anesthesia for about an hour, or a little over, and is almost free from danger or discomfort. The postoperative complaints infrequent and trivial in most cases. If air is excluded from the spinal canal, headaches are largely obviated. Convalescence was shortened, there were no cases of pneumonia, no lasting paralyses, and very little shock, in the author's cases.

MEDICAL RECORD.

April 8, 1916.

Phenomena Resulting from Fatigue and Shock of the Central Nervous System, by E. Murray Auer.—This paper is based on observations at the front in France and shows that the effects of nervous shock may be extremely varied. The conditions found included amnesia, insomnia, tremors, headache, tachycardia, loss of motor power, vasomotor disturbances, impairment of vision, auditory disturbances either of hypersensitive or hyposensitive nature. Practically all patients gave the history of earlier neurotic manifestations and the treatment consisted of isolation, absolute rest, corrective measures, and psychotherapy.

Acetonuria in Relation to Contagious Diseases, by Stephen H. Blodgett.—A "sore spot" two inches square over the pancreas is usually found in contagious diseases, and Blodgett undertook the investigation of 100 cases to determine whether or not there was acetonuria. One half the number were of scarlet fever and the others were of erysipelas, measles, whooping cough, diphtheria, and one case of tonsillitis. Of eighty-one cases with a complete records, fifty-one had vomiting, and of these forty-five had acetone in the urine; of the thirty cases without vomiting, twenty-one had acetonuria. Of sixty-one cases showing acetone, fifty had the sore spot, seven had general abdominal tenderness, and four had no tenderness.

The Acute Surgical Abdomen, by Thomas F. Lancer.—Thirty cases of acute abdominal disease are analyzed and the analysis seems to justify prompt operative procedure, even when an exact diagnosis cannot be made. Conditions to be excluded before exploratory laparotomy are referred pain in thoracic affections, especially in children; referred pain from spinal affections; visceral crises in tabes and the erythema group; typhoid fever; acute gastroenteritis; acute dilatation of the stomach; pyelonephritis; Dietl's crises in floating

kidney; inflammation of the abdominal portion of the vas deferens and sclerotic angina of the abdomen (Ortner's disease). The essential triad demanding operative exploration of the abdomen is muscular rigidity of the abdominal muscles, pain, and tenderness, and lastly a blood picture with a high total white cell count or a high percentage of polymorphonuclear cells.

April 15, 1916.

Arterial Degeneration, by Charles E. Nammack.—Causes are heredity, age, sex, alcohol, syphilis, acute rheumatism, acute infections, high living, and hard work. Overeating is of great importance, especially in America. Factors in the prognosis are the seat of the sclerosis, the stage of the disease, the complication, and the patient himself. The treatment is individualized, Turkish and Russian baths are to be condemned, constipation must be avoided, while drugs are unsatisfactory. The iodides are of service in syphilitic arteritis, while the nitrites are irregular and transient in action. The best measure for relief of high blood pressure is absolute rest in bed with limitation of diet. Morphine is invaluable in attacks of dyspnea coming on late in the disease, while radium and the high frequency current have their advocates.

Dilated Heart as a Sign of Early Apical Pulmonary Tuberculosis, by Max Grossman.—This sign has not been sufficiently emphasized up to date, as slight dilatation of the heart with diffuse apex beat at the fifth left intercostal space frequently precedes the earliest physical signs of incipient pulmonary tuberculosis. Dilatation may occur in apparently healthy individuals.

LANCET-CLINIC.

March 15, 1916.

Diagnosis of Lesions of the Stomach and Duodenum, by E. H. Beckman.—A carefully reported and well interpreted case history is held to be the most reliable means of diagnosis. Though much information is obtainable from the gastric analysis, it should be remembered that the degree of acidity depends on the patient's condition at the time, and may vary remarkably from day to day. The acid and ferment content may depend entirely on a rundown general state, and have no significance as to the presence of gastric disease. Absence of mucus is a diagnostic aid, signifying that a normal amount of acid may irritate the mucosa and cause the same symptoms as high acidity when mucus is present. Cancer and ulcer of the stomach are readily amenable to x ray demonstration. With a favorable posture and multiple plates, a permanent deformity of the duodenal outline, in involvement of this structure, can also usually be shown. Indirect signs, such as changes of tone, peristalsis, and motility, or temporary changes of contour due to spasm, are unreliable unless reflex causes can be eliminated by a reexamination after giving belladonna. Pain occurring immediately after food, especially with vomiting, indicates a severe contraction of the stomach due to reflex conditions and disease outside the organ itself. Periodical pain between meals, especially if relieved by food, points to duodenal or gastric disease. Constant pain, not affected by taking food, may or may not be due to gastric

disease. Continuous nausea is not typical of gastric, but of gallbladder disease. Pain in ulcer of the duodenum, pylorus, or pyloric end of the stomach usually occurs one to three hours after meals, and is relieved by food, water, saliva, almost invariably by alkalies, and often by absolute rest. The appetite usually remains good. In gastric ulcer the symptoms are less definite than in duodenal, vomiting is more likely, and the patient is apt to be thinner. Cancer of the stomach is in the majority of cases painless, and may be symptomless for a long time. Constant distress, anorexia, loss of strength and weight, anemia, and low acidity suggest cancer. The condition can be diagnosed extremely early with the x rays which should obviate many exploratory operations.

Proceedings of Societies.

MEDICAL ASSOCIATION OF THE SOUTHWEST.

Tenth Annual Meeting, Held at Oklahoma City.

The President, Dr. J. D. GRIFFITH, in the Chair.

(Continued from page 812.)

Nitrous Oxide-Oxygen Analgesia in Obstetrics: A Contrast.—Dr. F. K. CAMP, of Oklahoma City, concluded: 1. That the time of labor was materially shortened, owing to the fact that the pains were so often more frequent and stronger, and partially, at least, to the fact, that during the expulsive stage, the patient, feeling no pain, brought the secondary muscles of expulsion to their best work. 2. Perineal lacerations with nitrous oxide gas, when given by an experienced administrator, were less frequent. This was due to the fact that when the head was on the perineum, the gas could be increased, temporarily slowing the contractions, and giving the tissues time to stretch. Doctor Davis had stated that in forty-four primiparæ to whom gas was given in the hospital, twenty showed some degree of laceration, or forty-five per cent., while with sixteen primiparæ without gas, there was some degree of laceration in twelve cases, or seventy-five per cent. 3. In his series of twenty-five cases, all the babies cried as early and as vigorously as those who did not receive the gas, and showed no signs of anesthesia. 4. Convalescence in those patients was in every way smoother and quicker than he had ever seen in a corresponding series of cases. More patients left the hospital under ten days after delivery than over twelve. Multiparæ were generally out of bed on the fifth day; primiparæ up in a chair on the sixth or seventh day. Doctor Davis attributed the rapid convalescence to the absence of shock under nitrous oxide gas analgesia. 5. The expense of the gas to produce the desired analgesia should not enter seriously into consideration, as in his series of cases it did not exceed ten dollars an hour, while the average time of giving the gas did not exceed three hours. 6. Unlike twilight sleep, which its advocates stated, should be used only in a hospital, nitrous oxide oxygen analgesia might be administered in the home, and portable gas machines for obstetrical work were now being manu-

factured. In these days of automobiles, the doctor had little excuse for not adding this apparatus and this method to his armamentarium.

Dr. S. H. LANDRUM, of Altus, Oklahoma, would like to ask the essayist if this method of anesthesia was used in cases in a hospital or in general practice?

Doctor CAMP said that twenty-four cases were in hospital practice, at the Presbyterian Hospital in Chicago, and one case in general practice.

Dr. WILLIAM A. FOWLER, of Oklahoma City, thought Crile had proved to the medical profession the bad effects of shock; that shock might be caused by pain and by the fear of pain; that there was actual cell degeneration in shock from those causes, so there was a real need for some agent that would lessen pain, that would produce analgesia and lessen the memory of pain or produce amnesia. If patients could escape that, they were less likely to have puerperal sepsis, postpartum hemorrhage, and the other things that caused mortality and morbidity. While he did not doubt the statements of Gauss and Krönig, he did not believe that they could get the same results with scopolamine and morphine anesthesia. They ought to lay down rules for the use of these agents, as they ought not to be used by people who were not skilled in giving them.

Dr. D. A. MYERS, of Lawton, Oklahoma, said that Doctor Fowler was evidently an enthusiast over twilight sleep, although he did not say so; he contended that nitrous oxide should not be turned over to the average practitioner. He wanted to say to him, they had no average practitioners in the Medical Association of the Southwest. He contended that any man who practised medicine in the southwestern States and had listened to Doctor Camp's paper could get some good out of it. Doctor Camp believed that they would have fewer lacerations of the perineum from the use of twilight sleep because it retarded the pains. His advice was not to let the head be born when the woman had a pain if they could help it, then they would not need nitrous oxide or anything else. They talked about anesthesia; it occurred to him that nature provided for local anesthesia. Had they not noticed that women in the final stages of labor got into an anesthetic condition? They certainly did. They noticed a difference in the mental attitude of the women during the puerperal period.

Dr. S. J. WOLFFERMANN, of Fort Smith, Arkansas, wished to report a fatal case in a member of his own family. The patient was thirty-two years of age, was given nitrous oxide in New York by one of the best anesthetists there, for the purpose of undergoing an operation for a peritonsillar abscess, and died in a minute and a half from respiratory failure.

Prevention and Treatment of Deformities.—

Dr. B. BELOVE, of Kansas City, Missouri, discussed two kinds of prevention: Deformities following diseases and accidents and deformities developed during school life. 1. The seat of the child should not be longer than the length of the thighs, otherwise the child's limbs were held in extension, which was uncomfortable and might result in various disturbances of locomotion. The back of the chair

should not be above the shoulders, with an arch whose convexity was to support the natural, so called physiological curve of the back; and in that way adequate support would be given to the back muscles. 2. The back of the seat should slope slightly downward, forming an angle of 100 to 110°. The back of the seat should be movable so as to fit the size of each pupil. 3. The distance from the top of the seat to the top of the table should be one eighth the height of a girl and one seventh that of a boy. This difference with reference to seat was due to the fact that boys had longer legs in proportion to height than girls. 4. The writing table should be at a height proportionate to the height of the person sitting. It should be shifted up and down to make adjustment possible.

Those who had had experience in orthopedic work knew the unpleasant surprises that were in store for those who thought that a deformity after being cured might be left to fate. Such patients should be under observation at frequent intervals and should be watched as they grew to adult life, and everything in their environment should be so constructed as to reduce to a minimum the chances of recurrence.

Cerebral Syphilis.—Dr. JOHN W. DUKE, of Guthrie, Oklahoma, stated that syphilis of the brain might be displayed in the role of any disease of the brain, its coverings, or its constituents. Fortunately the cerebrospinal fluid and the blood serum could be examined now and the fact ascertained whether or not the disease was due to syphilis. In many cases the diagnosis could be made with certainty from a consideration of the symptoms and the way in which they developed and grouped themselves, but in a large number of cases of cerebral syphilis, they could only guess at the nature and cause of the disease, therefore the laboratory must be relied upon for a definite diagnosis. This was especially true of those cases that were diagnosed as epilepsy, headache, neurasthenia, hysteria, and unclassified mental disease.

He had never seen a patient with brain syphilis that did not complain of headache, therefore this was one symptom that was always present. This pain was described by every conceivable adjective such as agonizing, terrible, boring, throbbing, and splitting. Only absolute rest gave the patient any relief. There was greater agreement of relief as to what constituted proper treatment of syphilis today than there had ever been before. It consisted of salvarsan and mercury, begun at the earliest possible moment after the infection and kept up until all evidence of the disease had ceased. The physician's duty did not end even when this had been accomplished, but he should watch that no evidence of the disease reappeared for months and even for years. For two or three years after recovery seemed to be complete, an occasional Wassermann test of the blood should be made. He wished particularly to urge the importance of early treatment. The old idea of waiting until the appearance of the secondary symptoms before beginning treatment, unfortunately cost a great many lives. Another important fact to be remembered was that the potassium iodide was not an antisiphilic remedy. There

were two substances that killed the spirochete, arsenic and mercury.

Diagnosis and Medical Treatment of Gastro-duodenitis.—Dr. F. B. ERVIN, of Wellston, Oklahoma, stated that the nervous phenomena in these cases were so very prominent that many had at first been diagnosed hysteria, neurasthenia, and other nervous diseases. They had even been diagnosed as gallstones. The patient complained of general weakness, occipital headache, hot flashes, numbness of limbs, nausea with occasional vomiting, disturbance of vision, pain in the region of stomach and duodenum, from one to two hours after eating, belching considerable quantities of gas, palpitation of the heart and many similar symptoms. Upon physical examination, the patient frequently presented a pale, rather sallow, listless expression; the heart action in the incipient stage was usually fairly good, with the exception of being easily irritated; there was some tenderness in the region of the stomach and duodenum; kidney action was increased at the time of attacks of pain; acidity of the urine was increased; bowels in the first few months were usually constipated; blood pressure was slightly lowered; superficial reflexes were increased considerably and the deep reflexes slightly.

The treatment of these cases was largely dietetic, with a small amount of medicine the first few weeks. The medicinal treatment should be so adjusted as to check and change the too acid condition of the stomach and return it to normal. A mild alkaline preparation should be given every two or three hours for a few days. At the same time strychnine should be given three or four times daily. A gentle laxative should be used every two to four nights. No severe purgative should be prescribed at any time, for the reason that it irritated and aggravated the condition. Strychnine had an excellent tonic action upon the muscular striae of the intestinal wall when given three or four times a day. The length of time for medicinal treatment would depend upon the stage of the disease and the reactive power of the patient. The diet should be largely carbohydrates and fats, so as to place as little work as possible upon the stomach and duodenum. It should be taken every three or four hours for a time in small quantities. Cream, butter fat, toasted light bread, and such foods were easily digested. No fried foods or acid should be allowed.

Tracheobronchoscopy and Esophagoscopy.—Dr. D. L. SHUMATE, of Kansas City, Missouri, stated that the majority of the foreign bodies were found in the right bronchus, on account of the anatomical features, it being larger and more in direct line with the trachea. He had used a general anesthetic in all his bronchoscopies, but had done considerable work in the esophagus under local or no anesthesia in adults. In removing specimens for the microscope in malignant growths of the esophagus, the patient was generally thin and emaciated and used to having people poke things down his throat, so they could usually remove a specimen with no trouble. The same applied to strictures of the esophagus. He had done all his work through the mouth, not finding it necessary to do tracheotomy. Under a general anesthetic, he used a dorsal position, with the patient's head held off the

table by an assistant. He had found that the quicker he operated, the better condition of the patient, and the easier to remove the foreign body. He had had two cases of safety pin in the esophagus, one in a grown woman, the other in a seven months' old baby. A twenty-five cent piece in the middle third of the esophagus, he failed to find the first time he tried, but got it on second trial. He saw a half dollar disappear into the stomach of a six year old boy, which was passed in stool five days afterward. He saw a peach seed do the same, except that it passed from the esophagus before the patient had entirely lost consciousness from the anesthetic, but was unable to tell him until afterward. Of course he failed to find the seed, for it was no longer in the esophagus. He had had big buttons, little buttons, button hook, plum seed, pieces of tin, and many foreign bodies in the esophagus. He had had some thirty cases all together, and he felt that he had only begun to acquire the skill and knowledge of doing good work. He had had only the two deaths that he reported.

Trachoma.—Dr. DANIEL W. WHITE, of Tulsa, Oklahoma, stated that after proper preparation of the patient for operation the eyelid was everted, the margin grasped by author's fixation forceps, and the eyelid was everted again; it was now ready for incision. This incision was very important, as failure of correct placing meant postoperative deformity and dissatisfaction. He began in the centre with a sharp scalpel down through the subareolar tissue to the inner and outer canthus. He introduced the mattress suture in the centre of the ocular conjunctiva, and continued the dissection until the outer and inner canthus was reached. The outer and inner canthus dissection should be left to the last, as the hemorrhage from the arteries at this point was profuse. That hemorrhage was best controlled by hot cotton compresses, with mosquito hemostats and adrenaline. He introduced the mattress sutures into the outer and inner canthal dissection, and was then ready to excise the cartilage. He introduced his wide thin rubber horn between the conjunctival flap and the posterior surface of the tarsal cartilage, started the excision with a sharp scalpel, making sure that the horn protected the eyeball, completed the excision with a heavy curved scissors, dissected the muscle and tissue from the inner surface of the cartilage and removed it in its entirety. He was then ready for the introduction of the sutures in the lid. The sutures properly placed, constituted an important step in the operation; starting at the centre, he introduced the first suture through the transverse fold; the second thread of the double armed suture was then introduced through the strip of cartilage left at the peripheral margin of the lid, at the same vertical point as the first suture. The other sutures were introduced in like manner, and all sutures were placed with preexisting trachomatous deformities (entropion, ectropion, canthosis) well in mind with a view to their correction.

He tied these sutures on sanitary cigarette drains extending from the inner to the outer canthus, or upon rolled cotton aseptized with argyrol, ten per cent. solution. All sutures should be sterile and kept so as to prevent formation of stitch abscesses. He removed the stitches on the third day, or sooner

if necessary, rolling the suture out, thereby lessening the pain of the procedure, and dusted the external surface of the lid with a sterile powder.

Can an Early Diagnosis of Pulmonary Tuberculosis Be Made?—Dr. S. K. WOLFERMAN, of Fort Smith, Arkansas, said careful auscultation was most important. The chest must be bare, and if in a male patient and hairy, olive oil or petrolatum must be applied to the chest to eliminate extraneous noises. The stethoscope was first placed in the axilla about on the nipple line. This area, if not tuberculous, gave the normal breath sounds for that individual chest. After that, if he heard fine crepitant rales at the end of inspiration or at the end of inspiration following a cough, and these rales were persistent and localized in repeated examinations, he then had a most suspicious finding. If such rales were found, the patient was again examined at intervals of from three to ten days, to establish persistency and localization. These two points, persistency and localization, he believed, distinguished the tuberculous rales from rales due to other causes. These rales, together with the increased whispered voice sounds, were the most important auscultatory findings in early tuberculosis. Similarly a prolonged expiratory murmur was suspicious, as in bronchial breathing. An enlarged bronchial gland or an enlargement in the mediastinum might give a transmitted cogwheel or interrupted inspiration. If confined to the mediastinum, he might upon careful examination, obtain the Eustace Smith head retraction murmur, pathognomonic of an enlarged mediastinal gland. The clinical and laboratory findings being those of early tuberculosis then enabled him to make a diagnosis of tuberculous mediastinitis.

First, upon the routine tuberculous treatment of fresh air, regulated rest, good diet, some with, some without tuberculin, these patients recovered. That was, the symptoms all disappeared and they gained weight in surprising amounts. One man, a minister, who weighed 147 pounds at the beginning, gained twenty-two pounds in seven months. Secondly, upon a recent visit to St. Louis, where he was formerly physician on the Municipal Tuberculosis Clinic, he found six patients, diagnosed as having tuberculosis by his predecessor, Doctor Henske, or himself, who had neglected their treatment and were now being cared for at the same dispensary with positive sputum. He firmly believed that if he found trace of others, there would be more with positive sputa, but he believed they were treated at other tuberculosis clinics.

Can the Mortality of Tonsillitis Be Reduced?

—Dr. THOMAS L. HIGGENBOTHAM, of Hutchinson, Kansas, stated that if throat surgeons were to rank in efficiency with abdominal surgeons, they ought to be able to give immediate assistance. Tonsillectomy must become an emergency operation. It was the duty of the throat surgeon to prevent every complication of tonsillitis; the responsibility for the present high death rate from tonsillitis lay with him. The method of treatment was accepted by physicians and laymen alike. Six years ago, he laid aside the symptomatic treatment of tonsillitis. He decided to defy tradition and use common sense. He had removed the infection while it was confined to the tonsils, and the complications did not occur. This

treatment met with the demand. It was as great a factor in saving lives as the removal of an inflamed appendix. The much feared hemorrhage and extension of the infection at the operation site failed to materialize. In his experience hemorrhage was caused by faulty technic.

This treatment meant no added danger to the patient's life. As in other surgical diseases it should be applied as early as possible, before the patient's heart or kidneys were irreparably damaged, and before the patient was overcome with toxemia. It should be applied before the patient was suffocated with secretions and membranes from peritonsillar abscess and middle ear infections.

In conclusion, he wanted to emphasize the fact that eliminants, tonics, and local applications were only adjuncts in the symptomatic treatment of tonsillitis. They had no direct action on the infected focus. They did not cure the disease. They did not sterilize the infected site. They did not prevent the spread of the disease to others. They did not prevent chronic tonsillitis. They did not prevent complications, and they had no effect on the disease, except to reduce the severity of the symptoms.

Letters to the Editors.

ADVICE TO YOUNG PHYSICIANS.

WILMINGTON, N. C., April 11, 1916.

To the Editors:

A goodly number of articles have been written recently dealing with the future of medicine and comparing the incomes of physicians with those of other trades and professions. Many theories have been advanced to account for the small earnings of physicians and some writers appear not to be very optimistic regarding the future of medicine as a profession. The thought naturally presents itself, Are we necessary to society, or are we parasites on the body politic?

Starting out with the premise that we are a necessity, it then naturally follows that we as a class have a right to exist. On the other hand, if we have lost our ancient prestige, does it not follow that we have been guilty of some error?

From time immemorial medicine has been hedged around with mystery, and the profession, rank and file, has encouraged rather than discouraged this mysticism. But as time has passed, thinkers, both lay and professional, have laid bare many of the mysteries, and as is usual in such cases, they have gone to extremes. On the other hand, the masses of the present day are better educated and do not have the blind faith in the doctor that their ancestors had, realizing that he is not possessed of divine attributes and has no monopoly of knowledge.

The tyro entering the practice of medicine thinks that all he needs is a working knowledge of the subject, and that when he diagnoses and prescribes he has done his duty. He will find, though, before he has gone very far on his professional journey that patients expect more. The tired and discouraged mother wants sympathy for herself as well as treatment for the baby; the father working for a small wage needs encouragement. The young clerk just starting out, with perhaps a widowed mother and young brothers and sisters to provide for, wants advice as to how to improve his mental as well as his physical condition. It is necessary to make a study of patients. Those that come in the early years of practice are usually poor, but many are of good material, and it is well to remember that the peddler of today may be the prosperous merchant of tomorrow. The American people are proverbially restless and are ever changing, but this has its good sides. If it were not for this the beginner would have to wait an interminable time to build up a paying practice. The thing is to know how to anchor the drifters, and how to convert

the poorest patients into valuable assets. If we have the true missionary spirit we can do it thereby helping humanity and incidentally helping ourselves. Let us take a deep personal interest in our patients. Have them feel that we want them to prosper and enjoy good health. Ill health begets poverty and poverty is the handmaid of ignorance. We must encourage them, especially the young men and women, to improve their minds so that they can obtain employment paying better wages. We should encourage saving. We must give them a warm welcome when they seek our advice; teach the members of our household to be courteous to all comers, irrespective of creed or nationality. Many a good patient has been lost irrevocably by being treated coldly by some member of a doctor's household, and thereafter he damns all doctors. Answer calls promptly, and keep office hours when possible; for an office kept when you are young will keep you in your old age. Let your patients feel that you aim to give them the very best service within your power, but that they must have some consideration for you—that you cannot give good service unless you have the proper amount of rest and diversion. When you get tired and discouraged, remember that the proper antidote for fatigue is rest, and that after a good rest many a problem melts away like a snow ball in a summer's sun.

Keep a strict account of your earnings. In this way you will be enabled to arrive at your average monthly income and can cut your cloth accordingly. Spend less than you make so that you can lay up a surplus for that time when you will be a "has been." Old age is inevitable, but few professional men seem to realize it.

Dull periods will come now and then, but try so to arrange your affairs that the surplus created in the fat months will take care of the lean ones. Pay attention to your personal appearance and keep your vehicle spick and span. Even your poorest patients take a pride in you, and strangers judge a man by his appearance. Nothing is more fatal to success than slovenly habits. Take an interest in your town and county, and work for good roads, good schools, good water, and sewage; and cooperate with your local board of health. Physicians are proverbially negligent about these matters and the public resents it.

Make a study of the diseases peculiar to your section, and do not get envious when a Stiles or a Goldberger makes a discovery you perhaps should have made yourself. As we said in the beginning, if physicians are a necessity, then there is no valid reason why one who has spent a goodly sum of money and many hours in hard work, who is expected to respond to the calls of others, day or night, rain or shine, is not entitled to a fair return on the investment. Those who argue otherwise are either new to the business; or have no thought of the morrow.

It is the opinion of the writer that every physician is the architect of his own fortune, and if he is not making a fair living it behooves him to take stock of himself and if necessary dissect to the bone; there is some weak point elsewhere. Few of us were destined to be a Mayo or an Osler, but there is a place for all. Try to find that place and fill it.

CHARLES P. BOLLES, M. D.

THE TREATMENT OF PSORIASIS.

CINCINNATI, OHIO, April 16, 1916.

To the Editors:

In the April 1st issue of the NEW YORK MEDICAL JOURNAL my attention was called to a short article entitled, Have We Found a Remedy for Psoriasis? The article mentions that the hypodermic use of emetine hydrochloride gave very satisfactory results in three cases of this disease.

In May, June, and July of last year, I had occasion to give this drug a very careful clinical test in a series of ten cases of psoriasis. These cases were all stubborn, three being cases of palmar psoriasis. I gave from one half of a grain to one grain hypodermically every third or fourth day, each patient receiving from six to ten injections in all. In a number of cases I obtained the physiological effect of the drug, which was quite unpleasant for the patient for a day or two.

In not one case did I notice any marked improvement in the disease or any material change in the individual lesions. From my own experience I would say decidedly no to the question, Have we found a cure for psoriasis?

C. J. BROEMAN, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Practical Treatise of Infant Feeding and Allied Topics. For Physicians and Students. By HARRY LOWENBURG, A. M., M. D., Assistant Professor of Pediatrics, Medico-Chirurgical College of Philadelphia; Pediatricist to the Mt. Sinai Hospital; Pediatricist to the Jewish Hospital; etc. Illustrated with 64 Text Engravings and 30 Original Full Page Plates, 11 of which are in Colors. Philadelphia: F. A. Davis Company, 1916. Pp. xii-382.

This is the latest addition to the enormous number of books dealing with the subject of infant feeding, and is based largely on the author's personal experience. The book is clinical and practical, and mere theory is wisely omitted; the result is a volume which should be useful to the practising physician and popular with the medical student. The author has the faculty of expressing himself clearly and without undue circumlocution. We are glad to see that the importance of breast feeding is duly emphasized; it seems to the casual observer that this method of feeding infants should have occurred to most people without special instruction on the subject, but there are many, both lay and professional, who seem to think that Nature's method is old fashioned, and that modern civilization should be content with nothing less than test tubes, sterilizers, chemistry, calories, and mathematical formulae. The subject of artificial feeding is sensibly handled, and the more cumbersome and complicated methods are wisely omitted. There are chapters on: Infantile atrophy, rickets, scurvy, vomiting, constipation, diarrhea, spasmophilia, and the exudative diathesis. Dr. John B. Deaver adds a valuable chapter on pyloric obstruction, which will be read with both pleasure and profit by all whose practice brings them in contact with this condition. The book concludes with a discussion of such topics as lavage, enema, colonic irrigation, nasal feeding, gavage, hypodermoclysis, and feeding during the infectious diseases and nephritis. We have noted a few misprints which can be corrected in subsequent editions; and we suggest that prescriptions be written in either Latin or English, and that either the metric system or the old system of weights and measures be used, and not various combinations of these methods.

Reports on Questions Connected with the Investigation on Nonmalarial Fevers in West Africa. Yellow Fever Commission (West Africa.) Yellow Fever Bureau Bulletin, Supplement Volumes I and II; Bulletin (Including Dengue and Pappataci Fever, Volume III, No. 4. Liverpool: The University Press of Liverpool, 1915. (Price, Volumes I and II, Twenty-five Shillings, Volume III, Three Shillings.)

These volumes contain reports from the investigators working under the Yellow Fever Commission, and from other medical men, on the subjects of yellow fever, dengue, and pappataci fever. Experienced students do not need to be told that it is in such reports as these that the most valuable material is to be found. The present volumes represent an enormous amount of the most painstaking work, both clinical and pathological; and it is in such work alone that the hopes of solving the problems connected with the diseases in question lies. These reports should be accessible to readers in all medical libraries.

Elementary Bacteriology and Protozoology. For the Use of Nurses. By HENRIET FOX, M. D., Director of the William Pepper Laboratory of Clinical Medicine in the University of Pennsylvania. Second Edition, Revised and Enlarged. Illustrated with Sixty-eight Engravings and Five Colored Plates. Philadelphia and New York: Lea & Febiger, 1916. Pp. 251. (Price, \$1.75.)

This is a text-book of approximately a dozen text-books for nurses compiled by three publishers. The present work is the second edition of the treatise, just published in order to bring the book up to present day information, for which purpose the author states it has been found advisable to add details concerning general disinfection, the transmis-

sion of infection, especially in regard to diseases spread by insects, as well as the peculiar phenomena of hypersusceptibility.

Doctor Fox has produced an admirable treatise for the purpose for which the book is intended, namely, for a better understanding by the nurse of the general subject of infection, information every nurse should possess if she is to realize her greatest usefulness in combating the spread of preventable diseases. While much of the text is informative and therefore general in nature, yet even this is knowledge the practitioner will find it well his nurse should possess, particularly if she has anything to do with securing cultures and other specimens for laboratory purposes.

Throughout the book, however, the author constantly refers to the practical phase of his subject by giving the accurate methods of disinfective technic, the requirements for which are made plain by the characteristics of the particular bacilli under discussion.

The work is almost an ideal textbook on the subject and should be in the possession of every practising nurse.

The Physiology of the Amino Acids. By FRANK P. UNDERHILL, Ph. D., Professor of Pathological Chemistry, Yale University. New Haven: Yale University Press; London: Humphrey Milford (Oxford University Press), 1915. Pp. 169.

This excellent book is the first conspectus to treat adequately of the roles played by the aminoacids in digestion. The study of alimentation demands an informed mind concerning recent advances in problems associated with nitrogenous metabolism. Doctor Underhill's study of the present status of experimentation in this field is a noteworthy contribution to the subject. He presents a brief statement of the proteins and their derivatives, the aminoacids. He discusses bacterial activity in relation to the aminoacids and digestion. The absorption of proteins and aminoacids is given extended treatment, and finally is analyzed the most recent work relating to the aminoacids as foodstuffs and their specific role in nutrition and growth.

The little book is admirably suited to the needs of every earnest student of alimentation. If anyone not thoroughly informed with regard to the latest experimental developments, wishes to prepare himself to meet the problems of medical practice in a thoroughly intelligent manner, it is well worth his while to read and reread these brief chapters. The book is helpful and suggestive, and like the stuffs of which it treats, supplies nutrition and stimulus in highly condensed form.

Surgical Operations with Local Anesthesia. Second Edition. By ARTHUR E. HERTZLER, A. M., M. D., Ph. D., F. A. C. S., Surgeon to the Halstead Hospital, Kan., The Swedish Hospital, Kansas City, Mo., and to the General Hospital, Kansas City, Mo. New York: Surgery Publishing Company, 1916. Pp. xiii-312.

The second edition of this work has been expanded to include, not only minor operations, but also those major ones which can be performed under local anesthesia. It is purely practical, all history and theory having been omitted, and the numerous illustrations make very plain the various points of technic. In its present form the book will appeal to the general surgeon who more and more is learning the great value of local anesthesia, especially with novocaine. It is only by the pen of one experienced in the work that a practical book can be written, as the ultimate object is a really painless operation and not one that can be merely endured. As local anesthesia is still in its infancy, a work of this sort from one with broad experience is most welcome and will help very much to popularize a procedure which deserves wider acceptance.

Lehrbuch der Grosseinmalige (Handbuchen.) Neue Folge. 1915. Bonn: A. Marcus & E. Webers Verlag (Dr. jur. Albert Ahn), 1915. Pp. xviii-246.

These collected papers are divided into four parts, the first dealing with bacteriology, protozoology, and foodstuffs of humans, the second with the struggle against diphtheria, the third with historical and general remarks on the origin and treatment of disease, the fourth with the campaign against tuberculosis. Naturally the papers have to do mainly with the serum and vaccine treatment, of which von Behring is a distinguished advocate.

Interclinical Notes.

Speaking of us laboring men, an engineering authority writes in the New York *Evening Post*, according to *Collier's* for April 1st, of a conversation he had with a very competent Belgian workman whom he had known in the old country and afterward in Pittsburgh. The immigrant had been here some two years, and made this comparison: "In Belgium I had my little home in the country, surrounded by green fields and everything was pleasant. In Belgium my children respected their parents, kissed the hands of my wife and myself, and addressed us as 'Father' and 'Mother.' I had my friends. We had our fête days, and life was pleasant. In this country I receive three times the wage. I live in a dark flat in the dirty city of Pittsburgh. My children treat me with contempt; they call my wife 'Mom' and me 'Pop.' I have my friends, but I must meet them in saloons reeking of beer and liquors; my sole amusement is limited to moving pictures; I have none of the pleasures of life; therefore I will go back to Belgium." Is this why, inquires *Collier's*, some Americans oppose the notion of ever fighting for their country?

* * *

Tuberculosis and Industry from the Standpoint of the Manufacturer, is a thoughtful article by Jonathan Godfrey in the *Journal of the Outdoor Life* for April. Mr. Godfrey undoubtedly did some studying, direct and from books, also some thinking before he put his thoughts on paper. This is an excellent example for other wealthy Americans. One millionaire statesman has recently repeated the ancient theory that bad cooking is the cause of alcoholism. We doubt if it produces the alcoholism of the clubs and great Fifth Avenue hotels; or the notorious alcoholism of first class cooks. Two of the most chronic cases of alcoholism we have ever seen were those of the "head vegetable" of a famous uptown hotel and of his wife and assistant. Lord! how he could cook spaghetti, before the drinks began to come too fast. We had the honor of a calling acquaintance with this couple and were permitted occasionally to help in the production of some culinary miracle.

* * *

If people must have one cause and one only for alcoholism, let them attribute the vice or dyscrasia or whatever it is, to *ennui*. We believe that the moving pictures have diminished drinking. People greatly interested in their work are seldom intoxicated. It is the principal danger of the idle.

* * *

After reading The Swiss Soldier, by Jean Martin, in the *Outlook* for April 5th, we believe that if we had the same system here, any nation thinking of attacking us would ponder long and deeply first, while the results on the national physique and the national manners as well would be most desirable. Under Universal Military Training, General Wood is freely quoted to the same effect. A picture of the new police force glee club gives the remarkable effect of a meeting of priests. Well, there was a time when the priests were police and doctors too, also the officers of the army, if memory serves us.

* * *

A terrible line from *Leslie's* for April 6th is: "The majority of the regular soldiers—from 20 to 25 years of age—have been killed." It comes from an article, *Saving France's Broken Men*, by C. H. Tyler, highly interesting, if somewhat gruesome, and handsomely illustrated.

* * *

The critic on one of the morning papers is greatly impressed by Galsworthy's *Justice*, but the extraordinary word into which he coins his admiration is "untheatrical." Since *Justice* was written for the theatre, and no proper idea of it is to be had elsewhere, we should imagine that a full theatrical quality was altogether to be desired. If we were speaking of a surgeon operating, we should consider "theatrical" a reproach; in speaking of a play it is hard to find a more complimentary epithet. Perhaps when the critic in question was a child, his father may have accused the pastor of being theatrical, and ever since, the word has been associated in his mind with qualities undesirable in plays as well as in books and sermons. As well accuse the music of Wagner of being "operatic."

Meetings of Local Medical Societies.

MONDAY, May 1st.—Clinical Society of New York Throat, Nose, and Lung Hospital; German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association; Clinical Society of the New York Polyclinic Medical School and Hospital; West Side Physicians' Economic League.

TUESDAY, May 2d.—New York Academy of Medicine (Section in Dermatology); New York Neurological Society; Clinical Society of the West Side German Dispensary and School for Clinical Medicine; Amsterdam City Medical Society; Lockport Academy of Medicine; Society of Alumni of Lebanon Hospital, New York; Syracuse Academy of Medicine; Buffalo Academy of Medicine (Section in Surgery); Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Yates.

WEDNESDAY, May 3d.—Brooklyn Society for Neurology; Society of Alumni of Bellevue Hospital; Harlem Medical Association; Bronx Medical Association; Elmira Academy of Medicine; Psychiatric Society of New York; Society of Alumni of St. John's Hospital, Brooklyn (annual); Schenectady Academy of Medicine.

THURSDAY, May 4th.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society; Practitioners' Club, Buffalo; Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, May 5th.—New York Academy of Medicine (Section in Surgery); New Utrecht Medical Society, Brooklyn; New York Microscopical Society; Gynecological Society, Brooklyn; Manhattan Dermatological Society; Practitioners' Society of New York (annual); Corning Medical Association; Saratoga Springs Medical Society (annual); Society for Serology and Hematology, New York; Alumni Association of Roosevelt Hospital (annual).

SATURDAY, May 6th.—Benjamin Rush Medical Society, New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending April 12, 1916:

Anderson, Thomas B. H., Assistant Surgeon. Relieved from duty in plague suppressive measures, New Orleans, La., and ordered to proceed to the Marine Hospital, St. Louis, Mo. **Bahrenburg**, L. P. H., Surgeon. Authorized to present a paper on vital statistics before the school for health officers, at the University of Texas, Galveston, Texas, May 12, 1916. **Collins**, G. L., Surgeon. Ordered to proceed to the Marine Hospital, Baltimore, Md., when necessary for the examination of patients or to perform certain operations. **Francis**, Edward, Surgeon. Detailed to deliver an address on the prevention of malaria at the Teachers' Institute, Frogmore, St. Helena Island, S. C. **Frost**, W. H., Passed Assistant Surgeon. Granted three days' additional leave on account of sickness, from April 8, 1916. **Knox**, H. A., Assistant Surgeon. Directed to report to the chairman of the Board of Examiners at the Bureau, Washington, D. C., April 25, 1916, for examination to determine his fitness for promotion to the grade of Passed Assistant Surgeon. **McCoy**, George W., Surgeon. Granted four days' leave of absence en route under Bureau orders of April 1, 1916. **Mullan**, E. H., Passed Assistant Surgeon. Detailed to attend a meeting of the Society for the Study of Mental Defectives at New York, N. Y., April 17, 1916. **Pierce**, C. C., Senior Surgeon. Authorized to attend a meeting of the State Medical Association, Galveston, Texas, May 9-11, 1916, to present an address on typhus fever; also to deliver an address on May 13th before the school for health officers at the University of Texas, on the suppression of epidemics.

Rucker, W. C., Assistant Surgeon General. Ordered to proceed to New York on April 21, 1916, to participate in the discussions of a paper on sanitation of railway cars. **Sayers, R. R.**, Assistant Surgeon. Directed to proceed to Greenville, S. C., for duty in studies of rural sanitation. **Schereschewsky, J. W.**, Surgeon. Authorized to attend a meeting of the committee on industrial hygiene, at New York, N. Y., April 17, 1916. **Smith, F. C.**, Surgeon. Ordered to proceed to Washington, D. C., to take part in a conference between representatives of the El Paso and Southwestern Railroad Company and the Government, on the water rights at Fort Stanton; also to attend a meeting of the National Association for the Study and Prevention of Tuberculosis, May 11-12, 1916. **Stiles, C. W.**, Professor. Authorized to deliver an address before the Cleveland Medical Society during the present month. **White, M. J.**, Surgeon. Detailed to attend a conference of local health officers at Rosedale, Kansas, April 24-29, 1916, and to deliver a series of addresses on Public Health. **Wilets, D. G.**, Assistant Epidemiologist. Directed, in connection with studies on pellagra, to visit the colony farm of the Georgia State Sanitation when necessary. **Williams, C. L.**, Assistant Surgeon. Directed to report to chairman of a board of examiners at New Orleans, La., April 26, 1916, for examination to determine his fitness for promotion to the grade of Passed Assistant Surgeon.

Boards Convened.

Boards of commissioned medical officers convened to meet for the examination of certain assistant surgeons to determine their fitness for promotion to the grade of passed assistant surgeons, as follows: Bureau, Washington, D. C., April 25, 1916, detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Assistant Surgeon General W. C. Rucker, member; Surgeon C. H. Lavinder, recorder. New Orleans, La., April 26, 1916, detail for the board: Surgeon R. H. Creel, chairman; Passed Assistant Surgeon French Simpson, member; Assistant Surgeon S. L. Christian, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending April 22, 1916:

Allen, William H., Captain, Medical Corps. Directed to report in person to the commanding officer of the Presidio of Monterey, Cal., for duty with Ambulance Company No. 2. **Banister, William B.**, Lieutenant Colonel, Medical Corps. Relieved from duty at headquarters, Central Department, to take effect at such time as will enable him to comply with this order, and will proceed at the proper time to San Francisco, Cal., and take the transport to sail from that place on or about August 5, 1916, for Hawaii, and upon arrival at Honolulu, will report in person to the commanding general, Hawaiian Department, for assignment to duty. **Clark, Albert P.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, effective on July 31, 1916, and will then proceed to the United States, and upon arrival will report for further orders in accordance with General Orders No. 80, War Department, 1914; will proceed to Hot Springs, Ark., and report to that post for duty. **Craft, Edgar D.**, Captain, Medical Corps. Relieved from duty with Ambulance Company No. 2, and upon his relief from treatment at the Letterman General Hospital, the Presidio of San Francisco, Cal., will report in person to the commanding officer, Fort McDowell, California, for duty. **Dowdle, Edward**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Ontario, New York, and report to the commanding officer of that post for duty during the illness of Captain Daniel F. Maguire, upon whose return to duty, First Lieutenant Dowdle will return to his home and upon arrival report to the adjutant general of the army. **Falisi, J. Vincent**, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to the Army and Navy General Hospital, Hot Springs, Ark., and report in person to the commanding officer of that hospital for duty. **Little, William L.**, Major, Medical Corps. Detailed for duty at Oglethorpe Camp, May 3 to August 8, 1916. **Lowe, Thomas S.**, First Lieutenant, Medical Reserve Corps. (Continued on page 865 to the Walter Reed General Hos-

pital, Washington, D. C., and report to the commanding officer for observation and treatment. **McKnight, John R.**, Captain, Medical Corps. Relieved from duty in the Philippine Department, to take effect August 5, 1916, and will then proceed to the United States, and upon arrival report for further orders in accordance with General Orders No. 80, War Department, 1914; will proceed to Fort Benjamin Harrison, Indiana, and report at that post for duty. **Reynolds, Frederick P.**, Lieutenant Colonel, Medical Corps. Relieved from duty in the Hawaiian Department, to take effect August 9, 1916, and will then proceed to the United States and after arrival, and upon expiration of such leave of absence as has been or may be granted him, will proceed to Chicago, Ill., and report in person to the commanding officer, Central Department, for duty as assistant to the surgeon and sanitary inspector of that department. **Robinson, Carl M.**, First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in that corps is accepted by the President, to take effect April 17, 1916. **Siner, Joseph L.**, Captain, Medical Corps. Relieved from duty in the Hawaiian Department, effective on July 2, 1916, and will then proceed to the United States, and upon arrival report for further orders in accordance with General Orders No. 80, War Department, 1914; will proceed to Fort George Wright, Washington, and report at that post for duty. **Wolfe, Edwin P.**, Major, Medical Corps. Now on detached service in the Southern Department, is assigned to temporary duty at the base hospital at Fort Bliss, Texas, as disbursing officer and medical supply officer.

Births, Marriages, and Deaths.

Died.

Ballard.—In Asheville, N. C., on Friday, April 14th, Dr. Albert M. Ballard, aged seventy-three years. **Cliness.**—In Wilmington, Ohio, on Saturday, April 15th, Dr. George Cliness, aged forty-two years. **Corkran.**—In Philadelphia, on Friday, April 7th, Dr. Millard F. Corkran, of Wilmington, Del., aged fifty-seven years. **Curts.**—In Paterson, N. J., on Sunday, April 16th, Dr. Robert M. Curts, aged fifty years. **Derrick.**—In Brookline, Mass., on Sunday, April 16th, Dr. George W. Derrick, aged thirty-eight years. **Downs.**—In Three Tuns, Pa., on Saturday, April 15th, Dr. Norton Downs, aged fifty years. **Fernald.**—In Boston, Mass., on Wednesday, March 15th, Dr. Charles Augustus Fernald, aged sixty-eight years. **Goldthwaite.**—In Boston, Mass., on Sunday, April 9th, Dr. Seth V. Goldthwaite, aged sixty-eight years. **Hardin.**—In El Paso, Texas, on Monday, April 10th, Dr. Wilford B. Hardin, aged thirty-three years. **Keever.**—In Newark, N. J., on Friday, April 7th, Dr. A. S. Kever, of Mountain Lake, N. J., aged fifty-two years. **Kirby.**—In Osage City, Kansas, on Sunday, April 9th, Dr. Elizabeth Kirby, aged ninety years. **Mathews.**—In Gay, Pa., on Tuesday, April 11th, Dr. James C. Mathews, aged sixty years. **Maxfield.**—In Brooklyn, N. Y., on Sunday, April 23d, Dr. Traverse Rocke Maxfield, aged forty-four years. **Meahl.**—In Buffalo, N. Y., on Monday, April 17th, Dr. Charles H. Meahl, aged forty-seven years. **Moore.**—In Worcester, Mass., on Saturday, April 15th, Dr. John F. Moore, aged thirty-five years. **Moore.**—In Smyrna, N. Y., on Wednesday, April 12th, Dr. Thomas C. Moore, aged sixty-two years. **Ogden.**—In Detroit, Minn., on Friday, April 7th, Dr. Emma Katherine Ogden, aged seventy-six years. **Owen.**—In Cloverport, Ky., on Wednesday, April 12th, Dr. James T. Owen, aged seventy-six years. **Palmer.**—In Greencastle, Pa., on Monday, April 17th, Dr. Edgar Wachtell Palmer, aged forty-six years. **Peairs.**—In Joliet, Ill., on Thursday, April 13th, Dr. George M. Peairs, aged fifty years. **Porter.**—In Southwick, Mass., on Thursday, April 13th, Dr. Fred K. Porter, aged forty-two years. **Richardson.**—In New York, on Monday, April 17th, Dr. Andrew Richardson, aged sixty-eight years. **Stevens.**—In St. Louis, Mo., on Sunday, April 9th, Dr. Charles D. Stevens, aged sixty-four years. **Stevenson.**—In Mooresville, N. C., on Saturday, April 15th, Dr. Samuel W. Stevenson, aged seventy-two years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 19.

NEW YORK, SATURDAY, MAY 6, 1916.

WHOLE No. 1953.

Original Communications.

THE TREATMENT OF CARDIAC SYPHILIS.*

By JAMES M. ANDERS, M. D., LL. D.,
Philadelphia.
PROPHYLAXIS.

The fact has long been recognized that a more systematic treatment of syphilis would lessen the incidence of cardiovascular affections. The spirochetes display a selective action for the myocardium, and once imbedded in the structure of the heart they are confessedly difficult to eradicate. Longcope (1) affirms that "for some reason as yet unexplained, the root of the aorta and ascending arch seems to be one of the sites of predilection for the organism." The cardiac lesions caused by *Spirochæta pallida* in the main belong to, but do not develop solely in the tertiary stage of syphilis. Longcope, from his extensive studies of syphilitic aortitis, concludes that infection of the aorta probably occurs during the secondary stage, "and though the symptoms and signs of syphilitic aortitis with the usual complications may develop within a few months of infection, the process usually remains latent or unrecognized for an average of sixteen or seventeen years." Grassman, and later, Brooks and others have expressed the opinion that damage of a serious character may appear as early as the forepart of the second stage.

Isaac Adler (2) first pointed out that the most important lesion of the heart in all stages of syphilis is one of the myocardium which is dependent on periarteritis of the coronary vessels. The frequent occurrence of this finding has been confirmed by Harlow Brooks (3), and later by Warthin (4), who has demonstrated the presence of spirochetes in these characteristic foci, and Wright (5) was able to demonstrate these organisms, often in enormous numbers, in all of five cases of mesaortitis. Says Richard Cabot (6): "The permeation of the congenital syphilitic's myocardium with spirochetes (as shown by Warthin and others) makes it probable that in adults as well, many cases of myocarditis are due to syphilis." Babcock (7) pertinently remarks: "Consequently, whenever we have charge of a patient with only the primary lesion and still more with secondary manifestations of this insidious and malign infection, we should bear in mind the likelihood of incipient visceral disturbance

and be on the unceasing lookout for signs of functional derangement, by which alone perchance we may recognize and forestall more serious results."

Longcope concludes from autopsy statistics and the Wassermann reaction that seventy-five per cent. of cases of aortic insufficiency are dependent on syphilitic aortitis. Now there is perfect agreement among syphilographers that, when either aortic regurgitation or syphilis of the myocardium of marked extent exists, curative treatment is impossible of attainment, as a rule, hence the obvious necessity for a vigorous course of medication during the early stages, Wassermann tests being made at intervals until a positive reaction is no longer obtained. In this manner, and in this manner only, may we kill the spirochetes before they localize themselves in the cardiac tissues. Physicians should feel themselves charged with a serious responsibility on behalf of the public in regard to the question of the wise direction of the treatment of early syphilis, and realize the greatness of that responsibility, as well as the unanswerable indictment that lies against them if they fail to discharge their plain duty toward this class of sufferers.

Perhaps one of the principal reasons why treatment should be carried out at the earliest possible period after infection lies in the hazard and danger from the administration of salvarsan in cases in which severe forms of cardiovascular syphilis develop subsequently. An investigation into this question has revealed the fact that deaths, occurring either suddenly or after several days, from the use of salvarsan or neosalvarsan, are due, in the immense majority of cases, to myocardial degeneration secondary to coronary lesions.

A sane view of the prophylaxis of cardiac involvement in this disease demands inclusion of the treatment of its secondary manifestations. It is in this stage that their development sometimes takes place, and also that the time of cardiac invasion can be fixed, in some cases at least. Grassman (8) studied the cardiovascular system in 288 cases of secondary syphilis and in eighty-five per cent. found disturbances of the rate and rhythm of the pulse, while in forty per cent. accidental murmurs occurred, usually with dilatation. Here it should be pointed out that the cardiac lesions—aortic insufficiency, myocarditis, a certain group of cases of angina pectoris, aortic aneurysms—are looked upon by many writers as complications of syphilitic aortitis.

TREATMENT IN THE SECONDARY STAGE.

In my opinion, when these associated cardiac lesions arise in the acute and secondary stages of

*Read at the sixteenth annual meeting of the American Therapeutic Society, held in San Francisco, Cal., June 21 and 22, 1915.

sypylis, they are most successfully treated by the alternate use of mercury and salvarsan. The iodides should not be employed in these stages, but, as will be pointed out hereafter, they are valuable adjuvants quite late in the disease, or after the active sypylitic process has been checked. The most successful method is by the vigorous administration, intramuscularly, of mercuric salicylate pushed to the limit of tolerance, to be followed by salvarsan, which is also to be given intramuscularly. After the lapse of a few days the mercury must be resumed, and respecting cases that do not manifest the most active symptoms, I am in agreement with Brooks and Carroll (9) in stating that the protiodide administered *per os* may at times prove entirely satisfactory in its effects.

The writer believes that the alternate use of mercury and salvarsan, as briefly outlined above, especially in acute stages, is capable of yielding more brilliant results than the use of either drug alone. I am quite aware that many clinicians contend for vigorous treatment with mercury only, believing that the results thus obtained are comparable to those attained in cases in which both remedies are employed. In these early cases, attention to the circulatory disturbances may be additionally demonstrated. The Wassermann test should invariably be made, and the only criterion of sufficiency of specific treatment is a negative Wassermann reaction. Moreover, the employment of this test from time to time enables us "to determine what success has attended our efforts at eradication of this subtle and obstinate malady" (Babcock).

Furthermore, it should be the rule among clinicians not to place absolute reliance upon a single negative Wassermann reaction, but to repeat the test after the lapse of a couple of months, mercury in some form being exhibited meanwhile. At all events, if this procedure cannot be carried out subsequently, then mercury should be exhibited for a year in order to make thrice certain that a cure has been effected. Failure to obtain a positive result may have been due either to faulty technic or to the fact that too few spirochetes were present to cause the production of antibodies. I have observed this to be true of cases apparently cured with the use of salvarsan.

On the other hand, early cases of lues are not invariably curable. Again, cases of lues without observable cardiac lesions treated with mercury without complete success, owing possibly to the establishment of tolerance toward the remedy, may yield to one or more doses of salvarsan. As illustrative of cases of this sort, the writer has notes of an instance occurring in a man aged thirty-five years, in whom mercury had been employed for a period of four years from the first appearance of secondary manifestations, and it was not until after two doses of salvarsan had been given intramuscularly that a negative Wassermann reaction was repeatedly obtained. My experience coincides with that of Brooks and Carroll (10), who have found that when treatment by mercury is resumed after a discontinuance for a variable interval of time, a prompt response is less likely to occur than when it was first used without interruption.

TREATMENT IN THE TERTIARY STAGE.

The majority of the cases of cardiac sypylis which the writer has treated either in hospital or private practice, have been late cases, typical instances for the most part of aortic regurgitation in decompensation, and equally typical ones of myocardial degeneration independent of aortic incompetence. In the management of these cases, in many of which dropsy has supervened, the usual circulatory indications are to be met, as under other circumstances. For example, complete rest of body, hygienic and therapeutic measures, such as digitalis and other cardiants, are all to be enjoined, with modifications to suit individual cases. It cannot, however, be denied that these agencies fail to afford as satisfactory results as in nonsypylitic cases of cardiac disease.

Assuming the Wassermann reaction to be present, how shall the sypylitic element be attacked in these late cases? Shall salvarsan be employed in aortic incompetence after decompensation has appeared? There are two small classes of cases in which the use of salvarsan is, to my mind, quite justifiable: 1. In myocarditis and aortic insufficiency in which the actual condition of the myocardium is indeterminable, but obviously not degenerated to a marked extent; and, 2, cases occurring in patients who urgently demand that something be done to afford relief from their sufferings. Stone (11) has invited attention to two cases belonging to the latter class in which the distressing symptoms were minimized by the use of salvarsan.

In well marked cases of sypylitic myocarditis and in aortic incompetency due to the same cause, it is my custom to give mercury a prolonged trial by inunction, and this failing, by the hypodermic method. If this does not yield a favorable result, i. e., a negative Wassermann reaction, then salvarsan is used intramuscularly, at first, however, in small doses. In this group of cases the injections of salvarsan are to be followed by a period of absolute physical rest. Ehrlich, quoted by Held (12), emphasizes this point, stating that it is an important factor in the treatment with salvarsan of cardiovascular conditions dependent on sypylis. All such cases should be treated in a hospital, and Held properly recommends that the patient be kept at rest for from twenty-four to thirty-six hours—in instances of myocardial degeneration not less than two weeks—and subjected to all other measures entering into the routine treatment of this condition.

I agree with Daland that the intravenous method of administration of this agent is too hazardous to life to permit of its adoption in these cases; especially is this true where a decided and rapid invasion of the myocardium has declared itself symptomatically, e. g., in arrhythmia, in tachycardia, and in the event of the development of fresh murmurs. It should be pointed out that experience has shown neosalvarsan to be no less apt to induce serious collapse than salvarsan, and the former, in my experience, is not less painful than the latter. Brooks and Carroll are of opinion that the old salvarsan is more efficacious in the relief of heart complications in sypylis than neosalvarsan.

Unless a negative Wassermann reaction occurs when salvarsan is administered in the manner stated above, a follow-up course of mercury should be accorded a fair trial, and it may now give a permanent result. To show the degree of improvement gained from any method of treatment, the Wassermann test should be, as already stated, undertaken from time to time.

The iodides are indicated in the treatment of cardiac syphilis after the active process has been checked or has ceased, in order to effect absorption and replacement of tissue, and it is advisable to continue them so long as progressive improvement is manifest. For a period of one year after a negative Wassermann reaction has been obtained, mercury should also be exhibited, and this combined medication should not be neglected. The dose of the iodides, preferably of potassium, may be pushed to the limit of tolerance, if desired, but I have not seen any better results from this mode of administration than from a maximum dose of ten or fifteen grains gradually reached after commencing with a five grain dose.

As the result of personal experience, I have become thoroughly convinced that the majority of late cases of tertiary cardiac syphilis do not carry a favorable prognosis as to cure, but some degree of amelioration of the symptoms, and prolongation of life in comparative comfort may be confidently expected in the majority of cases.

BIBLIOGRAPHY.

1. *Archives of Internal Medicine*, vii, 18, 1914.
2. *Transactions of the Association of American Physicians*, May 3, 1909.
3. *Medical Record*, lxxx, 351, 1912.
4. *Transactions of the Association of American Physicians*, May 13, 1914.
5. *Boston Medical and Surgical Journal*, cli, 2, 1909.
6. *Journal of Internal Medicine*, lxxviii, October 24, 1912.
7. *Transactions of the American Climatological Association*, xxviii, 244, 1912.
8. *Deutsch Arch. f. klin. Med.*, lxxviii, 457, 1912.
9. *Journal of Internal Medicine*, lxxviii, October 24, 1912.
10. *Ibidem*.
11. *Transactions of the American Climatological Association*, xxviii, 259, 1912.
12. *Medical Record*, lxxxiv, 1105, 1913.

1605 WALNUT STREET.

A SEVEN GLASS URINARY TEST.*

With Special Reference to the Prostate and Seminal Vesicles,

By VICTOR COX PEDERSEN, A.M., M.D., F.A.C.S.
New York,

Associate in Urology and Chief of Clinic in Urology, St. Mark's Hospital.

The necessity of a clinical means of recognizing prostatic disease apart from seminal vesicular disease, and of vesicular disease of one side apart from that of the opposite side, and likewise of the prostate, induced the author to evolve the following procedure. It is published, not as a substitute for the findings of cystourethroscopy, but as a distinct aid, guide, and verification of this most valuable procedure. This seven glass test will not furnish absolute bacteriological separation of any of these three parts from one another or of any two from the third, because no method will do that except individualized aspiration with syringe and needle through the skin of the perineum under guidance of the finger in the rectum. The with-

drawal of pus in this manner is in these days unnecessary and is rarely performed.

This seven glass test will, however, furnish the clinical basis of operation with great satisfaction by demonstrating whether the pus is chiefly or solely in the prostate as distinguished from the vesicles or vice versa, or in one vesicle independently of its fellow or of the prostate gland. In these days, when seminal vesicular surgery is receiving great attention, it is well to determine its limitations and indications very carefully, so that the excesses which have marked the invasion of other surgical fields through the absence of good guides may be avoided.

Unless the several steps of this method are carefully carried out, the urologist will have little satisfaction in it, and, in general, it should not be cast aside on theoretical grounds, but should be given many weeks' or several months' conscientious study before even reasonable skill with it is assumed. Doubt as to the findings may often be cleared up

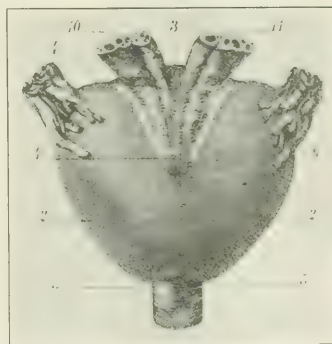


FIG. 1.—Lower surface of prostate showing middle position of the ejaculatory ducts. (Testut). 1, membranous urethra; 2, right and left lobes of the prostate; 4, base of prostate; 4, median sulcus; 3, middle lobe of prostate; 5, apex with anterior and posterior sulcus; 6, superolateral angle of the lateral lobe with vascular trunks; 7, seminal vesicles; 11, vas deferens uniting into centrally placed ejaculatory ducts.

by repeating the test in the two stage method as detailed later.

Its clinical principles are familiar to urologists and are the analogues of those of all other multiple glass tests represented by the pioneer Thompson two glass test and those which followed it, such as that of Kollmann, Jadassohn-Goldberg, Krohmeyer, Lohnstein, Wolbarst, Young, Luys, and others. This article is concerned with the special reference of the author's method to the prostate and seminal vesicles rather than in historical data or comparative details, which are therefore omitted.

The anatomical basis of the test is shown in the accompanying illustrations of the prostate and the seminal vesicles in Figs. 1 and 2, borrowed from the sixth edition, volume iv, of Testut's anatomy.

The dissection in Fig. 1 demonstrates the fact that the ejaculatory ducts enter the upper surface or base of the prostate nearly in the middle line, and remain in this general portion as they pass more or less along the urethral floor and emerge in the colliculus. From this arrangement it follows

*Read before the Section on Genitourinary Surgery of the New York Academy of Medicine, 1915, and before the American Urological Association at the annual meeting, St. Louis, Mo., April 17, 18, and 19, 1916.

that massage of the prostate, which is confined to its lateral borders and deliberately avoids the urethral or central zone, will largely evacuate the lateral lobes without much influence on the intra-prostatic segment of the ducts, at least with sufficient definiteness to develop whether or not expressed fluid is prostatic or seminal vesicular in origin for clinical diagnostic purposes. Careful



FIG. 2.—Lateral view of the anterior urethral control glass. (The reference numbers apply also to this cut.)

microscopical study of the specimen will prove that the predominant number of epithelial cells and other elements are prostatic.

The anatomical relation of the two seminal vesicles and of the ampullæ of the vasa deferentia, being, as they are, widely separated from each other on the two sides of the body and from the prostate through which they evacuate, makes it possible to massage first the one vesicle with its corresponding ampulla and then the other, independently of the right from the left organ and of the prostate below, provided that the massage is applied only to the upper two thirds or four fifths of the organ and avoids with exact caution their confluence just before they enter the base of the prostate at its middle line.

Again the use of the microscope is required to finish the diagnosis of the specimen exactly as this multiple glass test and cystourethroscopy go together. Modern diagnostics require reasonable corroboration of all methods so that it is not an element of adverse criticism to admit interdependence of this seven glass test with exploration of the bladder and urethra and with full laboratory study of the specimens.

ONE STAGE METHOD.

Preliminary preparation of the patient requires as much urine as he can hold without inconvenience—a statement which means about five hours' excretion in the bladder. Irritability of the bladder so that such a quantity cannot be retained requires distention of the viscus with sterile normal salt solution or sterile boric acid water. The various glasses of the test are secured by the following technic.

A very important detail is that copious specimens should always be obtained. Less than 100 c. c. may

be regarded as insufficient and 150 c. c. as the least adequate quantity.

Glass I, also called the anterior urethral glass, is secured, by laying the patient on the table with suitable sterile towels and a Wolbarst basin between the thighs. After cleansing the meatus, a 12 or 14 Fr. velvet eye soft rubber catheter or a blunt point lisle thread or silk catheter is very gently passed to the bulb, where it is held in the urethra by the left hand of which three fingers support the penis and the thumb and index finger retain the catheter. The right hand takes the 150 c.c. Janet-Frank syringe filled with warm sterile boric acid water or normal salt solution and slowly irrigates the anterior urethra from behind forward. The fluid follows the catheter coiled once upon itself in a large sterile glass, resting in the bottom and against the side of the Wolbarst basin (Fig. 3).

Glass II, the anterior urethral control glass, is secured in exactly the same manner, so that both these specimens, for the most part, show the contents of the anterior urethra, either as pus and shreds or as shreds alone, by exfoliation or by unhealthy glandular secretion, or by all combined. The glandular source of many of these shreds renders gentle massage of the urethra upon the catheter *in situ* advisable, in order to express and dislodge the largest number possible, which might otherwise remain behind.

Glass III, also designated the posterior urethral glass, is now filled by having the patient pass from 100 to 150 c. c. of bladder urine. If the bladder is normal, this glass will contain almost solely the contents of the posterior urethra, whose nature will be shown by the microscope as the products of posterior urethritis in uncomplicated cases, or of this lesion combined with drainage products from the prostate and vesicles in complicated cases. If it is suspected that the bladder has pus within it as



FIG. 3.—Irrigation for the anterior urethral glass in the author's method.

After removal of penis, large sterile glass is held by the thumb at the upper end of the Wolbarst basin. The left hand supports the catheter within the penis and makes it coil within the glass. The right hand makes the irrigation with a Janet-Frank syringe, and the outflow is conducted by the course of the catheter directly into the glass as shown.

well as that the posterior urethra is diseased, then this method may be modified and performed exactly as the Wolbarst five glass test, by which a catheter is passed into the bladder for Glass III, followed by

irrigation of the organ. Any smaller quantity of urine evacuated may not cleanse the posterior urethra sufficiently, so that 150 c. c. is the safest specimen.

The bladder and the posterior urethra may contain pus at the same time. The cystoscope at a later sitting determines the share of the bladder or ureters or kidneys and at a control author's seven glass test, also at a subsequent visit, the Wolbarst step of drawing off the bladder urine as Glass III, followed by protective lavage, distention, and evacu-

from that used in the irrigation of the anterior urethra. The contents of the bladder glass may be only a few c. c., just sufficient to show by the microscope that there is no pyuria or that, if present, its origin is either vesical or renal.

Glass v, also recognized as the prostatic glass, requires much fluid in the bladder. If, therefore, the patient has insufficient urine left in the viscus, as nearly as possible 500 c. c. of sterile normal salt solution or sterile boric acid water should be run in while the catheter is still in place,

CHART OF SPECIMENS, SEVEN GLASS TEST							
	I.	II.	III.	IV.	V.	VI.	VII.
Number and anatomical title of glass.....	Anterior urethral Irrigation	Anterior control Irrigation	Posterior urethral Evacuation	Bladder Catheterization	Prostatic Massage lateral lobes only	Right seminal vesicular Massage vesicle only	Left seminal vesicular Massage vesicle only
Method of securing specimen	Boric acid water	Boric acid water	Urine	Urine	Urine or boric acid	Boric acid water or urine	Boric acid water or urine
Constituent	Boric acid water	Boric acid water	Urine	Urine	Urine or boric acid	Boric acid water or urine	Boric acid water or urine
Approximate quantity of specimen	150 c. c.	150 c. c.	150 c. c.	150 c. c.	150 c. c.	150 c. c.	150 c. c.
ANTERIOR CHRONIC URETHRITIS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Turbid or clear with shreds	Clear or scattered shreds	Clear	Clear	Clear	Clear	Clear
POSTERIOR CHRONIC URETHRITIS WITHOUT COMPLICATIONS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Clear with shreds or turbid	Clear with scattered or no shreds	Turbid or very shreddy	Clear	Clear	Clear	Clear
POSTERIOR CHRONIC URETHRITIS WITH PROSTATITIS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Clear or few shreds (turbid)	Clear	Turbid or large shreds (prostatic elements)	Clear	Turbid abundant prostatic detritus	Clear	Clear
POSTERIOR CHRONIC URETHRITIS WITH UNILATERAL SEMINAL VESICULITIS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Clear or few shreds (turbid)	Clear	Turbid or large shreds (vesicular elements)	Clear	Clear (few prostatic and vesicular elements)	Clear, slightly turbid	Turbid, many vesicular shreds
POSTERIOR CHRONIC URETHRITIS WITH BILATERAL SEMINAL VESICULITIS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Clear or few shreds (turbid)	Clear	Turbid, large shreds vesicular elements)	Clear	Clear (turbid)	Turbid, many vesicular shreds	Turbid, many vesicular shreds
POSTERIOR CHRONIC URETHRITIS WITH PROSTATITIS AND BILATERAL SEMINAL VESICULITIS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Clear or few shreds	Clear	Turbid or large shreds, prostatic and vesicular elements	Clear	Turbid, abundant prostatic elements (seminal vesicular detritus)	Turbid, seminal vesicular elements	Turbid, seminal vesicular elements
POSTERIOR CHRONIC URETHRITIS WITH CYSTITIS.							
	I.	II.	III.	IV.	V.	VI.	VII.
Contents of glasses.....	Clear or few shreds (turbid)	Clear	Turbid or large shreds	Turbid, abundant bladder elements	Clear	Clear	Clear

Pus in the bladder may be due to cystitis, ureteritis, or pyelonephritis, and therefore indicates cystoscopy, ureteral catheterization, functional test, and perhaps radiography.

ation, which give Glass iv as the posterior urethral specimen.

Such a condition is very rare without abundant symptoms pointing to the urinary organs as sources of pus, so that the interchange of the posterior urethral glass, with the bladder glass in exact accordance with Wolbarst's method is a very uncommon experience. Furthermore, the important specimens of the author's method, as indicated in the title, are those from the prostate, and the less diseased and the more diseased seminal vesicle—respectively, Glasses v, vi, and vii, as explained later.

Glass iv, likewise known as the bladder glass, is catheterized with cautious gentleness, employing the same kind, but a different individual catheter

after having secured Glass iv. The patient is now ready for the massage of the prostate, which is one of the most important details of the test. It is performed solely along the lateral borders of the lateral lobes where they form a distinct sulcus for the finger in the rectum, between the prostate mesially and the fascia of the pelvis outside it. Strict caution is demanded to avoid the middle of the prostate along the urethra, where the course of the ejaculatory duct lies as shown in Fig. 1. Skill in this detail is required, otherwise the test will fail. After massage has been carefully though fully done, the patient passes 150 c. c. of bladder contents, and thus presents prostatic secretion, normal or pathological, for examination. If there

seems to be a great deal of this secretion, he may urinate into another glass, which will show whether or not the posterior urethra is free of the prostatic massage products. Such a control glass, if negative, may be thrown out or may be added to the prostatic glass. It is rarely necessary to secure a secondary or control glass.

Glass VI is the first seminal vesicular glass, designated in accordance with the side from which it is taken. The author prefers to elect the vesicle which seems to be the less diseased, on the ground that its contents may be far more normal, and he always begins with the normal vesicle if its fellow seems solitary in involvement. The bladder being still full, with perhaps 350 c. c. of fluid in it, permits the patient to evacuate another 150 c. c., which will contain so purely the products of the massaged vesicle as to make the specimen of great clinical value.

Glass VII, or the second seminal vesicular glass, also distinguished in accordance with the side of the body as its source, is last, and should come from the more diseased side, when possible. If sufficient fluid remains in the bladder, the seminal vesicle as yet unexamined is carefully massaged in exactly the same way as its fellow, and the patient then empties his bladder. If, on the other hand, there is not sufficient vesical contents, such should be provided by again inserting the catheter with gentleness and filling up the viscus with from 150 to 200 c. c. of warm normal salt solution or boric acid water. As in Glasses V and VI, if the urologist desires to observe whether or not the evacuation has thoroughly cleansed the deep urethra, he may have the patient evacuate 150 c. c. into Glass VII, and the remaining fifty c. c. may be used as a control, which, if negative, is disregarded, but if positive, may be added to Glass VII.

In virtue of the fact that all these massage products—from the prostate and each seminal vesicle in turn—are instantly delivered into, and then at once washed from the urethra, it follows that such control tests are rarely necessary or positive in their findings, with the sole proviso that the urologist always keeps sufficient fluid in the bladder to provide at least 150 c. c. at each test, as stated in the introductory paragraphs.

In sterility the seven glass test carried out in the usual manner will show whether or not both testicles are involved and whether or not, associated with this condition, there is atrophy of the two seminal vesicles. It, therefore, becomes a means of elucidating the medicolegal aspect of the subject, for the reason that when the test is done in two stages on a very full bladder, half is evacuated at first to cleanse the urethra, the other half remaining behind to receive the massage products of only one side at each sitting. Thus error in interpretation is practically eliminated.

The charts show the number and name of the glasses, the method of securing each specimen, the fluid menstruum in each, and the approximate quantity in each container in the first half of the list, while in the second half are shown the ordinary findings given in the various specimens in the average case of its kind.

Charts cannot possibly cover all possible varieties of case in uncomplicated and complicated chronic urethritis, but those which follow are meant to cover types. In the various columns less usual though possible features are put into parentheses.

TWO STAGE METHOD.

Not uncommonly we find patients in whom it is perfectly obvious that the prostate and both vesicles are compromised, and yet in whom it becomes desirable to distinguish between the two seed sacs and the prostate before the man is convinced of the wisdom of operation. In other subjects, it is worth while to check up the one stage method by the two stage method, in order to be certain that no error has occurred. The first stage consists in carrying the examination through Glass VI in the ordinary way, just described, and then in postponing Glass VII until a subsequent visit. At this time the patient presents himself with a very full bladder, of which he evacuates half as Glass I, containing all the products in the anterior and posterior urethra, which, having been previously examined, are of no further interest; or, if a control glass is preferred, the first half of the bladder contents may be divided between two glasses filled consecutively. The vesicle, which at the first sitting was not yet massaged, is now evacuated, and the patient empties his bladder into one or two glasses, according to the call for a control specimen. This detail is extremely valuable where tuberculosis is suspected, and the contents of one vesicle must be carefully separated from those of its fellow.

The following case reports are of interest, because they show the application of the test to men in whom anatomical defect, disease, or operation has changed one testicle and its seminal vesicle profoundly.

CASE I. D—, railroad conductor, subjected to incessant vibration and a victim of chronic relapsing epididymo-orchitis and seminal vesiculitis on each side. The right testicle was the more involved and the left clinically recovered, but the seminal vesicles reversed the condition in that the left vesicle seemed to have little or no drainage and much perivesicular infiltration, while the right had good drainage and seemed quite normal. These findings were corroborated by the author's seven glass test in that the contents of the vesicle which had drained well were almost normal and very scanty, while those of the left vesicle were abundant and highly pathological. In this patient the prostate was also compromised, so that the prostatic glass contained much typically pathological prostatic fluid.

CASE II. W., school teacher. This very intelligent man had suffered from the sequels of gonococcal infection for several years, compromising his right testicle and seminal vesicle and the right lobe of the prostate in chronic relapsing inflammation, in which the gonococci were still present when I first saw him. The opposite testicle was undescended and its corresponding vesicle so small as to be recognizable with difficulty. The author's seven glass test developed pus from the prostate and the right vesicle, but little or no seminal fluid from the left vesicle, so that the conclusion was fair that the sac on this side was atrophic with its testicle.

CASE III. C., prize fighter, subject to violent physical strain. Had had the left testicle removed for tuberculosis; its vesicle was found to be atrophic and otherwise seemingly normal under the finger. The right testicle had become involved in the tuberculosis by secondary extension, and its vesicle did not escape. The prostate in this subject appeared to be without tuberculous nodules. The author's seven glass test gave a practically negative prostatic glass; nothing of importance from the left seminal vesicle, and great abundance of pyogenic detritus from the right side.

There was a sinus from the skin to this testicle. Operation was refused, but the clinical diagnosis was made absolute by the test.

This new seven glass test is not infallible, and no such claim is made; but no test possesses the quality of infallibility. It is not self sufficient, and the author does not so state; but few tests are really self sufficient, not even the x ray, which commonly requires corroboration or is itself only corroborative. The seven glass test requires, first of all, digital skill in massage as such, and then with the parts of the prostate and seminal vesicles which are to be reached and with those parts of the same organs which are to be avoided during the massage which this test delimits. It will be well for the beginner to study many patients perseveringly before being satisfied with his own skill in the manipulation, and therefore convinced of his own deductions from the test.

45 WEST NINTH STREET.

CAN ERRORS IN DIAGNOSIS AND INDICATION BE MINIMIZED BY A COOPERATIVE METHOD?

By CARL BECK, M. D.,
Chicago.

Diagnosis and indication form the basis of our activity as physicians and surgeons. Without these, any method that is undertaken to cure a patient is a mere chance or speculation.

It is true that cures often occur even without a diagnosis and proper indication, but they surely are accidental. Our experience demonstrates to us daily examples of such accidental or spontaneous cures by those who have not the slightest knowledge of medicine, but who aver that changes which are naturally taking place without the least interference on their part are the result of their treatment. *Post hoc ergo propter hoc*, is the Latin expression for this false conclusion. Because a change follows an undertaking it is not necessarily caused by it. For instance, a patient is suffering from an abscess in the appendicular region; a quack applies tobacco juice or some irritant on the skin and the patient immediately feels relieved and remains well. He will refer his relief and consequent cure to this application, but in reality the abscess has broken into the intestine and in that way Nature has cured the abscess spontaneously. The same result might have been brought about by prayer, and, therefore, the same cure might be claimed by Christian scientists. In this manner everyday life occurrences show us the falsity of such reasoning.

These accidental or spontaneous cures are always brought up as trump cards against the exaggerated claims of the importance and value of medical science. On the one hand, the public demands absolute knowledge and cure from the physician and on the other it minimizes the merits of the profession by pointing out that, even without such knowledge, good results may be obtained. We must forgive the public because of the infirmity of human nature and lack of logical reasoning. The whole process of curing and preventing diseases is based

upon the application of the laws which experience and experiments have taught us. The changes which we recommend in the methods of living in hygienic conditions, and those which we produce by actual interference as surgeons, are founded upon such experiments and experiences, and are in strict correlation to the causes of the ailments.

Finding the cause of a disease, its nature, the stage of its development, and identifying its species is diagnosis. To designate, a method to remove these changes and bring about a normal condition, according to experience and the experiments of medical science, is the indication in the individual case. Indication means, therefore, What we are to do in this case to get the patient well.

Of course, error is human, *Errare humanum est*, as the proverb says, i. e., we may be absolutely wrong in our conclusion, even with the best will and best endeavor. The causes for these errors in diagnosis are twofold: 1. They may be in the disease itself or in the way the patient reacts in the disease; 2, they may be with the patient or with the physician.

We have to consider these errors, therefore, under two heads. In the first place they lie in the disease itself. There are many diseases which do not run a typical course. The best physician, knowing all the intricacies of the disease in a special case, may not be able to recognize it with the best methods at his hand, because the disease in that particular case is not typical. For example, scarlet fever is a disease which is usually very characteristic. It begins with typical symptoms in most cases, a certain typical temperature, a rash, throat trouble, redness of the tongue, a characteristic course, a desquamation of the skin, and the history of contagion, etc. Most of the cases that show the majority of these signs will be easily recognized by the physician who is well versed in diagnosis, but there are cases of scarlet fever in which none of the symptoms are present which we have mentioned, or they are present in such a mild degree that they may escape the ordinary observation. Subsequent disease of the kidney or perhaps some less noticeable sign like blood changes will indicate that the disease was present, or may be at least suspected.

We see in this very plain example, that even the best physician may make a mistake in his diagnosis. It lies in the disease. There are hundreds of such instances which are much more intricate, such as diseases of the spine, brain centres or other internal organs, where the diagnosis may be extremely difficult or impossible.

In the second place, we have to refer the errors to the physician. He may be mistaken in his conclusions about a certain case, either through lack of knowledge and experience, carelessness or unavoidable conditions. These two points would cover nearly all the errors made in diagnosis.

As to the first point, namely, the errors due to the disease, it is only progress of our science and enlargement of our methods of research, that will improve the conditions, and we are all working heart and soul in that direction. The second point, the errors that lie with the physician, we will now discuss in detail.

The qualification of the physician is a result of his education in school and his experience after school life, based upon natural talent and diligence. All these factors will produce different results and different classes of physicians. Whenever natural talent, good education, diligence, and a great deal of opportunity are combined, the result will be the best. Where one or the other of these factors is missing, the result will not be as good and, therefore, since all cannot have the same talent, schooling, and opportunities, we shall have different grades of doctors.

It is evident that those who have had all these qualifications will, in the end, make fewer errors in diagnosis than those who have not had these advantages. Ignorance, therefore, in the first place, is the most important cause of errors. The term "ignorance" may not mean the same as ignorance in the restricted sense of the word. The doctor may be a very shrewd and very well instructed individual otherwise, but he lacks one or more of the factors which make up a good diagnostician.

A good diagnostician must have, naturally, good talent, common sense, good vision, and good judgment, much knowledge, must have seen a great deal of sickness, must have examined a great many patients. He must be familiar with all the methods of diagnosis, what can be accomplished by them and how to make use of their results, and, last of all, he must be a good logician who does not draw conclusions except on good logical grounds. Even with all these qualities there are possible errors. In the first instance, errors may be due to ignorance or lack of experience. This cannot be denied. It is an unfortunate condition, which is not always the fault of the physician. There is a great demand for medical and surgical help in our social life, as there is a demand for any other comfort or commodity.

Medicine has become a necessary occupation. The public knows that it can obtain relief or cure in case of illness, and that the person to whom they must apply is the doctor. The choice of the doctor is left to them, and, in choosing, they may select a good one or a poor one. The criterion which the public uses is different. Some apply for help to the physician without giving the selection any thought, calling the nearest physician in the neighborhood; others select very carefully. Most of the people, however, choose the successful doctor upon recommendation of friends or relatives.

Success is the leading motive. But what the people call "success" is not always success in reality. As we said in the beginning, success or cures may result from accidents or natural phenomena. The natural course of disease without the aid of the physician's skill, experience, knowledge, or interference may appear as the results of his endeavors. So he innocently will become the beneficiary of nature's good will. On the other hand, even the most successful physician cannot avoid bad results or failures if they occur in the nature of the disease.

As to the second cause of errors mentioned, namely, carelessness, a good diagnostician, with all the qualities mentioned above, may, naturally, be

obliged to be careless by necessity. He may be careless because he is indifferent or too much is demanded of him, and he cannot devote enough time to the careful study and consideration of the case. The carelessness may be the result of self-confidence or conceit. Seeing that he strikes the right diagnosis in many instances without much labor, by some sort of intuition, he will often spare himself the time of investigation and examination of the case and draws his conclusions without careful study. He becomes what we call a good snapshot diagnostician or *routinier*.

Quick perception and intuition are the best qualities of the diagnostician. It may be that he strikes the right conclusion in many instances, but without examination he is not sure of his ground, and very often makes grave errors. Especially is this true of those who have acquired a certain fame, and after many years of experience, some physicians are apt to cultivate these faults.

In most instances, however, the demands of the public, the rushing and ceaseless work do not give the practitioner time enough, even with the best intentions, to devote his energies to the individual case. He may be a very good diagnostician, but he is too busy, as we say, and therefore is careless. The public makes great demands, especially upon those who are capable, therefore there is a danger of failure on the part of those who are the best and most dependable.

A diagnosis, therefore, may be missed by the nature of the disease or by shortcomings of the diagnostician. When it comes to the point of setting an indication or making up a line of action for the physician in regard to a case, he must also be influenced by the laws laid down by our science. Every case has its indications for the physician to act or not to act. The latter are often termed "contraindications." Such laws may change from time to time with the progress of medicine, but the majority of scientific physicians are well acquainted with the rules for treatment. There is, however, a personal element in the setting of an indication in many cases. There are factors which influence the indication, social factors and others. This brings another element into the indication, namely, the possibility of dishonesty on the part of the physician.

As long as a diagnosis is not connected with any indication, these errors may not have grave consequences. The gravest consequence, however, follows when an indication to operate results from the making of a diagnosis. Diagnosis is always the means toward a certain end. It is preliminary to the treatment, and in many instances, as we have said, Nature, whether interfered with or not, reaches her result so that it is often immaterial whether a diagnosis has been made or not.

Without detracting very much from the value of diagnosis in general medicine, we may truthfully say, that in many of the ailments which come under its domain, the physician is helpless as far as the treatment is concerned. The patient will get well no matter what he does. This fact is responsible for many of the successes or failures of physicians for which they are not accountable, although they

may say, and many do, that they have interfered in certain ways with the process of changes in the body of medication or hygiene and cured the patient.

Many others have achieved the same results by just the opposite remedies or by none at all. For instance, during the thirty years which I have had a chance to observe medical results, I have seen many different and entirely contradictory views and activities in some of the diseases. Let us take, for instance, pneumonia. I have seen it treated by wrapping the patient with hot applications and underneath feather beds, preventing the least current of fresh air; I have seen patients die and patients recover under this treatment. Again, I have seen pneumonia treated with medicines of different kinds, supposed to act upon the heart and fever, and I have seen it treated absolutely without medicine; I have seen it treated with success both ways, and with bad results in both ways. I have seen patients placed without covers in fresh air, entirely exposed in winter, patients also getting well and others dying under this treatment. Claims and counterclaims can be made in this respect. Nobody can prove to what treatment the recovery was due. I have seen the same in typhoid fever and in other conditions.

The indications in these purely nonoperative ailments are of importance, but not of such importance as the diagnosis, where we have the indication or the demand for actual interference by surgical operation.

Many very interesting experiences, I am sure every physician has had in his practice; after toiling for some time with a case and trying to lead the changes into a curative process without apparent success, the patient often leaves him and turns to some other physician for help. At that moment, by accident or as the result of the former physician's treatment, the sickness takes a turn for the better, and the last physician will receive the benefit of the first man's work. Another experience, is that by the application of so called innocent and inert remedies (placebos) we are often able to achieve splendid success.

Another experience, even more frequent, is that without prescription or medicine, the layman often feels that nothing is done for him, and therefore invites the use of placebos or innocuous medicines as a sort of tolerated fraud.

Taking this frailty of human nature into consideration, even the most conscientious physician has to prescribe occasionally such placebos or fraudulent, harmless treatment if he wants to keep the patient under observation, because a diagnosis often cannot be made without observation of the patient for some time. Only intelligent patients understand this and allow themselves to be observed without the use of medicine. The ignorant or fearful person must have something done at once, or must at least have a prescription, and thus precipitates such action on the part of the doctor. This does not mean that I wish to detract from the importance of diagnosis and therapeutics. On the contrary, they are very valuable. I wish, however, to emphasize that we should not claim

too great merit for having interfered with the natural processes. I shall go more in detail of this part later on, but I may mention one fact to which I alluded in passing before.

Unfortunately, the lucrative part of medicine is a matter of consideration. There is no doubt that the physician is entitled, like any other worker, to just compensation for his labor and for his art. From the oldest times he has been, in many instances, rewarded munificently. It has also been a great satisfaction to him to enjoy recognition and appreciation from those whom he has cured.

With the increase of physicians their value has deteriorated. Only certain services, which require a great deal of special art and skill demand greater compensation. Surgery, in particular, in all its branches, has been the fortunate part of our science to have had the just recognition of the public. Its results have been marvelous, its successes so manifest that the public has been unable to withhold its admiration and has been obliged to pay for such cures liberally. But surgery has also lost some of its value. It has been within reach of a great many. The art has been simplified by asepsis and surgical technic and is accessible even to the mediocre. It has been made a common art, even among those who are less skillful, but very anxious for the liberal compensation. This has led to the development of the commercial operator, who uses the art for gain, and upon an erroneous diagnosis, he uses surgical methods and claims success where surgical interference is least indicated.

The patient may recover from symptoms which have not in the least been affected by the operation. A long and tedious aftertreatment may bring the patient down in his general condition, whereupon during convalescence he recovers his strength and may attribute this whole change of conditions to his surgical operation, and be a grateful patient even in cases where the operation had nothing to do with his condition. We see how much more important in this category of treatment is the diagnosis. With the wrong diagnosis, a wrong operation may be performed.

I spoke only of the successful operations. There are many more instances of bad results of operations, of failures, bad aftereffects, and even fatalities following wrong diagnosis and wrong indications. This last point has been utilized by the public and by people who do not wish us well to inflict a great many attacks upon the profession. For the failures and bad results of some unscrupulous operators, the whole profession has to suffer and stand ridicule, attacks and persiflage from some people.

From time to time interesting articles about surgical operations of such nature are published in the daily press, and physicians for different motives describe such malpractice in medical papers. Such publicity must of necessity be detrimental to surgery and its advancement. The public, with its meagre understanding of conditions, will not appreciate the real value of these writings.

I may say something at this time about publicity. Education of the public in regard to medicine is very important. A whole article could be written

on this subject of the value and disadvantage of medicine in newspapers, but, on the whole, it may be said, that the propagation of medical knowledge through newspaper articles, without sensationalism, is very valuable. It will lead to a great many early cures and the prevention of disease, and will add in its ultimate result to the making of diagnosis, because the public that is instructed can tell better of its ailments than the uninstructed public. In this way publicity is a help to diagnosis, but, of course, as we said before, without sensationalism.

Summing up, I may say that the greater part of the errors in diagnosis lies with the physician. It is a fact that we cannot all be excellent in every respect, and that we cannot be at all times successful. The fewer errors we make in diagnosis and indication, the more the public and ourselves will benefit.

Now I have reached the main proposition which logically develops from the foregoing statements. If we cannot all be experts in the whole field of medicine, only in part of medicine and diagnosis, then by combination of our individual labors and by division of labor of diagnosis we can accomplish more than if we work independently. Herein lies the whole secret. Division of labor has proved beneficial in many other human efforts.

Let me give an example: In former times an artist would devote a number of years to the construction of a watch, and after arduous labor and using every possible means, he would finally construct a beautiful piece of art, in which he had done every little detail. There was a great deal of individuality about that watch. It was a time-piece of remarkable construction. But through the division of labor in our modern times, millions of watches of much finer construction and each one in itself a finer piece of art, have been constructed, wherein hundreds of different working men, each one making a certain part of the watch, have been employed.

The medical profession has in this respect not made use of that very valuable principle of human effort to such an extent as it ought to. It is true that there is much individuality about the making of diagnosis that at the first thought it seems rather strange to recommend this method.

As long as medical science was very simple and crude one could master all the principles, but in our times, when it is so complicated, an isolated worker who would know all the details and intricacies of diagnosis and could by his isolated and independent work become a master, would be a unique phenomenon. But if we should perchance have one who knows all these arts well, he could not employ them satisfactorily, because he could not be a diagnostician, a laboratory man, and a practical surgeon at the same time. Many, however, attempt it, but they must fall short in one of the respects which we have mentioned. Either they have not the time or the knowledge to do everything well.

It seems to me, therefore, that the only logical method of decreasing the errors is to remove their causes. As far as the first cause is concerned—to remove the difficulties of diagnosis lying with the disease—only thorough research and progress of

medicine will decrease it. They are not so much in the power of the individual physician as in the power of the whole scientific apparatus of the work, and that acts automatically.

As far as the second cause is concerned—the lack of knowledge is the most difficult to be removed, for many follow the line of least resistance. It means to raise the whole standard of the profession to greater effectiveness and competency through schooling and experience in hospital practice.

These methods are the special work of committees and educational bodies who have made it an object to raise the standard of the profession. The results are slow but permanent, and during many years' sojourn and practice in this country, I personally have noticed a tremendous progress in the general profession. The progress is far out of proportion when compared with the progress in many other civilized countries which I have visited and know well in this respect.

The American physician has improved to such a degree that in many instances he can compete with his colleague from a university abroad, but still a great many defects are to be remedied and a great deal is to be desired if a universal higher standard is obtained. In spots, in larger centres like large cities, this progress is very good, even in some country place, but there are still large numbers of very poorly equipped physicians. In many instances they labor under difficulties due to the conditions of the country and the material on which they have to practise. There is another point of view, from which this country in particular is different from the rest of the civilized countries. The freedom of practice has put it into the hands of a large number of men to avail themselves of the opportunity to practise surgery without the necessary preliminary education. Here lies a very dangerous factor, which is not so dangerous in other civilized countries on account of the time honored restriction of the practice of surgery to those who have either spent more time on studies or have to pass through special examinations to arrive at such a point. The correct diagnosis plays a more important part in this respect, because, as we said before, commercialism may enter into such ignorance.

Ignorance with power is a dangerous weapon. It is true, and must be admitted, that many of the uneducated surgeons through practice and a great deal of natural ability are perfect in technic and become less dangerous by this factor than they would be if they did not have the technic.

Postgraduate schools have been established in many large cities. They offer educational advantages to physicians who are in practice and wish to perfect themselves in the art of specialism. These students acquire good knowledge, good technic and learn how to operate safely, but to learn diagnosis and indication requires more than a postgraduate course of a few weeks. It requires years of study with a master, and, as a rule, men who are in practice cannot sacrifice so much time for such long studies, and, therefore, many operators who are postgraduates have been lacking in diagnosis, although they are expert technicians.

It is impossible in our present day with the prog-

ress of medicine to know and master all the methods of diagnosis. It means that a man would have to spend years for such preparation, and then, since medicine is progressing all the time, he could not keep up. The whole machinery of making a diagnosis has become too complicated and the making of a diagnosis has to be relegated to different departments and branches. The profession has for a long time recognized these facts and has developed into specialties. These specialties have gone into greater detail and have split up into subspecialties, but with the division of labor, they have naturally dissociated and often have lost a great deal of advantage gained by specialism.

Then the profession has discovered that by "team work," i. e., by working together in institutions, specialists could achieve better results. This has been a great step forward. Personally, I do not like the term "team work." It sounds more like an automatic machine and not intelligent, harmonious investigation; more like the work of a well-trained baseball team, and not like the work of scientists. Team work, however, is the only way in which modern medicine can be practised.

The routine employed, as a rule, is as follows: The patient applies for help to the doctor, who examines him and sends him to a laboratory or to a colleague to receive an opinion in a specialty in which he himself is not a master. On the strength of this opinion or laboratory report he makes his diagnosis. In some organizations a little better method is employed. In hospitals or offices where several such specialists practise and have the same office hours, a patient may be sent from one office to another, and in that way receive these expert opinions; but a real organization having a co-operative system is the best way to achieve this object.

Organization is the great secret of success, whether it be in manufacturing or in practising medicine. Organization means a coordinate, harmonious working of different members and the control from a centre. No organism can live and thrive satisfactorily without such organized control of all the functions, nor can medical activity thrive and live satisfactorily without such organization. This organization has been employed by us, first, experimentally, and now as a matter of successful practice for several years, and has proved very satisfactory. It allows the making of diagnosis and the avoiding of errors in many instances where errors were formerly unavoidable. It allows the practical establishment of an unbiased indication, and it furnishes to the patient a control of the cure or treatment by a whole organization.

One man might be mistaken, two might be less mistaken, a dozen or more men, if working harmoniously, will be less apt to make mistakes than one. The labor must be divided in such a manner that each one of the members has the whole object of making a diagnosis and setting up an indication in mind while he is doing only his share or part in this object, so that the work runs harmoniously.

The controlling head must be experienced and must know what can be accomplished by the different methods of examination, but not necessarily be familiar with their details. He also must know

the significance of the results of such examinations, and their application in drawing conclusions as to diagnosis. In order to do that, the controlling head must constantly keep himself posted as to the progress, as to new methods and as to reliability of the men who give him the reports of their findings.

In order to awaken the interest of the coworkers and put them on guard so as to be careful in their conclusions, we have to show them in every case, if possible, that they are correct or wrong in their findings. Such is especially possible where findings have been made that can be corroborated or can be controverted during a subsequent operation. For instance, if the fluoroscopist has made a positive diagnosis of an ulcer of the duodenum in a certain place, and he witnesses the operation and finds that it is not present, he will be more careful the next time to avoid such an error in diagnosis; on the other hand, if he sees his findings corroborated, it will add to his knowledge and confidence in his examinations.

The organization is made up on a general scheme somewhat like the following: There is a head of the organization. This head may be the surgeon or the general medical man. His qualifications must be the following: He must have experience in diagnosis, i. e., he must have a knowledge of a large number of cases in which he has made a scientific diagnosis and corroborated it himself in operations or post mortem. He must be an experienced practitioner who knows something about indication or contraindications of surgical operations. In the second place, he must possess a great deal of executive ability, so as to be able to direct the examinations into proper channels, otherwise the organization will develop into an automatic body which may, like all automatic procedures, defeat the valuable object for which it is formed. He must know, at least theoretically, the modern methods of examination, the value and their results, in order to be able to appreciate the value of findings of the different departments, and finally, he must be conversant with the ability of his coworkers. He must know how much credence or reliance he can place on their findings. He is the one to whom every case which needs an accurate diagnosis is referred to first.

The departments which are connected closely in such an organization may be condensed or specialized. The larger the amount of work and the more accurate the work, the more specialized will be the departments. There is no doubt that if a person devotes a lifetime study to the changes of the blood, that particular person, if kept constantly in contact with clinical work and kept interested in the clinical side, will be better than if he has to do at the same time all the other laboratory work and can devote only a part of his attention to the blood examinations. There are certain departments which are more or less indispensable. In the first place the medical department requires a man with a good deal of knowledge of the physical methods of examination; percussion, inspection, auscultation, palpation of the different organs, the examinations of the lungs and heart, and the relation of anatomical conditions of the abdomen; the examination of the stomach and intestinal tract in particular.

Where the amount of work permits, two men who can easily divide or combine their work and control each other can be employed as medical men. Where the examination of stomach contents, different dietetic tests, and stool examinations is considerable, such combination will be very useful. The general medical man is the one to whom every case is referred in the first instance by the chief.

The next department of importance is the department of radiology and fluoroscopy and radiography. This department requires a man who devotes all his time to this branch. He can also very satisfactorily survey the therapeutic part just as much as the medical man can survey the medical part of the treatment of the cases.

Radiology and fluoroscopy is something that has to be practised by a clinician and not by a mere technician. In other words, the man who is to make a diagnosis by fluoroscopy or radiology must know and be able to apply his knowledge of medicine and also surgery to a great extent, because if he does not know it, he sinks down immediately to a mere laborer and his findings will depreciate greatly in reliability and value.

Unfortunately, the medical profession has not recognized this fact, and in many institutions a photographer or some person who cannot make a living in any other way devotes his time to this branch of work. It is not necessary that this clinician should do the work himself, as far as the technical part is concerned. If he directs it and if the amount of work warrants it, he can have a technical adjunct who develops pictures, doing purely the technical work.

This department must be in close contact with the operating room, especially since the whole science of radiology and fluoroscopy is not settled and well studied in the results of its findings, and wherever possible the head of the department should be called into the operating room and confirm or disprove his diagnosis. It is also necessary that this department head should have the liberty and freedom to reexamine as often as is necessary and discuss the cases freely with the medical and surgical head, so that he may keep abreast with modern advancement.

Another department is the one which pays attention closely to endoscopy, cystoscopy, and proctoscopy in connection with the examination of the genitourinary tract. This branch of our medical science has developed greatly in connection with radiology, and of course it takes a specialist to examine the cavities with the cystoscope. The infrequent and only occasional use of these instruments cannot develop one into a specialist.

The laboratory part requires again experts, and not, as often occurs, interns and inexperienced men, although some of these interns coming recently from school have proved that they can occasionally make a diagnosis. But to have a scientific method, we must have experts in these lines, people who do nothing else but examinations from morning until night; not as automatic laborers, but people who also know what they are examining for, who are also familiar with the history and the cause of the case, and who are also interested in the findings. I will say later on how we keep these people interested

and posted on the conditions for which they examine, by means of conferences.

There are mainly two experts in the laboratory required; one who has charge of the chemical part of the diagnosis and one who has charge of the bacteriological part. The examination of urine microscopical and chemical, also the examination of blood, can be done by the same person very accurately. If there is a large amount of the work, it can be divided. The bacteriological part, examination of the sputum, Wassermann examinations which are so important nowadays, the Abderhalden test, and other serological and bacteriological examinations, the vaccine preparation, etc., must be in charge of another person, who in turn may have an assistant working under him if the amount of work requires it. If the diagnosis body cannot be very large, this whole department may be in the hands of one expert, but in any event, where the amount of material warrants it, it is very favorable to divide the work.

The examination in the well recognized specialties—nose, throat, and mouth, which are so intimately connected with each other—makes a department of its own, which of course must be closely connected with the whole organization, so that patients requiring these special investigations may be referred back and forward as often as is necessary.

There are some other specialties which may have to be recognized in such an organization, if the amount of material warrants it—the nerve specialist, the skin specialist, etc. They will depend upon the amount of work in these lines. The medical expert may take charge of these specialties.

This organization is nothing else but the old recognized division of the medical field as practised in many instances in clinics in this country and abroad. Especially the European universities have had this interchange of examination established for a long time for the benefit of their public patients, and they have made very extensive use of their interchange of ideas of the different departments, but in private practice this method has not been used to a great extent as yet, and still it is probably the only method which will avoid errors in diagnosis and indication.

There is, however, one great element which I have not mentioned as yet fully, which distinguishes this method of cooperative organization from the ordinary method of team work, namely, discussion of each diagnosis of importance by the whole organization. In our establishment we meet every morning and discuss every case of importance from every point of view, and herein give the results of examination, so that the different departments can correct each other's views and bring them into relation with their findings. At this time all reports are given in regard to results of examinations, indications are discussed, and contraindications if such are of value; at this time everything that is of interest is brought forth and everybody has a voice in the final diagnosis. The laboratory man and all people are present at these conferences. They suggest new lines of investigation or have the same suggested to them. This whole procedure is conducted in the way of a scientific conference. The disposition of the cases remains with the chief and the outline of treatment and indication when finally settled is at his responsibility.

New cases that arrive for diagnosis are divided into two classes: Such as no not require this extensive apparatus of the organization, the plain cases, in which the ordinary physician or the layman is capable of making a diagnosis; errors in these cases are not frequent. The second class of cases are those in which the ordinary man, without an apparatus, would either make a snapshot diagnosis or would be baffled and could not make a diagnosis. They have to go through the routine of examination described before. It seems that in this manner we can avoid a great many errors in diagnosis. There is no possibility of making accurate statistics, but it is my impression that the number of mistakes in diagnosis, and particularly the number of mistakes in indications, is greatly diminished.

When we know that our operations are controlled, watched, and criticised by a number of men who are all familiar with the details of the case, then our diagnosis becomes a matter of importance and our indication a matter of still greater importance. No operation will be undertaken lightly, because when we have made a diagnosis and it is not confirmed at the operation, then we know we have operated without indication. If we find our diagnosis correct and we base a surgical undertaking upon that and a cure results, we know we have done a correct operation.

A question may be justly asked: How can the profession avail itself of such combinations and how can the same be formed successfully? I may say that they are already formed in many institutions in this country, and that there are numerous institutions developing right along, and also that the public is beginning to appreciate their value. In reading a paper before the Chicago Medical Society some time ago, Dr. C. H. Mayo referred to these institutions as "diagnosis hospitals" and then the idea was expressed that special institutions might be formed for the purpose of diagnosis.

The existing bodies of physicians intimately connected may easily combine in this manner and produce the same effects. There will be diagnostic bodies in which the results will be better than in the others, because the men composing them might be more experienced and better. There will be others in which the men, through more energy, better facilities, and great dignity, may work out a better diagnosis. On the whole it will require "cooperation with harmony and most of all organization."

108 NORTH STATE STREET.

PULSATING EXOPHTHALMOS.

By F. KRAUSE, M. D.,
Philadelphia.

CASE. Mrs. Margaret B., aged fifty-seven years, was referred to me by Doctor Seiffert on account of swelling of the eyes, June 17, 1915. She complained of inability to lift her right eyelid, blurred vision, and a continuous noise in her head, especially on the right side.

The ocular condition, when first seen, was as follows: Both eyes were protosed, especially the right eye, which was very prominent. The lids were dusky, the conjunctiva was greatly congested and edematous, hanging in folds beyond the lid margins, completely shutting off the sight from the right eye, the upper lid of which was immovable. The vision in the right eye was 5/22.5 and in the left eye

5/15. Ocular movements were restricted, especially up and out. The fields of vision were greatly and concentrically cut in both eyes, with slight crossing of the color fields.

The left eye was freely movable, the exophthalmos, though very pronounced, less than in the right eye. The pupils reacted to light and accommodation. In the right eye, the ophthalmoscope revealed deeply filled tortuous veins, the arteries being somewhat contracted with no hemorrhages. In the left eye the nerve was gray in tint, the vessels were full, but there was no swelling of nerve or retina. There was no pulsation in either eyeball, but there was a very loud bruit accentuated with every cardiac impulse, heard all over the face and head, but loudest over the right temporal bone anteriorly.

The following history was obtained by my resident, Doctor Belk, upon her admission to the wards of the Episcopal Hospital, June 21, 1915:

The patient had three children, living and well. One child died of marasmus. One miscarriage. No tuberculous or hereditary disease.

Personal history: Rheumatism and some palpitation of the heart for several years, off and on. Had usual diseases of childhood. Drank coffee to excess. Present illness: Began about six weeks ago, with throbbing on top of her head, and severe continuous headaches, gradually getting worse; no history of traumatism. Six weeks ago, the right eye became bloodshot and painful, followed, four weeks later, by a similar condition of the fellow eye. At the present time she had continuous throbbing and aching in the eye and forehead, photophobia, lachrymation, and impairment of vision in the right eye.

The following notes were dictated by Dr. J. E. Morris of the medical staff: She had severe palpitation but no dyspnea or cardiac pain. Had vertigo and tinnitus. Constipated habit. She had no symptoms referable to the pulmonary or nervous systems. She showed bad teeth, tonsils enlarged, pharynx injected. Lungs showed a few vesicular rales, at both bases posteriorly. At the right apex posteriorly was a small area of prolonged expiration.

Heart outline: Right border of sternum, upper border at the third rib, six cm. to the left of the midclavicular line. The sounds were regular and of good muscle quality. Over the aortic area was heard a soft double murmur, occurring before and after the second sound. The aortic second sound was accentuated. The pulses were equal and synchronous. The head nodded with each heart beat. Abdomen large; no masses or tender areas or fluid. Extremities: Slight edema of ankles; knee jerks absent on both sides; station fair; no Romberg sign.

The x ray showed nothing abnormal, except a cloudiness of the orbits. The Wassermann test was made on June 24, August 23, and September 15, 1915, being uniformly negative.

The spinal fluid showed: Cell count, five per cent.; Nonne, negative; Noguchi, negative; Fehling's, negative.

At a later test similar findings were noted, except that Fehling's was reduced. The blood count on June 21, 1915, was 8,240, which increased to 12,320 on October 2, 1915, with forty-one per cent. polynuclears.

The blood pressure was 202 systolic, 125 diastolic. The patient was put to bed on light diet, keeping bowels and kidneys free. She was given increasing doses of potassium iodide.

Dr. Thomas R. Neillson examined the patient for me with a view of tying internal or common carotid, but on account of the high blood pressure and mental sluggishness of the patient, he was disinclined to assume the risk. Upon explaining the danger of the operation to the patient and her friends, operative interference was declined.

Several weeks passed under this expectant treatment, during which time both eyeballs bulged out enormously, being hidden by tremendous folds of chemotic conjunctiva arising from the fornices. The right eyeball became fixed immovably, and apparently was held by the tension of the orbit at congestion, which was light bluish in color, therefore apparently venous and serous, the latter evident in the conjunctiva. Attempts were made to relieve the chemosis by scarification, which was partly successful. In the left eye, the ocular movements were greatly diminished, but not abolished.

There was free conjunctival secretion. At this time argyrol and hot compresses were being used in conjunction with cleansing.

The vision became worse, gradually dropping to counting of fingers. Upon receiving the refusal of the patient to be operated upon, the resident and nurse were instructed to compress the common carotid artery on the right side against the vertebra, until the lumen was completely occluded. This was readily ascertained by the absence of pulsation in the facial artery and by the cessation of the loud bruit in the skull. At this time there was no pulsation in either eye.

Following this was a gradual diminution of the size of the exophthalmos, until it was normal in the left eye and but slight in the right. The patient

ished, the arteries much contracted, the superior temporal veins very full and tortuous. On October 18, 1915, a low grade of iritis developed, with slight circumcorneal injection, causing posterior synechia and haze of the vitreous.

The eye became absolutely blind. Under continuous treatment, consisting of small doses of sodium nitrite, potassium iodide, and intermittent occlusion of the common carotid for fifteen minutes thrice daily, associated with hot compresses and pressure bandaging, the exophthalmos gradually diminished in size and the pulsation was less marked. There was gradually increased motion

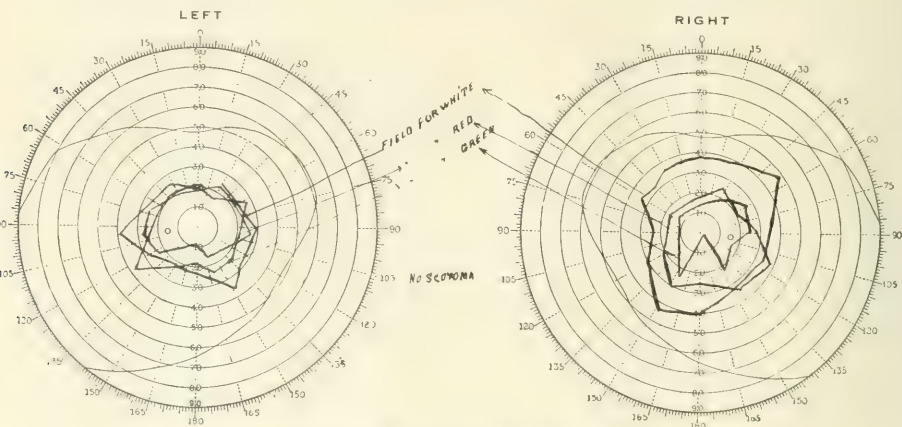


FIG. 5. The fields of vision in patient with pulsating exophthalmos.

complained little of the noise and throbbing, and the bruit was much fainter. This was on August 24, 1915.

The following day, the patient experienced great pain in the right eye with much chemosis of the lids, recurrence of the bruit, and marked pulsation of the right eye. The left eye was also involved, but to much lesser degree, with no pulsation. The continuous blowing murmur was now most pronounced over the right eyeball, and slightly over the temporal bone.

The right eye gradually became fixed, with apparent palsy of all of its muscles, including the sphincter iridis, the iris being freely dilated and immovable. There was complete ptosis. The bulbar conjunctival vessels were deeply filled with passive congestion, the conjunctival sac in the fornices filled with serous exudate and extending in huge folds between the upper and lower lids and eyeball.

The eyeground showed diffuse edema of the optic nerve and retina, with deeply swollen veins seen at intervals. The swelling was less pronounced in the periphery. There were many retinal hemorrhages, in addition to which there were numerous radiating streaks of hemorrhagic tint. These were probably enormously engorged choroidal vessels. The vision was reduced to counting fingers at nine inches.

A few weeks later, the hemorrhage had been partly absorbed, the retinal edema greatly dimin-

ished, the arteries much contracted, the superior temporal veins very full and tortuous. There was developed at the inner upper part of the right orbit, a large vessel, pulsating synchronously with the radial pulse. The left eye did not pulsate and has gradually gone back to its normal position.

The optic nerve on the left side became more atrophic with diminishing calibre to its vessels. Vision remains 5/18.

The condition here had evidently been at first an aneurysmal varix affecting the internal carotid and cavernous sinuses, causing the loud bruit, which was heard by the patient through bone conduction, causing her great discomfort and transmitted to the auditor with the noise of an aortic aneurysm. Its loudest point was just anterior to the junction of the parietal and frontal bone, on a line with the frontal sinuses. The bruit was practically abolished by compression of the common carotid, recurring immediately upon its removal. Much benefit was apparently derived from occlusion of the common carotid for periods of five to fifteen minutes, three to four times daily.

After the condition had improved greatly, a second and apparently independent varix occurred in the orbit, with the production of a unilateral pulsating exophthalmos, the fellow eye being only temporarily affected.

The pulsating vessel in the orbit is apparently an enormous dilatation of a branch of the ophthalmic

artery or vein, possibly as a result of an aneurysmal varix. In view of the good result following ligation of the ophthalmic veins related in ophthalmic literature, ligation of this vessel may be considered essential to the final cure of the condition. The patient's blood pressure has gradually fallen from 202 systolic and 125 diastolic to 168 and 110.

The ocular palsies are disappearing, with the return of more normal conditions in the orbit.

Pulsating exophthalmos is a comparatively rare disease, though about 300 cases are recorded. It is frequently the result of an injury.

The lesions may be intraorbital or extraorbital. The intraorbital causes are a true aneurysm of the ophthalmic artery, arteriovenous communication in the orbit, and vascular tumor. The extraorbital lesions are most apt to be aneurysm of the internal carotid, or perhaps of the ophthalmic artery, or arteriovenous aneurysm occurring between the internal carotid and the cavernous sinus.

The latter has been found to be the most frequent cause. In an analysis of nineteen autopsies, Frost found orbital aneurysm in three, affection of the cavernous sinus in two, aneurysm of the intraorbital portion of the ophthalmic artery in two, arteriovenous communication in eight, and some undetermined condition in four cases. I am inclined to the opinion that we had in our case an arteriovenous aneurysm between the internal carotid and cavernous sinus, which best explains the symptoms.

1701 CHESTNUT STREET.

THE TECHNIC OF THE SECONDARY NEPHRECTOMY.*

Some General Considerations,

BY EDOUARD GAURAZ, M. D.,
Menecy, France.

The cases which require secondary nephrectomy are now understood. Usually the operation is indicated in renal fistula following a nephrotomy for either, 1, multiple calculi with infection; 2, renal retention with a mechanical obstruction, particularly ureteral, having an endogenous or exogenous origin; 3, tuberculosis of the kidney, in which a focus has been opened and drained.

In these cases, nephrectomy assumes the character of an operation of necessity or expectation, which allows of the experimental study of the urinary secretion of both kidneys when the bladder is intolerant.

Less frequently, secondary nephrectomy is indicated in the case, for example, in which a biopsy for malignant disease has been made without venturing to attempt the removal of the diseased gland on account of the uncertainty of the functional value of its fellow or even of its existence. This, of course, is of capital importance, that cannot be neglected without taking the chances of a disaster. It is, consequently, necessary to obtain an analysis of both urines in order to decide if the supposed healthy kidney can carry out the work of both when nephrectomy is considered necessary; in cases, e. g.,

1, of lumbar fistula, where the urine can be obtained from the fistula and bladder; 2, when it is possible to collect the urine from each renal pelvis; and, 3, lastly, by endovesical separation of the urine with Cathelin's instrument we can obtain in a very short time ten c. c. of urine, which is enough for the study of the quantity, color, amount of urea and chlorides, and at the same time to give an exact idea of the value of the renal glandular and subcortical glomerular parenchyma.

No matter which technic is employed, endovesical separation or ureteral catheterization, we must study the manner of elimination of the urea, which offers the only element upon which successful removal of a kidney can be judged. The data obtained by the analysis will be greatly aided by a knowledge of the following laws, the so called laws of urea.

1. *Law of the value of the absolute amount of urea.* The quantity of urea in the separated urines has a great value in itself, as far as the absolute amount is concerned, that is to say, per litre, without taking into consideration the quantity of urine excreted during the examination.

By the absolute amount of urea is understood the quantity contained in 1,000 c. c. In separation of the urine, this quantity by itself alone has the greatest value, quite independent of the quantity of urine excreted; whether or not one of the kidneys yields two or twenty grams of urine, the value of the amount of urea persists entire.

2. *Law of elimination of the amount of urea.* Determination of the amount of urea of the separated urines is the function of the preserved tubular apparatus and exactly represents the degree of change which has taken place in the renal parenchyma, decreasing in direct ratio to the extent of renal destruction or distention.

In point of fact it is in the tubuli contorti and the descending loops of Henle that the elective secretion of the formative quaternary principles of the urea takes place. A good absolute amount of urea consequently indicates the quality of the parenchyma intermediary to the pyramids and subcortical area.

3. *Law of constancy of the amount of urea.* The amount of urea of the separated urine remains about the same for the diseased kidney in the urines collected every ten minutes during the entire time of the examination, and therefore represents the biological potential or secretory quotient of the renal parenchyma.

When separation of the urine is complete and, for example, the absolute amount of urea in the urine of the diseased kidney is found to be 3.84 grams, if we take successive collections of urine every ten minutes for about an hour, we shall invariably find 3.84 grams on this side in each ten minute collection. In a word, this amount represents the maximum amount that the renal parenchyma from this kidney can furnish and is therefore the secretory quotient which reveals the biological value of the parenchyma.

4. *Law of the fixity of the amount of urea.* The amount of urea in the separated urine remains about the same for the diseased kidney, when we collect the urines at different times and by different methods.

When we separate the urine with several days',

*Written expressly for the NEW YORK MEDICAL JOURNAL.

weeks', or even months' interval, it is remarkable that on the diseased side the low amount of urea remains the same, or nearly so, as is proved by the figures obtained by various methods. The separated urine being studied, we know exactly the functional value of the remaining kidney, and if analysis permits, we can operate without the slightest fear of the outcome. The risks attending all operations, of course, exist here, and they are even increased in the cases under consideration, so that it is essential to choose an operative procedure which will reduce them to a minimum, and I shall now proceed to the discussion of this important question.

The kidney can be reached by four ways, viz., the posterior, anterior, and lateral routes and the combined route. The paraperitoneal lateral route is excellent in very large renal tumors, particularly for large sarcomata in children. The combined route is a bastard method, for here we begin by the anterior route, only to finish by lumbar drainage, which is an avowal of futility.

It is said that the lumbar route affords an easy operation, but this is inexact if applied to all cases, but is true if we can find a good line of cleavage, which makes the exeresis a perfect anatomical act. Although the diseased ureter can be removed as well by the transperitoneal as by the lumbar route, some German operators hold that recovery is more perfect when, instead of ligating the ureter, it is merely cut, leaving its lumen open in the bottom of the wound.

Morcellation, that can be avoided by the anterior route, has been often discussed, but it is evident that if it is resorted to in the lumbar incision it is not on account of this particular route, but because the removal of the kidney is particularly difficult. This is not an inherent disadvantage to the route selected, but to the pathological condition present. The necessity of leaving clamps on the pedicle has been decried, but as I shall show, this is of slight importance.

Beside these imaginary inconveniences, the lumbar route has inestimable advantages which should make it the method of choice in all cases. In the first place it is the safest and it is particularly well adapted for drainage. After operation, the patient is naturally placed on his back or side, so that clamps, if left on the pedicle, are not in the way. Protection of the peritoneum is assured when the lumbar incision is used, but what particularly commends this route is that all renal tumors can be removed, no matter how large, or when they develop anteriorly. Hernia is less liable to occur, so that all things considered, it is the ideal route for nephrectomy.

The anterior route obliges us to incise the peritoneum, is bad for drainage, and has been called "the route of diagnostic errors."

The incision in the lumbar region is of great importance. Straight, oblique, transverse, double combined T or H shaped incisions are never to be made, Guyon's curved incision being the only one that should be employed; excepting the rectocostovertebral incision, which starts at the costovertebral angle, extending vertically one hand's breadth from the spinous line along the external border of the sublumbar muscle mass, and is then carried in the shape of a Béniqué sound above the anterosuperior

iliac crest. It is at the same time an elegant and a sure incision, giving a large field of operation and perfect drainage.

This is not, however, the exact technic that we employ. In secondary nephrectomy the old cicatrix must be taken into consideration, also the fistula, if there should be one. Under these circumstances the incision used at the first operation must be followed, correcting it if it is not curved; then by following the track of the fistula, we are led directly to the kidney. Care should be taken not to invade healthy tissue, or wound neighboring viscera which are hidden by the adhesions resulting from the first operation. To avoid such accidents, after dissection of the fistula is completed, the area comprised between the capsule and the kidney should be brought up into the incision in order to proceed by a subcapsular ablation.

Rapidity is essential and the technic to be described is based entirely upon exact anatomical knowledge of Grynfeltt's quadrilateral. The posterior lumbar wall offers to the observer some minute points resulting from the nonsuperposable discussion of the muscles and by which we may easily arrive upon the kidney:

1. The superficial layer, the triangle of I. L. Petit, has its apex above, is limited by the posterior border of the great oblique and behind by the anterior border of the latissimus dorsi. Its base is formed by the iliac crest and its fundus is simply the internal oblique. The importance of this triangle from the operative standpoint is slight.

2. The deep layer is Grynfeltt's quadrilateral with a sharp inferior apex and is limited in front by the posterior border of the small oblique, behind by the external border of the sacrolumbar mass, above by the lower border of the forward portion of the twelfth rib, and below by the lower border of the small denticulate (serratus) muscle. Its fundus is composed of the thin aponeurotic fibres of the transversalis. The importance of this quadrilateral is evident, as it nearly corresponds with the lower pole of the kidney or immediately below when the renal gland has a high thoracic situation.

The entire question is simply to be able to recognize the topography of this quadrilateral and to feel the depression which leads directly to the kidney without being obliged to cut or dissociate a muscle. When the weak point has been defined, the cutaneous incision is made and, keeping the weak area in view, the knife is made to divide the aponeurosis of the transverse or the two accessory aponeuroses which are in close contact. The finger introduced comes upon a soft area, the retrorenal space.

All this should have required about five minutes or less, and the incision in the aponeurosis is enlarged by divulsion with two fingers. Theoretically, the finger sliding under the parietes pushes the pleura upward, while the still adherent peritoneum is pushed downward, while a snip of the scissors enlarges the incision, giving plenty of room for exploration of the kidney.

With the finger drawn from above downward, a resisting surface is sought for, which is the posteroexternal aspect of the kidney. With a snip of the scissors in the posterior fasciæ a little opening

is made, through which two fingers are passed and decortication is begun, while the entire hand completes the process over those portions of the kidney hidden under the thorax or in the abdomen. This subcapsular decortication is nearly always required in secondary nephrectomy, and when the gland has been thus removed, the essential step in the operation is reached; I refer to the treatment of the pedicle.

1. *Ligature en masse* includes the entire renal hilum, and is the oldest method. All the structures composing the hilum are seized in a curved clamp, the kidney being cut away and a ligature applied in one of the ways I shall speak of further on. This method is imperfect, inasmuch as it comprises all the structures, including the ureter as well.

Now, the ureter may be large, dilated, and infected, conditions which may complicate a favorable progress of cicatrization. Then, too, a large mass of tissue such as this, is often cut through by the ligature or by retraction toward the spine, the large vessels may become freed and give rise to secondary hemorrhage. It must not be forgotten that the nerves of the hilum and many branches of the solar plexus are included in the ligature, thus giving rise to pain.

2. *Ligature en masse, not including the ureter*, is simply a derivative of the foregoing procedure. The vessels are alone ligated, the ureter having been dissected away from the mass. However, such a pedicle is large and the ligature is not secure.

3. *The so called mixed ligature* consists in cutting the pedicle after having placed double ligatures below the clamp and before the kidney has been cut away. This technic is faulty inasmuch as the kidney hinders the work of pediculization.

4. *Dissociated ligature* consists in bringing up the kidney into the incision; the elements of the hilum contained in mass of fat are then dissociated. When this has been done it is easy to make out the different vessels. Each one is then seized in a Kocher's hemostat and the vessel is cut, thus liberating the kidney without loss of blood. This technic is elegant, rapid, and easy. It only remains to ligate each vessel, after which a second ligature is placed about 0.5 cm. below these, a double sailor's knot being made. If considered necessary, a third ligature may be applied one cm. below this last. This is the best method when the conditions present permit one to carry it out.

5. *Temporary clamping* is indicated when the pedicle is infiltrated and large as is met with in cases of renal tuberculosis or pyonephrosis, in long standing renal suppuration and calculus pyelonephritis; when the pedicle is short; when the twelfth rib or a narrow costolial space causes difficulty in seizing the pedicle; and, lastly, when the pedicle is subcapsular.

The advantages of clamping the pedicle are evident. It is rapidly accomplished, and secondary hemorrhage is not to be feared. It is perfectly safe if the following rules are followed: 1. The clamp should be tightly fixed; 2, the patient is placed in bed on his healthy side with pillows packed at his back; 3, the clamps must not be removed for seventy-two hours, and when this is done they should first be unlocked, then, five minutes later, the

blades are slowly opened, and five minutes after this they are slowly withdrawn.

We may conclude from what has been said of these different ligatures, that when dissociation of the pedicle cannot be accomplished, the application of the clamps *in situ* is the method of hemostasis to be selected.

6. *As to subcapsular ligature*, it is effected after the kidney has been removed by breaking down the peripheral portion of the pedicle and thus secondarily denuding the soft pedicle, so as to convert the operation, which was primarily subcapsular, into an ordinary subcapsular pediculization. This procedure is delicate and difficult of execution, and in my opinion should be superseded by the use of permanent clamps.

COMPENSATION AND INSURANCE IN EYE INJURIES.*

BY CHARLES B. MEDING, M. D.,
New York,

Executive Surgeon, The Harlem Eye, Ear, and Throat Infirmary.

By this time many if not all of us have had some experience with "compensation cases." Possibly those connected with hospitals have had most. So far as I know, the matter has not been brought before the section in ophthalmology of the Academy of Medicine.

We have, of course, nothing useful to say about the political aspects of the legislation, nor is there any profit in discussing the more or less emasculating changes which have modified the intent and usefulness of the original draft. Though it had been quite simple to copy the present foreign methods, there are no doubt honest difficulties in applying the ways and means of autocracy to democracy, and since all paternal measures are best negotiated by a paternal government, we must expect such misfit and inconsistency as is usual in our law making methods.

Every philanthropic movement is distrusted in its origin, handicapped by ignorance or bias in its beginnings, and consequently becomes productive of injustice and confusion where only content and simplicity were intended. As is usually the case in our country, committees on various matters are notable for the absence from their membership of specialists on the subject considered. The State Board of Charities, when it made clinical regulations, did not consult active clinic heads as to the needs and peculiarities of various departments, but without advice classed all together. The compensation law likewise had no oculists among its framers, though eye injuries yield a large and peculiar group of cases affected.

Physicians as such are certainly in no position to control decisions of the board and have no desire to do so if they were, and yet their voice is not only required but demanded. But their answers to a few more or less incomplete and unnecessary questions will scarcely redound to their credit. Later, a repetition of the statement with variation is required by the insurance company.

*Read before the Section in Ophthalmology, New York Academy of Medicine, December 20, 1915.

The purpose of my brief paper is to propose some means, such as a committee from a reputable medical body, to consider these questions and their answers, suggesting amendment and interpretation; to formulate a common and acceptable nomenclature, and in regard to insurance, to suggest a schedule of fees which shall at least command the respect of the examining physicians employed by the various companies. Such a committee should first become acquainted with the mind of the compensation commission. We can scarcely act fairly to our patients or with dignity to ourselves when it appears that the main value of our statements is the production of a definite basis for attack.

Compensation or indemnity, either by grant or insurance, has come to say; judicial opinion and decision will be asked of the law, judicial opinion and expression must be forthcoming from medicine. Several phases of the matter present themselves to me as an oculist and it is of these only I wish to speak.

First, compensation does not begin until two weeks of disability have elapsed. The object of this is clear, but granting the possibility of honest physicians, in eye cases at least, the method works injustice. In the first place, to obtain redress under the law, partial disability must be magnified into total. Secondly, eye injuries are frequently trivial in their beginning, serious even to total loss later on. Foreign bodies in the vitreous are often unnoticed for several days, or better are so little noticed that the victim does not seek advice for some varying time. Thirdly, since compensation is less than wages and its payment inordinately delayed, men of family can ill afford to chance it if there is a possibility of working or of faking work irrespective of eye welfare.

Commonly all injured persons are first seen and attended by general physicians, and I know of no branch of medicine in which they are less fitted to serve. If this is true of their service, it is doubly so of their statements as to effects of injury, yet since they have attended, their statement is received and considered together with that of all others mentioned by patient. In several cases observed final results were only apparent after compensation had been awarded. Reopening of cases is possible, but under present conditions its results are practically nil. We may not be able to persuade either employer or employed to engage oculists for eye affections, but it would be reasonable and feasible for the board to refuse any statement relative to eye injury not emanating from reputable ophthalmic knowledge.

The subject of disability from eye or visual loss is wide and involved. It has been fully treated abroad as a result of the insurance system there in force. The various well tried decisions have become imperial decrees and are as well known to the workmen as to the government. Here, however, the case is different and the various serious problems as to the probable reemployment of injured men without regard to their usefulness is left untouched. This question is complicated by the very common disinclination on the part of employers to further relations with men who have caused trouble. So well known is this to workmen that I have had several

such patients pledge me to silence. A number have voluntarily rejected compensation.

Oculists should be aware of these things and of the beneficial rulings that elsewhere obtain before they conclude their statement, and no set of questions should prevent a full and conclusive presentation of the case. Procrustean methods are particularly unfortunate and unfair in final reports.

Such items as appearance; the difference between apparent and real disability; the disadvantage or disability of monopsia; the relation of diminished vision to the particular trade or occupation; the loss of wage following change of calling due to injury; the possible future disability from recurrence or diminished endurance; in monopsia, where one eye is actually lost or where cataract or aphakia make it a practical loss.

Unless there is some agreement among oculists on these not too complex questions, we can expect no just consideration or decision on the part of laymen. We must remember that in all such matters the instrument of the government must in any case detect and defeat exaggeration, and since the ready disposition to cheat or deceive corporations is ever in evidence, cases where casual observation can find little in appearance to justify their serious statement are apt to fare badly.

INSURANCE.

In the matter of insurance so far as it covers the expense of medical treatment, we are personally interested. There are two sides to the question, and experience makes me alive to the company's side as well as to our own.

There is no doubt a tendency or temptation to overcharge a corporation. I think we should remember that the majority of these patients are clinical cases. Of themselves they could not afford private treatment. Under ordinary or former conditions they would not pay at all or at best pay but part of reduced charges. Now that they are insured, our clinics are entitled to the money awarded, but should the charge therefor be our best private practice fee or greater?

Should we forget that clinics are supported as charities, that the use of their premises and equipment is a public beneficence contributed by the commonwealth? So far as these are used the cost is in some measure prepaid by both the insured and insurer. On the other hand, should physicians known to be good chargers in their private work, advise the reduction of the legitimate remuneration of their brothers, because they themselves receive a salary or equivalent from the company?

It is a fact that no class of men give so largely of themselves and of their time as physicians. A thousand reasons may account for much of this wonderful charity, all stressing compulsion rather than volition. It is yet the truth that back of it all, permeating its every service, there is the best and noblest impulse of humanity. Possession of so splendid a record should not make us victims of our altruism. We should agree on definite fees for definite operations.

As to the moneys received, I believe there should be a division between the institution and the surgeon who treats the case. The bills should be sent

and collected by the institution and the division should be proportionate with values of work and board.

Finally, we should strive to prevent the traveling of these patients from clinic to clinic or from doctor to doctor. There must be plain dealing in these cases and the first question should be, "Have you been treated elsewhere?" No matter what our personal opinion may be, except in cases of obvious malpractice, these patients should be returned. It is only fair to the company, it is only honor to ourselves.

This is my résumé: Since compensation or indemnity and the insurance of employers against medical expense have come to stay, we as oculists should be well placed in our position as bulwarks for the patient, good citizens for the State, and intelligent preservers of ourselves.

111 WEST 121ST STREET.

REFLEX VESICAL IRRITATION.*

By J. N. UPSHUR, M. D.,
Richmond, Va.

Notwithstanding the great advance in every department of medicine, there are many maladies which theoretically should be easy of relief, yet which baffle our most skillful efforts and cause the patient untold suffering. One of the most conspicuous of these is vesical irritation in women, so commonly seen, so distressing to the patient, and so perplexing and harassing to the doctor; a malady which, from its persistence and the extreme suffering caused works havoc on the nervous system of the patient, the nervous disturbance reacting on the bladder, and aggravating and complicating the trouble. In men the range of causation is narrow, being restricted almost entirely to hemorrhoids, fissure, or other disease of the rectum, to urethral stricture, or dietetic causes. But in women the same causes situated in the rectum, a urethral caruncle or fissure, displacements of the uterus, various affections of the uterus and ovaries of greater or less gravity, chronic appendicitis, undue pressure on the bladder from tumors or a pessary or from other lesions in the pelvis, may act singly or produce a vicious circle, causing vesical distress. Or there may be irritation from too acid urine, or excessive alkalinity may be just as potent a cause, either being an expression of gastric derangement. To ascertain the cause in order to remove it, is often a task of great difficulty, and one which often causes us much mental anxiety. The paucity of satisfactory literature treating of these affections increases our responsibility, necessitates close observation, and taxes our resourcefulness in applying efficient remedies.

In investigating these affections, we should be careful to remember the anatomical relations of the organs in the pelvis, and the constitution of the adjacent and surrounding tissues. Nor is this all; some of the most distressing cases are found at the climacteric, some local irritation reacting on the nervous system, and the nerve condition reacting in

turn on the bladder, the psychic factor often keeping up the trouble after the local lesions have been entirely cured. Unrecognized, the trouble may have resisted all remedies given per os or used locally, increasing progressively in intensity and causing aggravated torture. I need not go into a minute description of the anatomy of the female bladder; I will only remind the reader that in childhood and old age the transverse diameters are the longest and in middle life the vertical. In old age there is a tendency to sagging of the bladder at the fundus because of atrophy of the pelvic organs, which explains the difficulty experienced by women advanced in life completely to empty the viscus, the residual urine undergoing ammoniacal change and becoming a cause of vesical irritation. The inferior portion of the female bladder which merges into the urethra is funnel shaped. The middle muscular coat of the bladder is denominated the vesical sphincter, and to its contractile power is supposed to be due the ability to retain the urine; the internal and external layers are the detractors of the bladder.

The abundant nervous supply of the trigonum of the bladder is derived from the lumbar portion of the spinal cord and the lumbar plexus of the sympathetic, making it the most sensitive portion. The vascular supply is derived from the three vesical arteries and branches of the uterine artery and is very liberal. The veins are numerous also, forming plexuses, and emptying into the iliac veins, and these communicate freely with the plexus of the uterus and rectum. From this source comes the affection known as vesical hemorrhoids.

CASE I. Miss —, aged forty-eight years, came under my care in August, 1914; she had then been confined to bed for seven months. Previously she had been in robust health. In her early womanhood, she had been thrown from a horse, causing a retroposition. At that time a gynecologist in another city replaced the uterus and adjusted a Hodge double lever pessary, which she had worn for more than twenty years. Menstrual function was in the main normal; some pain at times. She began to suffer with her bladder in February, the calls to void increasing in frequency and dissatisfaction, each act being followed by exquisite pain. There were days of suffering and disturbed sleep, or no sleep at night, until her nervous system gave way, and the nerve condition reacted on the bladder forming a vicious circle. Her periods returned regularly, but the discharge became more and more pathological in appearance. She spent three weeks in a hospital where little or nothing was done, then a few weeks at home, then returned to the hospital, for two weeks more. The pessary was removed, but as she complained of pain in the back it was replaced. The urethra was stretched (empirically) with no relief, and she returned home worse rather than better. When she came under my care the conditions existed as above described. Vaginal examination revealed the whole vaginal tract denuded of epithelium and exquisitely sensitive, endometritis and endocervicitis, slight retroposition. The pessary, which I removed with difficulty, was pressing upon the base of the bladder and the cross bar was covered with mucus. The local condition was treated by application of iodine to the uterine cavity and cervix, and a hot bichloride douche one in 6,000 used daily. The bladder was freely irrigated with hot boric solution. These remedies produced some amelioration in the distressing symptoms, and with the aid of veronal she slept better at night. Period came the first week in August, scanty, rusty color, lasted only a day or two, and was accompanied by violent headache. Internally she was given active feruginous nerve tonics and concentrated nourishment. The September period was better in every respect, and each month following there was progressive improvement until convalescence was established. For about a week, in the middle of September, her heart let down under the nerv-

*Presented to the eighteenth meeting of the Tri-State Medical Association of the Carolinas and Virginia at the session held at Richmond, Va., February 16 and 17, 1916.

ous strain and she was critically ill, death threatening from heart failure. So great was the nervous strain at times, that she was wildly delirious, all sorts of horrible delusions taking possession of her, and mental unbalance was feared. I do not know why, because I found no difficulty in locating the cause of the trouble, although my predecessors, nine in number, had been at a loss to explain or remedy the conditions. Undoubtedly the pessary pressing on the part of the bladder so rich in its nervous supply was the cause of the vesical trouble. She was discharged, cured, in May, 1915, and remained absolutely well, weighing 165 pounds, a gain of thirty pounds since her illness.

The female urethra is a short vascular canal, rich in nerves, and abundantly supplied with elastic tissue. When at rest it is a closed canal. The existence of any affection of the female urethra may cause vesical distress, but most common is urethral caruncle, a growth, insignificant in itself, yet giving rise to most distressing irritation. It resembles in appearance a small raspberry, and is apt to be overlooked, especially if situated in the urethral tract near its internal extremity. It is exquisitely sensitive, and the vesical distress can be cured only by its complete removal.

CASE II. Mrs. C. consulted me, complaining of intense vesical distress and pain on locomotion. Examination revealed a small caruncle in the external orifice of the urethra; excision under local anesthesia brought prompt relief.

Another of the simple causes is thread worms in children and young women, relieved by the injection of a strong infusion of quassia into the vagina and rectum. Great vesical distress may be caused even in little girls of three or four years by excessive acid or alkaline urine, the result of too much sweets or other articles of diet. The indications are for appropriate remedies to correct the stomach disorder.

A too bland urine, or urine containing an excess of solids, may give rise to vesical distress, most intense in character, attended by pain in the back and down the thighs, weight in the lower abdomen, and very frequent and distressing calls to void, causing a suspicion of some uterine lesion. Inquiry will elicit the fact that the urine is scanty and high colored. The administration of any standard alkali, such as potassium acetate or sodium salicylate and liquor ammonii acetatis, which will increase the flow of urine, with copious drinking of water, rendering it blander by free dilution of its solid constituents, will bring relief. The existence of anal fissure or hemorrhoids may sometimes cause great vesical distress, but as soon as these affections are recognized as the cause, the indications for relief are plain.

Where many children have been borne and there is great relaxation of the abdominal walls, the weight of the gravid womb on the bladder in the latter months of pregnancy causes great discomfort. This is a common experience, and may be relieved by a nicely adjusted abdominal binder or corset. In the early months of pregnancy the dragging of the womb on the base of the bladder produces vesical disturbance, to be remedied by a properly adjusted pessary, worn until the uterus rises above the brim of the pelvis. An analogous condition is seen from an enlarged womb, due to subinvolution, fibroids, etc., dragging on the base of the bladder and producing most distressing and intractable vesical irritation. Lesions of the endometrium, cervical lacerations, etc., are to be remedied by appropriate surgical intervention, assisted by a well

adjusted pessary. But sometimes nought will avail but creating a new support, and permanently lifting the uterus into its normal position.

CASE III. Mrs. S., aged forty years, of fine physique and good general health, widow, menstruation normal, had borne two children, the youngest nineteen years before; she was attended in both labors by the writer, the first labor instrumental, the second normal. For the past five years she had suffered greatly with vesical distress, rendering her unfit to enjoy any pleasure, and her household duties were a burden. Every known means for her relief was faithfully tried. Cystoscopic examination revealed a perfectly normal bladder and ureters, no evidence of any lesion of the kidneys, uterus retroverted, dragging on the base of the bladder. A suitably adjusted pessary gave only partial and temporary relief. She entered the Sheltering Arms Hospital, where Dr. Robert Bryan did a Webster operation, relieving the dragging on the bladder, and bringing about complete cure.

The bladder in this patient has not yet had time to regain entirely its normal tone. Another class of cases is observed where the cause is both central and local, influences are at work reacting on each other. A woman disregards the calls of nature, the overcharged bladder displaces the uterus; it in turn aggravates the trouble by dragging on the base of the bladder, making a vicious circle. Constant and long continued disobedience of the calls of nature results in permanent debility of the sphincter and detrusor muscles of the bladder, with consequent inability to retain the urine for any length of time, and urination is frequent, incomplete, and unsatisfactory; the residual urine becomes ammoniacal and acts as a local irritant upon the vesical lining. Secondly there comes a reflex influence from the displaced womb, in addition to the direct result of the dragging on the base of the bladder, adding in many cases the symptoms of displacement as a complication.

CASE IV. Miss W., aged fifty-four years, had distressing vesical irritation, the prominent features of which were frequent calls to empty the bladder, incontinence, and dissatisfaction in the act. Patient had passed the climacteric. For two years or more she had disregarded the inclination to void her urine, being a teacher and having a room remote from the toilet. Exhibition of remedies by the mouth failing, physical examination revealed a displaced uterus, with chronic endometritis, which had gone to the point of ulceration, evidenced by the discharge of muco-pus. The bladder manifested great debility in its muscular coat. There was more or less incontinence all the time, keeping the vulva excoriated. Urinalysis was negative, except for occasional mucus, probably from the vagina, and the solid constituents varied in amount. Various methods of treatment were only partially successful or failed entirely. Most benefit came from free curettage, application of agents to the cavity of the womb, and free irrigation of the bladder with warm solution of sodium bichlorate. But benefit was only temporary. The only chance of cure being by surgical means, and there being good reason why this could not be resorted to, the patient accepted the condition as an infirmity to be borne and treatment was abandoned.

A point I would emphasize is that any lesion of the cervix, because of its richer nervous endowment, is more apt to be the cause of reflex vesical irritation than are lesions of the cavity or body of the uterus. We have another class of cases which are emotional; the subjects are women who are run down, or school girls in whom the nervous system has been overtaxed by close application and they have become chlorotic and hysterical; or women suffering from neurasthenia, the result of abuse of the sexual relation. Change of air and scene and active ferruginous tonics are the remedies indicated in such

cases. The two classes of cases referred to are in striking contrast and require very different modes of treatment. In the first we can make no mistake by making a thorough examination of the pelvic organs at the start. In the second such procedure only aggravates the trouble. Stretching of the urethra has been recommended in intractable cases; it is entirely empirical, and results in no benefit or in actual harm. But there are cases in which the cause may be fissure at the vesical extremity of the urethra or ulcer; dilatation in such cases possibly may cure. I must candidly admit that I can suggest no way by which a diagnosis of such lesions may be made unless it be by the cystoscope; the same instrument reveals also any lesion on the vesical surface of the internal end of the urethra. Just here I wish to condemn the injection of all harsh or irritant substances into the bladder when used empirically, especially silver nitrate. Such treatment is too painful and is likely to do harm. Of the various emotional causes, hysteria plays a conspicuous part. In a work by Georges Guinan, *Les agents provocateurs de l'hystérie*, the following are given as the causes of hysteria: Moral emotion; attempted hypnotism; nervous shock, as from earthquakes, peals of thunder, injuries; general infections, such as typhoid fever, pneumonia, scarlet fever, articular rheumatism, diabetes, malarial infection, syphilis; morbid states characterized by considerable general exhaustion, such as hemorrhages, mental or physical overwork, sexual excesses, anemia, and chlorosis; poisoning in the chronic form, as by lead, mercury, alcohol, etc.; or in the acute form, particularly that caused by chloroform in surgical anesthesia; diseases of the nervous system, such as multiple sclerosis, locomotor ataxia, primary progressive myopathy, and gradual compression of the spinal cord in Pott's disease. The author also recognizes the fact that all of these causes may produce other nervous troubles, notably neurasthenia, also a form due to malnutrition of the nervous system (NEW YORK MEDICAL JOURNAL, July 6, 1889). When we recognize all of these causes and remember in addition that the uterus and appendages, when in an abnormal condition, may also give rise to obstinate hysteria, the bladder irritable and troublesome as a factor expressive of this condition, we begin to have a faint appreciation of the difficulty experienced in determining the cause in some cases and in applying remedies which will relieve.

Finally, much might have been said of treatment which has been left unsaid. But the whole field is covered by the exhortation to endeavor painstakingly to locate and remove the cause. Get firmly fixed in your mind, that in all obstinate and intractable cases there is an appreciable cause somewhere. There may be no lesion of the bladder, but there is the condition near or remote responsible, a reflex from some pelvic disorder or gastric derangement, modifying the composition of the urine. I have been prompted to the preparation of this paper by a wish to express difficulties experienced myself along this line, and with the hope that it may at least be suggestive of appropriate means of relief to a brother physician contending with the same difficulties.

1103 WEST FRANKLIN STREET.

DIATHERMIA IN TUBERCULOSIS.

By ALBERT C. GEYSER, M. D.,
New York,

Professor of Physical Therapeutics, Fordham University; Late Clinical Instructor, Radiography and Radiotherapy, Cornell University, Etc.

Let me admit that all the various theories concerning this disease are correct. I am inclined to do this because "that which is admitted does not have to be proved." After all I shall call attention only to that which appears to be an interference with normal individual physiology.

Tuberculosis manifests itself by a gradual "loss of weight and physical power, an increasing anemia, cough, and expectoration," accompanied by an irregular temperature, loss of appetite, and possibly night sweats. Patients differ according to their previous physical condition and their present environments; they may show a preponderance of one with a minimizing of some other manifestation.

Before we think of any therapeutic procedure, let us see what Nature is doing for the patient and in what particular Nature is failing to produce adequate results.

Fever.—The "irregular temperature" is a curative process; it is the result of reaction to something within the system. It is also evident that no matter how high this temperature may be, it is *inadequate in amount*. It may be adequate for the time being, the temperature returning to normal or, from exhaustion, to subnormal; there may be a new pouring out of that something which caused the first reaction, so that we have a continuous attempt on the part of the system to overcome or cure something. Taking this view of the rise and fall of the patient's temperature are we warranted in doing anything that would interfere with this curative process? The answer is self evident.

Our next question is, What is it that the system is trying to rid itself of? Without wasting time on theories, let us assume that *Bacillus tuberculosis* has gained entrance into the lung tissue and by its presence is responsible for the disease process. Is then the system trying to rid itself of these germs? We have no evidence of such an assumption. In fact, we know that the mere presence of the bacillus is practically harmless but either the body of the dead bacillus or emanations from the living germs do furnish a certain toxin which is inimical to the health of the patient. It is this toxic material that is continuously being poured out into the system that is responsible for the ever present reaction in the form of fever. We also know that nearly every person harbors within his system the bacillus of tuberculosis, yet only about eight per cent. die annually of the disease. The explanation is found in the fact that the other ninety-two per cent. have been *tuberculized* and are more or less immune to the disease.

Anemia.—Before this germ can multiply and cause evidence of the disease, it must have a suitable soil in which to propagate. Suitable soil is furnished by an anemic condition somewhere in the system. Such tissue as is naturally poor in blood supply is selected in preference to all others by this germ.

It is no wonder then that such tissue as the skin, the glands, the ends of bones, and the upper part or apex of the lung should be the most common sites for the lesion. In other words, the bacillus tuberculosis prefers for its habitat a blood poor area. Not only that, the toxic material which is the product of the germ destroys the red blood corpuscle and so actually causes anemia or a fertile culture medium for itself.

When the bacillus tuberculosis is injected directly into the vein, it is quickly destroyed and never produces the disease. It has been attempted to grow the bacillus directly from the blood, but so far all such attempts have been futile.

This shows that blood and plenty of it is inimical to the future existence of the germ; it further shows that the blood contains all the elements necessary for the complete destruction of the germ. Our first indication for a rational, physiological therapeutic procedure would be to change an anemic into a hemic area.

Diathermia is the agent physiologically indicated. It heats the entire lung area through and through, dilates the lung capillary system, and brings to the part where most needed an abundant blood supply and a raised temperature. It does not combat nature's attempt at a cure, but augments the fever and the activity of the wandering cells.

Cough.—Our next consideration must be the cough. What shall we do for that? Again we must bear in mind the reason, the object for the existence of the cough. As has been shown, the toxic material generated by the bacilli causes anemia of the local area. The moment that the red cells fail in the performance of their function, which is, among other things, constantly to carry oxygen to the cells, asphyxiation and death of the part is the inevitable result.

Dead tissue will not be tolerated amid the living, and the system makes a violent effort to rid itself of these asphyxiated cells. To do this successfully the mucous membrane of the alveolar air spaces and tubes makes an extra effort in the performance of its physiological function, which is the secretion of mucus in large amounts.

The ciliated epithelium of the tubes is reflexly stimulated and persists in sweeping onward and upward this detritus-laden mucopurulent discharge. We see again that the cough is not a part of the disease, on the contrary, it is Nature's only successful means of ridding the system of that which is undesirable. Shall we administer a sedative to stop the cough? The answer is self evident. What we require is an agent to *augment* that cough, not one that will stop it. The mucus can be obtained only so long as the blood stream adequately feeds the mucus-producing glands; an extra amount of blood is therefore needed. The remaining uninjured cells, the wandering cells, and the cilia can be stimulated into the performance of their physiological function by the application of heat, one of the phases of an inflammatory process. Diathermia supplies that heat. As in the case of the local fever, it makes the matter worse, the patient coughs more frequently and discharges more of the undesirable substances, but he does it more easily on account of the

assistance offered by the increased local temperature. Realizing now that the fever and the cough are really Nature's attempt at a cure, and that both are in perfect harmony with the known laws of physiology, let us investigate the "loss of weight and physical power."

Loss of weight and physical power.—Pulmonary tuberculosis is a slow, insidious, and chronic process. When tuberculosis is in the acute stage, one of two things happens, either the patient becomes tuberculized and so a more or less lasting immunity and immediate recovery take place, or else the patient succumbs rapidly and there is little time for therapeutic measures of any kind. A patient suffering from acute tuberculosis recovers or dies in spite of anything that we may or may not do. When patients recover, and the great majority do recover, their recovery is so prompt and so few definite symptoms manifest themselves, that in most instances we are not even aware that the patient suffers from consumption at all. On general principles, then, I may be permitted to say that whenever we are sure of the diagnosis and are considering therapeutic measures, we are dealing with a *chronic stage* of pulmonary tuberculosis.

Since we are obliged to admit the chronicity of the disease, we are at once forced to the conviction that the system has for a long time been undergoing a gradual poisoning. Equally sure are we that the system has been making a physiological attempt to stay its progress. Here we have two factors, one a continuous process of toxemia, the other an equally strenuous but fruitless attempt on the part of the system to overcome the same. It seems reasonable that between the two will be found a sufficient explanation for the gradual but persistent "loss of weight and physical power." Does it seem logical to resort to forced feeding, especially the increase of the proteins or concentrated foodstuffs, to counteract the loss of weight? Most emphatically, no. The powers of digestion, especially those of assimilation, have been reduced to a minimum. The patient is already weakened and does not perform sufficient labor to warrant the extra amount of calories. Assuming, however, that there is left some power of digestion and assimilation, and suppose that we succeed in fattening him, as we might fatten a goose, by stuffing, have we then in any way interfered with the toxin-producing disease? Did the accumulation of body weight, especially in the form of fat, ever indicate a higher standard of health? It certainly cannot be held that forced feeding ever tended to the development of muscle tissue.

Need I waste time in considering the cause of the loss of physical power? Anything that will stop the toxemia, anything that will overcome the anemia, will stop the loss of weight and physical power in the patient, and nothing else will or can do it any better than diathermia.

Climate.—While I am considering only the logical use of diathermia, I should feel that something was lacking did I not say a word about climate. At the present time there is no civilized country upon the face of the globe where tuberculosis does not flourish. Neither is there contained anything in this,

that, or the other country's air which *per se* tends to cure tuberculosis. Pure outdoor air, no matter where found, is grateful to a diseased as well as to a healthy lung. The pernicious habit of shallow breathing is the result of posture, faulty carriage, and impure air. It is far better to breathe the average impure air of a cellar or an attic to the fullest lung capacity than to breathe the purest mountain or sea air with only the lower two thirds of the lung. It is the nonuse of the apex of the lung that leads to atrophy and anemia of the part; it is such fertile soil that makes possible the flourishing of this disease in this common area. Therefore let us not send our consumptive patient among strangers in a strange land unless he is educated in the art of living and breathing in that land. Diathermia will temporarily overcome the anemia, while lung gymnastics will make permanent and temporary gain.

Diet.—As to diet, our patient should have all the fresh cream, not milk, that he desires. We advocate a diet rich in earthy minerals, especially the lime salts. We do not force the feeding—it is unphysiological. There is no drug that I know, that exerts even the slightest benefit. On the contrary, most of them interfere with the natural process of healing.

Exercise.—Exercise must be carefully supervised. Tuberculosis is a consuming, a wasting, a hyperoxidizing process. Rest therefore is of greater value than exercise, especially when diathermia is made use of. It is well known that after violent exercise tuberculous patients always react with a higher fever and increased malaise for a day or two. This is explained by the fact that with undue muscular energy there is an equally increased amount of circulation and respiration. During such times a greater amount of the toxins are liberated, and after entering the general circulation, cause a more violent reaction. Fifty per cent. of the benefit derived from lung gymnastics is due to the increased amount of antitoxin manufactured by the system during the flooding with the toxins.

Diathermia does exactly the same thing without loss of energy or effort on the part of the patient. It can be given in measured and graduated doses to suit each case from day to day.

Night sweats.—In about fifty per cent. of cases of tuberculosis night sweats become a troublesome symptom. I shall only mention that when the sweat of a tuberculous patient is injected into a nontuberculous animal a typical tuberculin reaction takes place. While the germs have never been found in the sweat, there is abundant evidence to show that the sweat contains the toxic material of the disease. Like the fever, cough, and the sometimes present diarrhea, the excessive night sweats must be viewed as reparative and should rather be encouraged than interfered with. I might say, in passing, that the term, night sweat, is a misnomer. A patient predisposed to sweating will sweat whenever the tension is taken off the nervous system, which occurs most commonly during complete relaxation, exhaustion, and sleep.

Anything that mitigates the production of the toxic material will lessen the tendency to profuse

sweating. All other symptoms being the result of the same causes, will be correspondingly influenced as the cause is mitigated.

Before considering the technic, let it be understood that diathermia must not be used to check or interfere with any of the symptoms of the disease. Most of the symptoms are not the result of the disease, but rather the manifestations of an attempted cure on the part of the system. Diathermia is used as a means to strengthen and increase this attempt of Nature. All the symptoms therefore at first should get worse. Not until the blood of the patient has furnished enough antitoxin to neutralize all of the toxins present, can there be an amelioration in the symptoms from toxemia.

Not until the blood of the patient has destroyed the bacteria, will the production of toxic material cease. Not until the blood of the patient has imprisoned all remaining germs in a prison of giant cells surrounded by a deposit of lime, will increase and proliferation stop.

All these things can be accomplished by an active blood stream directed to the seat of the lesion. The only agent at the present time known to be capable of this without harm or injury to the rest of the system is diathermia.

231 WEST NINETY-SIXTH STREET.

PAINS IN THE HEAD.*

From the Viewpoint of the Ophthalmologist.

BY ALFRED D. MITTENDORF, M. D.,
New York.

Pains in the head as viewed by the ophthalmologist may be roughly divided into three groups:

1. Those due to inflammatory conditions, of the eyeball, of its appendages, or of the other orbital contents. There are the usual signs of inflammatory reaction, redness, swelling, etc. The degree of pain depends upon the parts affected, e. g., if the cornea is diseased the pain is severe, while if the conjunctiva alone is involved, there is generally only a rough scratching sensation. Cases of orbital cellulitis are accompanied by severe pain, especially when the disease has spread from the neighboring sinuses, and the patients often consult an oculist first, as the symptoms seem to be due entirely to an ocular condition, the sinusitis being discovered only by an x ray examination. Glaucoma in acute attacks frequently causes such severe pain that morphine is needed to give the patient relief, and even this fails at times. The pain in iritis is also severe, radiating to the brow and temple and causing intense suffering with exacerbations during the night.

2. Cases, where on account of pain in brow, vertex, or occipital region, the patients believing their eyes are at fault come to be tested for glasses, and on examination it is discovered that the real cause is nephritis, arteriosclerosis, tumor of the brain, a rheumatic or gouty diathesis, malarial neuritis, or some other disease of the general internal system that had not been suspected.

The most striking example of this is nephritic

*Read before the Clinical Society of the New York Throat, Nose, and Lung Hospital, January, 1916.

neurorinitis, affecting young men or women in their twenties, when the only symptom complained of is headache, and where the ophthalmoscopic examination reveals the true nature of the condition.

3. Those due to eye strain. This is by far the most important class, as from fifty to sixty per cent. of the patients coming for consultation complain of headaches in brow, temple, occiput, or muscles of the back of the neck. The pain varies greatly. It may be only a feeling of dullness or slight constriction of the head, or it may be so severe that the patients are confined to bed, suffer from nausea and vomiting, and are unable to stand even the smallest amount of light, or the slamming of a door may start another severe paroxysm of pain, causing the sufferer to writhe in agony.

Eye strain, caused by the muscular effort of accommodation by means of which the eye is able to overcome the refractive error, is of gradual development, and if not relieved by proper glasses, will eventually produce a condition of chronic congestion of the lids and of the interior of the eyeball, with its characteristic brick red optic nerve, accompanied by pain and hypersensitiveness to light, the symptom complex called asthenopia.

On the other hand, the same ocular defect may cause severe pain in one case, only moderate blurring of vision in another, and no symptoms at all in a third; the last, overcoming the congenital defect by the habit of a lifetime, is never conscious of its existence. This is common in a strong, robust person, who does not have to use his eyes for continued near work, or who passes most of his life in the open.

Frequently glasses are used for a short time and then put aside, owing to the improvement in the patient's general condition, or to a change in environment or occupation. For example, a young man studying at school or college, when his summer vacation brings rest, may be able to lay aside his glasses and may never be forced to use them again, until presbyopia begins to make itself felt.

The grosser refractive errors often cause no headache, as the effort required to overcome the existing defect is so great that the person resigns himself to the blurring of vision, and by not fighting against it, escapes all eyestrain and pain.

Many patients suffer from headache, but are not aware that it is due to eyestrain, as there are no direct eye symptoms, only pain in brow or occiput which they had attributed to strong light, biliousness, fatigue, overindulgence at table, or mental worry. Some call their headaches hereditary, saying that as their parents and grandparents had headaches, they must naturally expect to have headaches themselves, little thinking that only the refractive errors were hereditary, and that they could expect relief from glasses.

Dull pain in the head is frequently complained of, with intense exacerbations after going to the theatre, riding in trains or automobiles, shopping, mingling in crowds of people, or watching ball games. Some authors go so far as to assert that car sickness or sea sickness may be prevented by the proper fitting of glasses.

Presbyopia, caused by the loss of elasticity of the

crystalline lens, begins to manifest itself at forty to forty-four years of age, by the gradual diminution of the range of accommodation. The patients complain of pain in the eyes or the back of the head, when they awake in the morning, especially after reading at night, or during the latter part of a trying day. This is similar to the condition known as "writer's cramp."

Errors of refraction may manifest themselves first after some severe illness or operation, when the patient's vitality has been reduced, particularly if any strain has been put on the eyes during convalescence, by reading in bed, for example. These patients later may regain their former ocular balance and go without glasses.

Muscular imbalance, where there is a continued effort required to force a weaker muscle to keep up to its stronger mates, is a common cause of eyestrain and headache. Where the defect is so great that binocular vision is impossible, we have few subjective symptoms, as no effort is used to force the eye into position, and it is allowed to wander at will, causing convergent or divergent strabismus. Muscular imbalance is generally found to have disappeared after proper glasses are used, but in a few cases this persists and must be treated by special means, such as exercising with prisms, using prisms constantly, or by operative procedures.

399 PARK AVENUE.

PAINS IN THE HEAD.*

From the Standpoint of the Oral Surgeon,

BY JOHN L. COURRIER, D. D. S.,

Newark, N. J.,

Assistant Oral Surgeon, New York Throat, Nose, and Lung Hospital.

Of all pains in the head, with the exception of headache which is present concurrently with a large variety of ailments in all parts of the body, I am of the opinion that the most frequent and constant may be traced to mouth and ear disturbances. Pain from the eyes is common, but takes the form of eye strain or headache rather than real acute pain. We find painful conditions of the sinuses of the head due to inflammation and infection. Also the nasal cavity with its deflected septum and turbinated enlargements is often a source of pain; but the number of people thus afflicted is small compared to those suffering from pain in the head originating in the mouth and ear. Caries of the teeth is the most prevalent malady to which the human race is heir. It is said that ninety-six to ninety-eight per cent. of the people of the United States have carious teeth. In countless numbers of these, the disease has progressed to such a degree that nerve exposure is present, resulting in the most excruciating pain in the head; the area involved depending on the particular nerve that is being irritated. As the nerve supply of the teeth is derived from the fifth nerve, it might be well to pause a minute and consider this fact and also trace a few of the reflexes of the area supplied by it.

*Read before the Clinical Society of the New York Throat, Nose, and Lung Hospital, January 20, 1916.

The oral surgeon meets more cases of reflex pain in the fifth nerve than any other practitioner of the medical art, because the field of his work is almost wholly circumscribed by this nerve. There is greater liability for reflex phenomena in the dental area than in the nose or orbit. The dental organs are peculiarly exposed to infection and traumatism, and the great number of teeth, together with the considerable mucous territory in the antrum of Highmore and cavum oris, all of which send dendritic processes to the Gasserian ganglion, make the dental region the point of most frequent occurrence for reflex pain in healthy dentures as well as the point of least resistance under circumstances of local disease in the teeth, gums, or antrum. There are reasons why the trifacial nerve more than any other should be the veritable reflex storm centre in civilized man. The peculiar structure of the nerve, the numerous filaments, and the extreme sensitiveness as observed by Landis and Sterling are conducive to pain both of local and remote region. The trifacial nerve represents the sensory roots of all the motor cranial nerves, from the third to the twelfth inclusive. Hence it responds reflexly to motor nerves of the face, orbit, and tongue. Moreover, the fifth and seventh nerves communicate everywhere on the face.

The facial distribution of the trifacial nerve is favorable to the depressing influences of heat and the paralyzing effects of cold, while its distribution to the tongue and temporomandibular articulation is subject to continuous traumatism and motion. The face and scalp may be the seat of local irritation which reacts reflexly as pain in the teeth and gums. On the other hand, a diseased tooth may produce reflex tender points in the skin, usually situated where the nerve emerges through the bone or fascia. An irritation in any branch of the sensory distribution of the fifth nerve may be the exciting cause of reflex pain in any other branch of the same nerve. It is equally possible for an irritant in very remote regions of the body to produce reflex disturbances in such parts as the teeth and jaws supplied by the fifth nerve. Thus a diseased uterus may be the cause of reflex pain in a tooth. Conversely, operations on the teeth of a pregnant woman may produce uterine contraction and premature labor. A carious tooth may be the cause of pain in the distribution of the brachial and cervical plexuses; conversely, a felon on the index finger may be the cause of pain in the distribution of the fifth cranial nerve.

Neuralgia of the fifth nerve has been produced by injury of the ulnar nerve (Anstie). A carious tooth may produce neuralgia in the cervical nerves (Salter). A carious tooth may produce distant neuralgia and no local pain (Gowers). Brachial neuralgia is associated occasionally with neuralgia of the fifth, and this when there is no connecting pain in the neck (Gowers).

Pain may occur in a sound tooth when a thorough, systematic anatomical examination shows conclusively that the cause of the pain is not in the fifth nerve.

The cervical plexus supplies the skin of the neck and the muscles concerned in respiration. The

phrenic nerve supplies motor fibres to the diaphragm and sensory ones to the pleura, pericardium, and peritoneum. An incipient inflammation of these regions may produce reflex pain in the distribution of the fifth nerve. Thus we see that we may have pain in the head along the fifth nerve from irritations starting from points distant from the head.

The trifacial nerve is more frequently the seat of painful affections than any other nerve in the body. Its proclivity to neuralgic affections may be accounted for as follows: It is the most sensitive nerve in the body; it has a large number of exceedingly sensitive fibres; its peripheral distribution to mouth, eye, ear, intramural sinuses, scalp, face, tongue, salivary glands, and temporomandibular articulation render its liability to injury and infection very great.

After this brief glance at the great part the fifth nerve plays in the pain of the head from the standpoint of the mouth worker, is it saying too much to trace more pains of the head to the mouth than to any other single region? Let me name a few of the diseased conditions of the oral cavity with which we come in contact daily in our routine work, every one of which is responsible for head pain. Pericementitis, acute alveolar abscess or periostitis, necrosis of jaw, blind abscess at the apices of the tooth roots, injury to alveolar process during extraction of teeth, leaving sharp points of bone which cause irritation of tissues, the leaving of small pieces of the roots of teeth in the mouth following fracture during extraction, unerupted supernumerary teeth, unerupted and impacted or partly impacted teeth, especially third molars and cuspids; pulp stones in the teeth, fillings placed too near to vital nerves, crowns placed on vital teeth, ill fitting plates and bridge work; orthodontia, when carried on by inexperienced operators, imperfect root canal work, bad occlusion of the teeth, hypercementosis; fracture of the jaw, tic douloureux, pyorrhea alveolaris, loose teeth, cysts of the jaws, antrum infection with the teeth as the starting point; neoplasms, epulis, tumors, granuloma in the sockets of teeth, epithelioma of the mouth, sarcoma, carcinoma, gummatous conditions; different varieties of stomatitis, thrush, leucoplakia, actinomycosis, Ludwig's angina, Vincent's infection; lead and phosphorus poisoning; calculus or stoppage of the ducts of the salivary glands, trismus of the jaws due to infection, unerupted or partly erupted third molars; and many other conditions which are a source of pain and must be reckoned with when we are speaking of pains of the head from the standpoint of the oral surgeon.

2 LOMBARDY STREET.

General Heliotherapy in the Treatment of Bone and Joint Affections.—Willis C. Campbell (*Amer. Jour. Orthoped. Surg.*, April, 1916) cites sixteen cases in which the treatment was given satisfactorily; there was improvement and cure in all but one. Patients were exposed at all times of the year, but especially from March to December. The Bradford frame and extension were used for fixation. No medicinal treatment was given.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXIX.—How do you proceed in post partum hemorrhage? (Closed.)

CLXX.—How do you prevent laceration of the perineum in childbirth? (Answers due not later than May 15th.)

CLXXI.—How do you treat a sprained ankle? (Answers due not later than June 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscriber or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXVIII has been awarded to Dr. C. C. Henin, of Springfield, Mass., whose article appears below.

PRIZE QUESTION CLXVIII.

THE CYCLIC VOMITING OF INFANTS.

By CHARLES C. HENIN, M.D.,
Springfield, Mass.

The best treatment of cyclic vomiting is to induce absolute rest of the stomach, maintaining strength by rectal feeding and irrigation, neutralizing the acid condition by means of sodium bicarbonate, and using sedatives to allay excessive nervous symptoms. The attacks occur usually without warning. Nothing is retained during the vomiting stage. Cyclic vomiting is characterized by periodical attacks of vomiting and prostration, and is due to some form of toxemia.

Diagnosis. At first view attacks may strongly suggest the onset of tuberculous meningitis, and only the course of the symptoms may show that this is not present. Usually a history of many previous attacks may be obtained. From acute indigestion, cyclic vomiting is differentiated by the fact that the attacks are not brought on by the ingestion of food. From gastritis it is distinguished by its severity, the shorter duration of its symptoms, and its self limited course. Appendicitis is excluded by the absence of pain, tenderness, and high temperature.

Treatment. When the fact is established that it is cyclic vomiting, then irrigation of the colon once or twice daily with normal saline solution containing from one to two drams of sodium bicarbonate is indicated. It relieves the excessive thirst and eliminates the accumulated toxic substances in the blood and intestines. Not even water or cracked ice should be given by mouth until the child has been free from vomiting for at least twelve hours. Rectal feeding of peptonized skimmed milk and white of egg should be started after the first twenty-four hours. If the child is very restless and exhausted from lack of sleep a good prescription is the com-

bination of thirty grains of the bicarbonate, ten grains of sodium bromide, and two grains of chloral hydrate given per rectum with the nutrient enema. In extreme cases one fiftieth of a grain of morphine may be given subcutaneously.

As soon as the retching ceases, plain boiled water should be given by mouth for several hours, and if it is retained, peptonized skimmed milk with lime water is tried.

Ten to twenty grains of glucose three times a day should be given by mouth as soon as the vomiting has stopped. In the course of four or five days, after the cessation of vomiting, the child should be on its regular diet, but it is wise to exclude for a longer time the fats of milk and butter and to give a larger carbohydrate diet than usual. If the vomiting recurs, it will be necessary to withdraw all liquids by mouth and resume the nutrient enemas and rectal medication. If constipation exists, a daily use of a cleansing enema before the rectal feeding is of value. Laxatives should be avoided.

[We regret that the other articles offered in this discussion are not of sufficient merit to warrant us in giving them space that may be profitably devoted to more valuable matter.—EDS.]

Abstracts and Reviews.

MEDICAL EDUCATION IN THE UNITED STATES.*

By WILLIAM H. WELCH,
Johns Hopkins University, Baltimore.

It has been the custom of the Harvey Society to have lectures which presented the results of original research on the more important scientific phases of medicine. The present remarks do not fall in that category, but I may throw the burden of responsibility for this upon your president, who selected my subject for me. The subject of medical education does not seem altogether inappropriate, however, since without adequate educational foundations scientific research could not flourish. It is with but certain phases of medical education in this country that I shall deal in the hope of pointing out certain anomalies and some of the great advances that have been made in spite of them.

During the first half of the last century, and even later, medical education was at its lowest level in this country. At no time and in no other country has it ever been on such an inferior plane. This was due to two main factors; one was the very rapid growth of this country, the other the anomalous condition of the growth and multiplication of medical schools which were entirely independent of both hospital and university affiliation. Even today the fundamental evils of medical education can be attributed to this divorce of the medical school from hospital and university. This evil was not altogether bad, however, for it had certain compensations, principally in the persons of some of the greatest and most inspiring medical teachers. Of the names which might be mentioned it is sufficient

*Summary of a lecture delivered before the Harvey Society, at the Academy of Medicine, New York, April 29, 1916.

to recall those of MacDowell, Drake, Dudley. Under these conditions it must be admitted that the results attained were far better than the system.

During the past half century, and more particularly during the last quarter century, there has been remarkable progress in medical education in the United States, and it would be well to look into the more important factors leading to this betterment. In the first place, during the past fifty years, there was a gradual awakening of professional and public opinion. This awakening, however, for a long time had little effect upon the schools themselves, but it served to ripen us for the changes which had their inception with the establishment of the Johns Hopkins Medical School, in 1893.

The establishment of this school was accomplished under what were then peculiarly advantageous conditions. There was a large hospital for the use of the school; there was a university with high standards of its own; and the endowment, though not large, was still the largest then available for a medical school. The endowment carried with it certain specifications as to preliminary requirements which have been followed with great satisfaction. It was made a prerequisite that the candidate for medicine should have a degree in arts or science. Further, the medical curriculum was lightened by the preliminary requirements calling for the inclusion of training in chemistry, physics, general biology, and a reading knowledge of French and German. While we believe that this plan of high preliminary requirements is satisfactory, it still entails too long a period before the young man or woman can enter upon the study of his profession. The fault here lies in the deficiencies of our secondary education. High schools do not yet provide sufficient educational preparation, but there is beginning a tendency toward the correction of this fundamental evil, and it is to be hoped that as our high schools approach the character of the German gymnasia the time for adequate preliminary education can be shortened so that the medical student will be ready and well prepared to take up his professional studies at the age of nineteen years.

A second factor of great importance in bringing about the recent advancement in medical education has been the proper organization of the laboratory branches of medicine upon a university teaching basis with full time heads of the several departments. For a long time anatomy was the only subject in the medical curriculum which was studied by laboratory methods, and as a consequence it rose in importance to undue proportions. The growth of the organization of teaching in the other laboratory branches, including physiology, pharmacology, bacteriology, pathology, and physiological chemistry, is truly an American development. At the present time these subjects are more highly developed from the teaching point of view in American medical colleges than anywhere else in the world. A great stimulus to growth of ability was the selection of teachers on the basis of their productive capacities in their respective fields and their contributions to the advancement of medical knowledge.

The question might properly be raised whether we have perhaps not tended to too great emphasis

on the importance of the laboratory subjects and laboratory methods of teaching. It must be recognized that only a relatively limited portion of any of these subjects can be taught by laboratory methods, and not necessarily the most important portion. The risk of too great emphasis on this small portion entails the loss of respect for the subject. An effort to correct this danger should be made by trying to give a broader conception and wider perspective to the student. This can be accomplished largely by the introduction of lectures, conferences, and quizzes. The student should be stimulated to read and to learn things beyond those capable of laboratory demonstration.

The organization of the hospital staff, which was first initiated at Johns Hopkins, also gave an impetus to the advancement of medical education. The need for some higher men than the intern staff was seen and met in the establishment of the system of house officers or resident staff. These positions were filled for indefinite periods by the best young men obtainable, who were encouraged to make use of the great wealth of material and almost ideal conditions for study and investigation. Not only did the medical students profit by this plan, but also the men themselves were helped to broader training and experience which fitted them for higher positions.

Another factor that has had some influence in improving the status of medical education was the adoption of higher standards by many of the State licensing boards. This has brought pressure to bear on the inferior medical schools and has done much to wipe them out or force them to raise their standards. The State board standards are not yet sufficiently high, however, to support the better medical schools, and often actually handicap them.

Two other influences which have played important roles have been the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges. The suggested adoption of a "standardized medical curriculum" by the council threatened the welfare of medical education, but fortunately this was not accepted. The evil lay in the inflexibility which it would have introduced.

The report prepared a few years ago by Abraham Flexner exerted a powerful influence upon professional, public, and university opinion and has done incalculable good. Lastly, the progress of medicine itself has been an enormous factor for the advancement of medical education. This factor, however, was in large measure due to the establishment of full time laboratory workers and the attendant increased productiveness in the medical sciences. With this advance and as a measure of it there has been associated the growth of many specialized medical journals to give suitable outlets for the work of the several scientific branches. It was but a few years ago that the *Journal of Experimental Medicine* was founded, and now we have many more highly specialized journals, made necessary by the rapid growth of our scientific departments.

Passing to the subject of growth in the clinical side of medical education we have seen the adoption of the clinical clerk and surgical dresser system, the better organization of the hospital staff, and the full

time clinical teacher. Still there remains some contrast between the laboratory and clinical sides of the subject. With the growth of the established changes this contrast bids fair to be wiped out. The placing of certain clinical departments upon the university basis, with full time heads of the departments, has yielded excellent results in spite of many criticisms. The ideal has not yet been reached, but the limits of human life, of human capacity, and of human endurance seem to indicate that the best approach to the ideal which is possible is the restriction of the activities of the full time clinical head to hospital practice with its splendid opportunities for investigation. The full time plan should not wholly exclude those who indulge in outside practices, and special uses for their services still exist. The fact that it is still hard to find adequately qualified men for the head positions in full time clinical work constitutes a severe criticism of the existing methods of medical education. The full time plan should not be regarded as more than a mechanism, and should be adapted carefully to the conditions, rather than adopted blindly. It is only possible where the clinical facilities are sufficient to occupy the entire time of the men selected.

There are still many points upon which something should be said. For example, our lack of the proper cultivation of legal medicine, the need for institutes of hygiene, and the neglect of the history of medicine. There is not time for their discussion.

The question will be raised, Does all this make better doctors? To this the answer may be given, that the fundamental aims of medical education have not changed; there has merely been a need for a change in the methods of training and education in order that the existing knowledge may be more efficiently applied to treatment of the sick.

Contemporary Notes.

Death of a Prominent French Surgeon.—Professor Léon Labbé, who died recently, was born at Merlerault (Oise) on September 29, 1832. He graduated at the Paris faculty in 1861, became *agrégé* in 1863, and surgeon to the hospitals in 1864. For more than thirty years, remarks the *British Medical Journal* for April 15th, he was one of the leaders of French surgery. Many years ago his name was brought prominently before the public by his successful removal of a fork from the stomach of a man who had swallowed it; the case was known as that of *l'homme à la fourchette*. Labbé was the author, in conjunction with Coyne, of a treatise on benign tumors of the breast and of a number of other writings on surgical subjects. He was a member of the Institute of France and a very active member of the Académie de médecine. He was a Commander of the Legion of Honor. Labbé retired from professional life in 1905 and entered the French Legislature, becoming Senator for the Orne and President of the General Council of the Department. Among those present at the funeral service, which took place at the Church of Saint Augustin on March 24th, were a number of representative men in science and politics.

The Question of Child Labor.—The question of child labor is a vexed one in all parts of the world. In Great Britain the matter has been adjusted in a satisfactory manner for a considerable time, but in various parts of Europe child labor flourishes. It is an evil from all points of view and to some extent a physical and mental menace to the race.

In America child labor has held sway too long and in some parts of the country has approached the proportions of a public scandal. However, now public opinion seems to have been fully aroused to the harmfulness of the system, remarks *Pediatrics* for February, 1916, and the result has been the introduction of the Keating-Owen Child Labor Bill.

Studies of child labor have been carried on by the Massachusetts State Board of Labor, and recently this board requested that Assistant Surgeon M. V. Safford, of the Public Health Service, should be authorized to assist the board in the problems which confronted it with respect to the employment of child labor in the State, and he was accordingly detailed for this purpose. The work already accomplished is referred to at some length in the *Annual Report of the Surgeon General of the Public Health Service for the fiscal year 1915*, published recently.

By recent State legislation the administration of practically all laws and regulations relating to the conduct of industries and the employment of labor in Massachusetts has been placed in the hands of this board, together with complete jurisdiction in matters of industrial hygiene.

Doctor Safford commenced his investigations in May, and under his direction comprehensive physical examination was made of minors employed in the textile industries of the State in accordance with a prescribed scheme calculated to bring out and record abnormal conditions possibly attributable to occupation or working conditions.

For instance, an undue proportion of the boys employed have been found to be under height and weight for the ages given, but such deficiencies bear no relation to the duration of employment. To some extent such deficiencies are more apparent than real and are to be accounted for by successful evasion of the State laws with respect to the age and hours of employment of minors. The same thing is apparent, however, in groups of boys whose ages would not seem open to question and appear to be accounted for by the fact that mill work is chiefly "woman's work" and is likely to attract males who by lack of physical strength or other causes are ill fitted to do anything else, or, in other words, that in this kind of investigation one is dealing to a great extent with material that was pathological from the start. So far as the investigation has gone, it may be said that, on the whole, considering that much of the work of mill employees calls for no greater degree of intelligence than enough to exert physical strength, there have not been found a surprising proportion of deficient persons.

Any law with regard to child labor should certainly provide that no child under sixteen years of age should work for long hours, not longer, if so long as eight hours a day, and there can be little doubt that reforms in this direction are urgently needed.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal and The Medical News.

A Weekly Review of Medicine.

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.
CLAUDE L. WHEELER, A. B., M.D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.

Subscription Price:
Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 6, 1916.

MORE THAN A CENTURY OF PUBLIC HEALTH ADMINISTRATION.

The Department of Health of the City of New York recently celebrated the fiftieth anniversary of its organization. In commemoration of this event, Dr. Charles F. Bolduan, director of the Bureau of Public Education of this department, has had printed a review of the history of the health administration in the city from 1805, when the first report of the city Inspector of Health was presented, down to the present time, more than a century.

The monograph makes most interesting reading both to the citizens of New York and to physicians interested in public health. Prior to the organization of the Metropolitan Board of Health, in 1866, the efficiency of the health department varied materially, depending largely upon the personality of the city inspectors. Fortunately for the community city inspectors from time to time have been selected who had more than a perfunctory interest in their duties, and whose reports show a deep sense of the obligations which they assumed in taking office, as well as a broad, scientific knowledge of medicine and sanitation as they were understood in those days.

As far back as 1859, we find a report condemning the overcrowding of the surface cars, and recommending legislation to prevent it. The criticism in

the report of City Inspector Delevan for 1860 sounds very much like reports which have been made within the last ten years. "The poorest accommodations at the dearest price is the real practice," says Doctor Delevan of the surface railways, and he urges the enactment of ordinances requiring adequate accommodations for the public. The same inspector points out the evils of tenement house life, and advocates the establishment of administrative control of tenement houses. The inspectors, however, had little, if any real power, and it was only after the Metropolitan Board of Health was organized in 1866 that the department came to assume the important place in the community life which it now occupies.

A detailed review of the work of the department of health since its organization in 1866 shows that the officers have not only kept pace with the development of medicine and sanitary science, but have even taken the lead from time to time.

It is most interesting to observe how nearly, as far back as 1822, Dr. J. C. Nott, at that time a city inspector, came to learning the real means by which yellow fever is spread, and that he realized the fact that the difficulty of solving this problem was due mainly to the imperfection of the microscopes then available.

As a whole, the record of the Department of Health of the City of New York is one of which the citizens and physicians of the metropolis may well be proud, and if minor abuses have crept in from time to time, the work of the department on the whole has been ably directed toward the protection of the people from disease and the organization of the forces of medicine and sanitation for the welfare of the community.

THE MALADIES OF NAPOLEON.

This day, ninety-five years ago, on the body of Napoleon Bonaparte, the greatest military genius of all time, a post mortem examination was being held. It is many years since Napoleon died, but still the discussion continues as to what disease ultimately brought about his end. The nature of the first and the last illnesses is well known, but the exact nature of the ailments from which he suffered during his lifetime remains a little uncertain. At the siege of Toulon, in 1793, he undoubtedly contracted scabies as a result of working at a cannon with a gunner who had that disease. The hero was improperly treated, and seems to have suffered from the itch for several years. In Egypt, in 1798, he had gastric catarrh, and according to Cabanès suffered also severely from the itch. When Napoleon was at the height of his glory, he drank coffee freely for

the purpose of keeping himself awake. At St. Helena he admitted to Arnott his partiality for coffee. During the latter part of his reign he suffered from piles, and to these the failure of the Waterloo campaign has been ascribed. His irritability on the morning of Waterloo was not due, as so frequently stated, to gastric distress caused by the eating of a hot biscuit.

The story that Napoleon was an epileptic is not true. Epilepsy is frequently mentioned as his special disorder, but on doubtful grounds. That disease in its chronic form is incompatible with the physical and psychical conditions which go to make up a great military leader. Napoleon certainly died of cancer of the stomach. Between Arnott, the English surgeon, and Antommarchi, Napoleon's personal medical attendant, there was a dispute as to what really was the trouble with their distinguished patient. Antommarchi persisted in attributing Napoleon's condition to the climate, while Arnott expressed the belief that the disease was the same which cut off his (Napoleon's) father in the pure air of Montpellier. Upon April 28th (1821), Napoleon issued instructions to Antommarchi, that after his death his body should be opened, but that no English medical man should touch him, unless assistance was absolutely necessary, in which event he gave Antommarchi leave to call in Arnott. He directed particularly that his stomach should be examined, and the report transmitted to his son. "The vomitings," he said, "which succeeded one another without interruption, lead me to suppose that the stomach is, of all my organs, the most diseased; and I am inclined to believe that it is attacked with the same disorder which killed my father, I mean a scirrhus in the pylorus." On May 2nd the patient returned to the same interesting subject, reminding Antommarchi that the stomach should be carefully examined. "The physicians of Montpellier had announced that the scirrhus in the pylorus would be hereditary in my family. Their report is, I believe, in the hands of Louis. Ask for it, and compare it with your own observations that I may save my son from the sufferings I now experience." May 5th came amid wind and rain. Napoleon's spirit was deliriously engaged in a strife more terrible than that of the elements around. The words, *tête d'armée*, the last which escaped his lips, intimated that his thoughts were watching the current of a heavy fight. About eleven minutes before six o'clock in the evening, Napoleon, after a struggle, which indicated the original strength of his constitution, breathed his last. On account of the poor light the autopsy was deferred until the next morning, May 6th. At the autopsy the cause of death was well brought out. A large ulcer occupied almost

the whole of the stomach. The intestines were absolutely free from disease. The specimen of cancerous disease of the intestine shown for many years at the College of Surgeons in London as taken from the body of Napoleon is now known to be spurious. All viscera were returned to the body save the heart, which was put in a silver vase filled with spirits. The vase containing the heart, however, was interred with the body. The autopsy as performed by Antommarchi and Arnott was in no sense a complete one. As cancer of the stomach kills within a few years, the legends that Napoleon suffered from the "germs of his last illness" when in Egypt (1798) and in Russia (1812) are absurd.

MAY DAY IN NEW YORK CITY.

The merry month of May brings thoughts of azure skies, green fields abloom, woodsy nooks carpeted with violets and starfaced primulae, tinkling brooks, lowing cattle, the song of birds, and the inarticulate voices of awakening Nature. No pastoral dream is May Day on Fifth Avenue in New York city, but rather an urban satire which every physician should peruse and ponder well. A hundred thousand human beings crowding the sidewalks of the famous avenue, chattering in Yiddish, Italian, or some Slav dialect, fifty thousand others marching four abreast, inspired by brass bands and hundreds of standards inscribed in Yiddish; a motley crowd, and yet only a small percentage of the million and more of those of foreign birth and habit who toil in New York city, industrious, intelligent, ambitious, speaking no English, often illiterate, ignorant, diseased, and careless of health and the duties of community life. These are the people for whose education in public sanitation and personal hygiene the medical profession is mainly responsible, yet whose existence is recognized in few courses of medical training, officially by no chair in any medical school, and rarely even in the conferences of any medical society.

Yet the mental and social isolation of the non-English speaking population is not characteristic of the metropolis, but is known in every city, town, and village in the middle Atlantic States. Only by reason of numbers is their condition notable in New York city. In Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, and the middle West they throng. The menace of disease lurks in the huddled shacks of slum districts in every town. The neglected foulness of labor camps and factory tenements means the spread of disease. These avoided foreign communities must be reached by physicians, boards of health, and teachers in the public schools. The possibility of reaching them lies pri-

marily through instruction in the English tongue. Should it not be a constant endeavor on the part of physicians to promote the Americanization of the foreign born by advocating the wider teaching of the English language to adult workers of foreign birth and thereby to extend the momentous possibilities of general health education?

THE PATHOLOGY OF EXERCISE.

There has been considerable lament, in connection with modern athleticism, that so little is known about the physiology of exercise. All physiology is the physiology of exercise, and, while we must confess to ignorance of physiology in general, we know as much about the working of the various organs involved in muscular exercise as we do about any branch of the subject. We certainly know enough of health for all practical purposes. Very rarely does the normal person in ordinary life exercise his muscles to a point which will be in the least disastrous to any organ. What is really desired by these enthusiasts for over strenuous athletics is a knowledge of the pathology of exercise, and a nice distinction between exercise which produces normal and that which produces abnormal results, so that a dozen fine human organisms can be worked to the limit in the arena for the entertainment of the indolent thousands who enjoy the excitement of the spectacle from the galleries.

We know as well as we shall ever know that the line between the physiological and the pathological is never sharply drawn, and that no tests will ever show when the body is worked to the safe limit of endurance. There is no safe limit to which the physiological machinery can be worked as it is in some competitive muscular exercise.

Man is the only animal that needlessly carries its activities to excess—that, without adequate excuse, exceeds physiological limits in mental, muscular, alimentary, sexual, or other activities. Yet man has the same instincts, the same feelings of fatigue, of satisfaction, and of general fitness for work and for enjoyment of life, which would be his guides if he permitted. There will never be any laboratory or instrumental tests to equal these in nicety, or to take their place in denoting either lack or excess of function.

No matter how much we know of either the physiology or the pathology of exercise, our institutions of learning will doubtless continue to sacrifice their lustiest recruits on the altar of its highly Christian, life and death effort to get the better of some other similar institution of learning. Since these must of necessity be life and death struggles, how can there be any line between the physiology and the pathol-

ogy of exercise of those concerned? No carefulness in training can make the strain of the final contest more than a trifle less severe and dangerous.

Fortunately, not all the athletic events require prolonged and violent effort, and need result in pathological changes; and when we become less imitative of the Greeks and other presumably more primitive people, and become rationally progressive in these matters, there will be a weeding out of such events as the Marathon race—a sentimental repetition of an historic achievement having nothing to do with the betterment of human life—and like pathological performances which parade in the disguise of physical training.

A FRENCH SUBSTITUTE FOR 606.

At a meeting of the Academy des sciences on March 20th, Laveran (*Paris médical*, April 1, 1916) read a paper by Roger, Dalimier, and L. Frenkel, of the sixth army, who have experimented successfully with the "Danysz Compound" in rebellious cases of syphilis. This is a compound of arsenic, antimony, and silver which has been used at the Institut Pasteur, and bears also a numerical title—"102." Two important cases were one of aortic aneurysm and one of myelitis which improved rapidly under a series of extremely small doses.

IMPERFORATE HYMEN IN A BABY.

Dr. Herbert R. Spencer communicates to the *Lancet* for April 15th a note on this unusual condition. For want of a simple examination at birth, he says, imperforate hymen escapes notice till menstruation occurs, when the pain, distention, ill health, and nonappearance of the menstrual discharge lead to a gynecological examination and the condition is discovered. Unfortunately, sometimes the distention of the genital tract has involved the Fallopian tubes when the case is seen; the patient has been rendered sterile, and the risk of treatment is much increased. All the cases Doctor Spencer has seen have ended in recovery after evacuation of the menstrual blood through an incision in the hymen.

The object of the note is to urge obstetricians to make a routine inspection of the vulva of female babies before the puerperal attendance ceases. If the hymen is found to be imperforate and bulged forward by secretion, a snip with a pair of scissors will save the patient from a grave risk to her fertility, health, and even life. The point is illustrated by a case in which the malformation was discovered by an observant mother.

A baby girl eleven weeks old was brought to hospital on December 4, 1915, on account of a swelling in the vulva which the mother had first noticed a fortnight previously. On inspection the labia were separated by a cystic swelling of the size of a small marble which became a little more prominent when the infant cried. It was obviously the imperforate hymen. Its most prominent part was seized with mouse tooth forceps and an elliptical piece was

snipped out; about a dram of mucus escaped from the vagina, and the hymen sank back to its normal position. A thin strand of oiled gauze was inserted into the hymeneal opening for a few days. A fortnight later the parts had a normal appearance.

THE SOUTHERN HOSPITAL RECORD.

We have to acknowledge receipt of the first number of the *Southern Hospital Record*, issued April, 1916, by Edward A. Werner, at Atlanta, Ga. It is a handsome publication of thirty-two pages, suitably illustrated, with ornamental cover, the subscription price of which is two dollars per annum. The editors—Mr. Werner and Dr. Charles Edward Dowman—in their Foreword, state that they expect to pay particular attention to the hospitals of the Southland; they invite criticism and promise informative articles on hospital construction, equipment, management, records, etc. We are glad to welcome the newcomer and to extend our best wishes for its success.

News Items.

Drugs in War Time.—This subject will be discussed at the joint meeting of the Philadelphia County Medical Society and the Philadelphia Branch of the American Pharmaceutical Society, to be held in Philadelphia on Wednesday, May 24th.

A Course in Sanitary Science at Rutgers College.—An appropriation of \$4,000 has been made by the State of New Jersey to aid in establishing a course of sanitary science at Rutgers College, which will be affiliated with the course in biology.

The Samuel D. Gross Prize.—The Philadelphia Academy of Surgery announces that essays in competition for this prize of \$1,500 will be received until January 21, 1920. Full information may be obtained by writing to the trustees, 19 South Twenty-second Street, Philadelphia.

Canadian Research Bureau.—Dr. Arthur D. Little, of Boston, has been placed in charge of this bureau, which was organized recently in Montreal for the purpose of coordinating the work of scientific men and experts engaged in scientific research in all parts of the Dominion of Canada.

Personal.—Dr. Henry W. Wandless, 9 East Thirty-ninth Street, has been appointed clinical professor of ophthalmology at New York University and Bellevue Hospital Medical College.

Dr. Charles S. Hirsch, of Philadelphia has been appointed genitourinary surgeon to the Mount Sinai Hospital.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, May 8th, Samaritan Hospital Medical Society, Philadelphia Academy of Surgery; Wednesday, May 10th, County Medical Society; Thursday, May 11th, Polyclinic Ophthalmic Society, Pathological Society; Friday, May 12th, Northern Medical Association, Psychiatric Society.

Doctor Jacobi Honored.—A dinner was given on the evening of May 3d to Dr. Abraham Jacobi, in celebration of his eighty-sixth birthday, by the directors of the Hospital for Deformities and Joint Diseases. Announcement was made at this dinner that \$12,000 had been given toward the million dollar fund which is being collected for new buildings for the institution. Of this amount \$100,000 was subscribed by the directors.

A State Federation of Minor Hospitals in Pennsylvania.—The committee of the State Medical Society on Postgraduate Teaching has taken up the subject of a Pennsylvania Federation of Hospitals of not over one hundred beds. Much clinical material in these hospitals is lost so far as instruction of medical graduates is concerned because of lack of cooperative effort. It is believed that it could be utilized by adequate directive influence.

New York Academy of Medicine.—At a stated meeting of the academy, held Thursday evening, May 4th, Dr. Walter B. Cannon, George Higginson Professor of Physiology, Harvard Medical School, read a paper entitled *An Explanation of Some Disorders Supposed to Have an Emotional Origin*. The discussion was opened by Henry Rutgers Marshall, L. H. D., D. S., and continued by Dr. Charles L. Dana, Dr. Pearce Bailey, Dr. Joseph Collins, Dr. Harlow Brooks, and others.

The Long Island College Hospital Raises Its Entrance Requirements.—After January 1, 1918, the Long Island College Hospital, Brooklyn, will require the completion of two years of study in a college of liberal arts or science by candidates for admission to the four year medical course leading to the degree of M.D. At present it requires but one year of college study. Beginning next fall Columbia University will conduct a premedical college year at the Long Island College Hospital.

A Symposium on Hyperthyroidism.—The next meeting of the Philadelphia Academy of Surgery has been postponed from May 1st to Monday evening, May 8th, when Dr. A. J. Ochsner, of Chicago, Dr. Miles F. Porter, of Fort Wayne, Ind., and Dr. G. T. Matlack, of Wilkes-Barre, Pa., will address the academy on the subject of exophthalmic goitre. Members of the American Surgical Association, *en route* to Washington, D. C., to attend their annual meeting, are invited to attend the meeting of the Philadelphia academy and take part in the discussion.

The "Safety First" Train.—The United States Government's "safety first" train left Washington, D. C., Monday, May 1st, for Philadelphia, the first stopping place on an educational tour that will take it through all parts of the United States. The train consists of twelve cars which carry hundreds of exhibits illustrative of the methods employed by the Federal government in saving human life and property. It is the belief of government officials that the number of deaths and injuries from accidents can be reduced one half through safety first methods, and the object of the tour is to show how this can be done.

Street Accidents in New York during April.—According to the report of the National Highways Protective Society, twenty-three children were killed in New York in accidents due to vehicular traffic in the month of April. Automobiles caused the death of eighteen, wagons three, and trolleys two. The total number of persons killed in this city for the month was forty-two, thirty-two by automobiles, five by trolleys, and five by wagons, compared with twenty-one by automobiles, seven by wagons, and ten by trolleys in April, 1915. In the State outside of New York city nineteen persons were killed by automobiles, one by trolley, and three by wagons, compared with twenty by automobiles, two by trolleys, and one by wagon in April, 1915.

Examination for Inspector of State Hospitals.—Among the positions for which the Civil Service Commission of the State of New York will hold examinations on June 4th, is that of inspector in the State Hospital Commission. This position, which is open to men only, carries a salary of \$1,800. The minimum age is thirty years. The position requires a thoroughly trustworthy man of good address who has had at least two years' experience as an inspector or investigator of State hospitals or State charitable institutions, or in connection with the work of such institutions. The duties of the position include the inspection of the management and operation of the State hospitals and of the various branches of the work of the State Hospital Commission.

California State Medical Society.—Dr. George E. Kress, of Los Angeles, dean of the medical department of the University of California, was elected president of the California State Medical Society, at the annual meeting held in Fresno on April 18th, 19th, and 20th, succeeding Dr. Harry M. Sherman, of San Francisco. Other officers were elected as follows: Dr. L. R. Wilson, of Fresno, first vice-president; Dr. John C. Yates, of San Diego, second vice-president; Dr. Philip Mills Jones, of San Francisco, reelected secretary. Next year's meeting will be held in San Diego.

New York City's Death Rate.—The total number of deaths from all causes reported to the Department of Health of the City of New York during the week ending April 29th, was 1,588, the annual death rate being 14.83 in a thousand of population, compared with a rate of 15.63 for the corresponding period in 1915. There was a noteworthy decrease in the mortality from measles, scarlet fever, diarrheal diseases, pneumonia, pulmonary tuberculosis, and heart disease, while the following causes of death showed a slight increase: Diphtheria, croup, whooping cough, digestive diseases, cancer, bronchitis, nephritis, and diseases of the nervous system. The death rate for the first eighteen weeks of this year is 15.44, compared with a rate of 15.65 for the corresponding period in 1915.

American Association of Immunologists.—The third annual meeting of this association will be held in Washington, D. C., May 11th and 12th, with headquarters at the Hotel Raleigh. Twenty-six papers are listed on the program and among the topics to be discussed are the theory of immunity, leucocytes, cutaneous reactions, pneumonia, typhoid fever, antinematogenic serum, streptococcus, complement fixation, sensitization of bacteria, and vaccine therapy. At the first session, held on Thursday forenoon, the president of the association, Dr. James W. Jobling, of Nashville, Tenn., will deliver an address on the Relation of Lipoids to Immune Reactions. Dr. Victor C. Vaughan, of Ann Arbor, Mich., will present a paper on Additional Facts Concerning Protein Poison. Dr. Martin J. Synnott, of Montclair, N. J., secretary of the society, will be glad to furnish programs and full information regarding the meeting to all who are interested.

Medical Society of the State of New York.—The 10th annual meeting of this society will be held in Saratoga Springs, N. Y., May 15th to 18th, under the presidency of Dr. W. Stanton Gleason, of Newburgh. An elaborate program has been arranged by the Committee on Scientific Work, of which Dr. Thomas J. Harris, of New York, is chairman. On Tuesday evening, May 16th, a general meeting will be held in the Casino Auditorium, with Doctor Gleason presiding. Dr. Albert W. Ferris, of Saratoga, will present a paper on the Geology and Hydrostatics of Saratoga Springs, which will be illustrated with lantern slides. Dr. Walter B. James, of New York, will present a paper on the Therapeutic Importance of a Scientifically Conducted Health Resort. The Honorable Charles S. Whitman, Governor of New York, will deliver an address on the Relation of the State to the Saratoga Springs Reservation. Dr. Richard P. Strong, professor of tropical medicine at Harvard Medical School, will deliver the oration in medicine.

American Association for Promoting Hygiene and Public Baths.—This association, which was organized on May 15, 1912, will hold its next conference in Baltimore, Md., on Tuesday, May 9th. Among the papers listed on the program are: Dock Baths, by Dr. F. E. Froczak, health commissioner of Buffalo, N. Y.; Floating Baths, by Colonel Frank Hines, superintendent of public building, New York; Effect of Baths in Training the Feeble-minded, by Eleanor Keller, Pd.D., Vanderbilt Clinic, New York; Comparison of Methods for Disinfecting Swimming Pools, by Professor Wallace Mannheimer, of Columbia University. The United States Public Health Service will be represented by Surgeon William Nydegger. An address will be delivered at McCoy Hall, Johns Hopkins University, by the president of the association, Dr. Simon Baruch, of New York, on Hygienic Preparedness and School Baths. J. Leonard Mason, 587 City Hall, Philadelphia, is secretary of the association, and will be glad to furnish full information regarding the meeting.

New Officers of the Georgia State Medical Association.—At the sixty-seventh annual meeting of this association, held in Columbus, April 20th and 21st, the following officers were elected: President, Dr. J. G. Nean, of Dawson; first vice-president, Dr. J. M. Anderson, of Columbus; second vice-president, Dr. C. K. Sharpe, of Arlington; secretary and treasurer, Dr. W. C. Lyle, of Augusta (reelected). Next year's meeting will be held in Augusta.

The Problems of the Deaf.—At a meeting of the Section in Otology of the New York Academy of Medicine, to be held on Friday evening, May 12th, the program will consist of a symposium on the problems of the hard of hearing. The following papers will be read: The Social and Economic Aspects of Deafness, by A. J. Amateau; The Psychology of Deafness from the Standpoint of the Patient, by George W. Johnson; The Partially Deaf Child, by John D. Wright, Ph.D.; The Problem of the Education of Deaf Mutes, by Harris Taylor, LL.D.; The Relation of the Hard of Hearing Patient to the Physician, by Wendell C. Phillips, M.D.

Medical Societies Meeting in Washington Next Week.—The following societies will meet in annual session in Washington, D. C., next week: American Association of Genitourinary Surgery, May 9th and 10th; American Association of Pathology and Bacteriology, May 9th to 11th; American Climatological and Clinical Association, May 9th to 11th; American Dermatological Association, May 8th to 10th; American Gastroenterological Association, May 8th and 9th; American Gynecological Society, May 9th to 11th; American Laryngological Association, May 9th to 11th; American Neurological Association, May 8th to 10th; American Ophthalmological Society, May 9th to 11th; American Orthopedic Association, May 9th to 11th; American Otological Society, May 9th and 10th; American Pediatric Society, May 8th to 10th; American Society of Tropical Medicine, May 9th to 11th; American Surgical Association, May 9th to 11th; Association of American Physicians, May 9th to 11th; Conference of State and Provincial Boards of North America, May 16th and 17th; Congress of American Physicians and Surgeons of North America, May 9th and 10th; National Association for Study and Prevention of Tuberculosis, May 11th and 12th.

\$100,000 for New York Hospitals.—The sum of \$100,000 was distributed, on May 1st, among forty-five hospitals by the United Hospital Fund of New York, formerly the Hospital Saturday and Sunday Association. The distribution, which was based upon the amount of free work done by each hospital, was as follows:

General hospitals.—Mount Sinai, \$8,745.16; New York, \$8,113.75; St. Luke's, \$7,931.45; Post-Graduate, \$5,843.25; German, \$5,327.87; Roosevelt, \$4,738.55; Lincoln, \$3,745.88; Lebanon, \$2,563.73; Beth Israel, \$2,367.08; Flower, \$1,668.72; French, \$1,153.82; Polyclinic, \$999.22; St. Mark's, \$969.23; Hahnemann, \$895.59; Knickerbocker, \$825.08; Volunteer, \$765.21; Sydenham, \$723.50; Park, \$360.68; total, \$57,737.77.

Special hospitals.—Orthopedic, \$4,449.02; Ruptured and Crippled, \$3,032.60; Deformities and Joint Diseases, \$1,006.10; Manhattan Eye, Ear, and Throat, \$1,975.29; Eye and Ear Infirmary, \$1,810.04; Ophthalmic, \$888.06; Knapp Memorial, \$442.75; Skin and Cancer, \$2,050.74; General Memorial, \$1,374.24; House of Rest, \$2,147.04; Neurological, \$607.48; total, \$19,689.36.

Hospitals for women and children.—Lying-In, \$5,129.12; St. Mary's Free, \$2,867.67; Infirmary for Women and Children, \$2,079.21; Babies' Hospital, \$1,638.15; Sloane Hospital, \$1,542.53; Woman's Hospital, \$2,295.64; Nursery and Child's, \$1,196.31; Manhattan Maternity, \$936.42; Misericordia, \$730; Hospital for Women, \$557.78; Jewish Maternity, \$255.40; total, \$19,223.23.

Hospitals for incurables and convalescents.—Montefiore Home, \$8,949.67; Home for Incurables, \$2,257.31; Isabella Heimath, \$1,064.61; House of the Holy Comforter, \$814.63; St. Andrew's Convalescent Home, \$258.42; total, \$13,344.64.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF ANGINA PECTORIS.*

By ROBERT H. BABCOCK, M. D., LL. D.,
Chicago.

Since the term, angina pectoris, designates a symptom and not a uniform pathological entity, rational treatment should include both temporary relief from suffering, and, so far as possible, correction or improvement of the underlying condition. Accordingly the first step in the undertaking must be the correct diagnosis of the pathological state responsible for the pain. It would be going afield to discuss the question whether or not there is a false and a true angina. Strictly speaking, angina pectoris is a chest pain associated with certain characteristics which give it features distinctive from intercostal neuralgia or pleurodynia, but we all know there is one kind of angina associated with, and depending on organic disease of the heart, and another which, so far as physical examination can determine, is independent of cardiac disease. The management of the two is different, just as the prognosis is different. In this paper, therefore, an attempt will be made to set forth what seems to me to be the mode of treatment suitable to the grave form of angina which carries with it the liability to sudden death.

Ever since Lauder Brunton called attention to the remarkable effect of the nitrites in allaying the distress of this formidable malady, English and American physicians have prescribed nitroglycerin or amyl nitrite well nigh universally and with good reason, since in practically all cases the remedy promptly affords relief. Its precise *modus operandi* is open to discussion, but its effectiveness is too well established to be doubted or distrusted simply because we cannot explain its exact mode of action. That a nitrite does not act equally well or promptly in all cases is likewise true. Doubtless those cases are most quickly and completely relieved in which vascular spasm seems present, as shown by pallor of countenance and coldness of the extremities.

On the other hand, it is not good practice to prescribe a nitrite every two or three hours with a view to prevent or lessen the frequency and severity of attacks. Some German writers, notably von Leyden, have considered the use of the nitrites detrimental, and their objection would hold especially with regard to the regular daily employment of this valuable class of remedies. This was impressed upon me this past winter. A man of sixty-seven years had been treated in another city for frequently recurring and intense attacks of grave angina. Nitroglycerin and amyl nitrite usually afforded relief, but I was quite horrified to learn that he was taking two or three fiftieths of a grain of nitroglycerin three times daily, beside inhaling the amyl ni-

trite whenever he experienced even a premonition of pain. His heart showed signs of dilatation and his blood pressure registered 120 mm. systolic, and 100 mm. diastolic, giving a pulse pressure of only 20 mm., or less than one fifth of the minimum pressure.

There seemed to be good reason why this man was having angina several times a day and often without discoverable provocation. This use of nitroglycerin was stopped and he was put upon strophanthine, 0.5 mg. four times daily, while instead of inhaling nitrite or amyl so frequently he was given morphine and atropine hypodermically when pain was really intense or when ammonia or whisky failed to relieve. At first also he received half a dram of aromatic spirits of ammonia every two hours. Although the angina continued to distress the man more or less, still his condition became less intolerable. In this case there were complications which favored the continuance and even the occurrence of his attacks, as I believe is true in many instances.

The foregoing cases was probably one of coronary angina, since aside from increased size and feebleness of tones the examination disclosed nothing on the part of the heart. The prognosis, therefore, was exceedingly unfavorable, and sudden death is probable despite any form of treatment.

The nitrites cause vascular relaxation with secondary acceleration and force of heart action. It is for this reason that they are useful in cases of coronary angina, since they occasion a better flushing of the coronaries. It should be remembered, however, that their effect is not confined to the nutrient arteries of the heart, but that they dilate the vessels in general, including those within the abdomen. Consequently, if a nitrite preparation is taken habitually and frequently it lowers vascular tone and really augments the heart's work.

As is well known, all cases of grave angina are not due to coronary sclerosis; nor are they associated with arterial hypertension. Even when blood pressure is abnormally high it is not well to prescribe these vascular dilators at short intervals with a view to lowering pressure. They not only fail in preventing anginal seizures, but they weaken the heart and thus actually frustrate the object to be achieved. Every consideration, therefore, makes it evident, as I take it, that the use of the nitrites should be limited to the relief of the anginal attack itself, and even then some caution should be observed. Fortunately the seizure is usually of rather brief duration and yields to the inhalation of a single three minim pearl of amyl nitrite or to one or two tablets of a hundredth of a grain of nitroglycerin dissolved on the tongue. But should the attack prove unusually intractable or should a status anginosus occur, then morphine and atropine hypodermically should be employed, freely if necessary. Should this not relieve, other stimulants, such as camphor, ammonia, caffeine, and even digitalis, should be resorted to.

*The first paper presented at the annual meeting of the American Therapeutic Society, held in San Francisco, Cal., June 21-22, 1915.

I well recall one instance seen in consultation in which angina persisted despite all measures, until the fatal termination. In this instance I believe death was hastened, if not rendered inevitable, by the too free use of nitroglycerin and atropine, since they were administered hourly, as I learned subsequently, and must have paralyzed the capillaries, thus bringing the heart to a standstill.

Although this paper is intended as a protest against the indiscriminate employment of vasodilators, it cannot be concluded without a brief consideration of the management of this class of cases between attacks. Manifestly the aim of treatment should be to strengthen the myocardium so as to enable the individual to exercise or bear physical disturbances without the induction thereby of angina. This is possible of achievement in only a limited proportion of cases, and perhaps not at all when coronary sclerosis is responsible for the symptoms. Nevertheless, an attempt should be made to this end and accordingly we have three chief means at disposal, namely, drugs, medical gymnastics, and hydrotherapy.

In some cases theobromine sodium salicylate in doses of five to ten grains three times a day, has apparently been of benefit. Yet truth compels the statement that the use of this drug has always been conjoined with strict regulation of diet and habits and sometimes with the use of medical gymnastics. But one man of seventy years was emphatic in his declaration that this medicine did him more good than anything else. Indeed, it is well nigh a routine practice with me to give this remedy a trial before resorting to other cardiac stimulants.

The efficacy of this agent depends probably on the theobromine and not the salicylate of sodium which is added to increase the solubility of the alkaloid. The exact *modus operandi* may not be clearly known, but theobromine probably acts in the same manner as does caffeine; that is, it stimulates the heart and perhaps exerts some dilating influence on the coronary arteries. I have never been able to recognize any definite or certain effect on general blood pressure. I usually prescribe it in capsules and in combination with takadiastase or pancreatin, and rarely find it disturbs the stomach.

Digitalis, and in particular amorphous strophanthin in 0.5 mg. doses three to four times daily, have likewise proved useful in certain patients. As might be expected, these are not individuals whose angina seems to depend on obstructive coronary disease, but persons with signs of general cardiovascular changes, stiffened vessels, blood pressure more or less elevated, and hypertrophic dilatation of the heart, and generally a mitral systolic murmur together with a rough systolic bruit in the aortic area. In such cases the angina may not be so much an expression of inadequate coronary flushing as of endocardiac pressure or strain. At all events more than one sufferer of this type has found amelioration of his symptoms from the combination of drugs and exercises herein advocated. Indeed, there is now under observation a man of sixty-four years whose condition has improved so greatly that he now is able to walk at his ordinary gait and even against a wind, without pain, whereas on coming

under treatment he was resorting to nitroglycerin several times a day.

A valuable adjuvant to drugs in the management of this class of cardiopathies are medical gymnastics. By these are meant active exercises under the supervision and control of some one skilled in their use. Massage may be of limited service, but the exercises here meant are those of deep breathing and movements of extension and rotation of the trunk and extremities, all carefully controlled so as not to accelerate the pulse materially or embarrass respiration. Their object is to hasten venous flow, especially in the large vessels of the abdomen, to dilate the intramuscular arterioles, and thus to aid the enfeebled myocardium in maintaining circulation. Most sufferers from angina feel the need of exercise, and not being able to walk, miss the sense of well being that comes from physical exercise. It is gratifying and often surprising how much better they feel during a course of medical gymnastics, and how much really vigorous movements they learn to execute without experiencing pain or dyspnea. Indeed, so much faith have I in the efficacy of these exercises that they form an essential part of the régime prescribed by me for myocardial patients who can afford the expense. On the other hand, it will not do to allow individuals with angina pectoris or other evidences of myocardial incompetence to carry out self resisting exercises, since they are very likely to embarrass rather than improve the heart's action.

Hydrotherapy is likewise of benefit, if properly employed. I refer to salt rubs and Nauheim baths. The only caution observed in the giving of salt rubs is that the water used in showering the patient after the rub is not too cold, care being taken that a good glow of the skin is produced. Patients quite universally admit a sense of comfort and well being after their rub.

Nauheim baths by means of artificially prepared waters have also been prescribed for a goodly number of persons suffering from the formidable malady now under consideration. They have to be ordered with extreme care, since in my experience these patients do not bear very strong baths or a high percentage of carbonic acid. I now recall only one patient who appeared not to be benefited by the baths, and after a few had been given he seemed to be so unfavorably affected that this mode of therapy had to be discontinued.

Finally of course, much attention should be paid to the diet and to the state of the bowels. As is well known, these patients are very apt to regard their pain as a manifestation of indigestion, especially since their distress is apt to pass off coincidentally with eructations of gas. Nevertheless it is important to see that digestion is well performed, since distention of the stomach or bowels with gas is likely to aggravate their symptoms. It may be necessary, therefore, to change their diet and to order certain aids to digestion—such as dilute hydrochloric acid and occasional cathartics. In short the intelligent management of sufferers from this distressing malady must include not alone relief of pain, but such other measures as may strengthen the heart and thereby possibly diminish the fre-

quency and intensity of suffering. Little if anything can be done probably to correct the coronary sclerosis unless perchance when syphilis is the cause, and then I must confess to very slight faith in iodine preparations, although I often prescribe them.

The percentage of cases that can be helped is at the most small, but those offering some prospect of permanent benefit from treatment appear to be such as present the following physical signs: Moderate stiffness of the peripheral vessels, with or without abnormally high blood pressure, hypertrophic dilatation of the heart, a mitral systolic murmur of muscular incompetence, and often a harsh systolic bruit in the aortic area. As pointed out by the late John Musser, their angina diminishes or disappears as endocardiac pressure becomes diminished. This may occur with the reestablishment of compensatory hypertrophy in cases in which a mitral leak developed as a result of dilatation, or in some few instances the giving way of the mitral valve appears to relieve the stretched left ventricle of strain and so lessen the liability to anginal pain. At all events such seems to have been my observation.

If as held by some clinicians, angina pectoris is a symptom of inadequate flushing of the coronary arteries, then the reestablished hypertrophy enables the ventricles to throw a greater volume of blood into the nutrient arteries. When on the contrary the angina is due to obstructive disease of these vessels, no amount of treatment is going to abolish symptoms, and death is only a matter of time. Avoidance of causes that evoke pain, and the employment of nitrites or morphine are then our only recourse.

30 NORTH MICHIGAN AVENUE.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Eighteenth Communication.

QUININE.

Probably no other one drug has so well deserved its reputation as a specific, or so ill deserved its reputation as a general all around remedy, as quinine. For the curative treatment of malaria and postmalarial manifestations quinine is unequalled; but the pharmacologist may rightfully challenge the preferential use of this drug for any other affection. Yet in how wide a field has the employment of quinine been advocated! Scarcely a febrile movement known but has been treated with this alkaloid. Neuralgia, whooping cough, rheumatic fever, influenza, pneumonia, diphtheria, typhoid, the exanthemata, rhinitis—all have had quinine recommended; yet in none of these illnesses are there adequate clinical or laboratory data to indicate that the drug is actually beneficial or that it is not even positively detrimental.

In the case of malaria, however, we have extensive laboratory and clinical evidence that quinine is toxic to the plasmodia, even though the degree of toxicity seems to vary widely with different protozoan strains and with differing physiological conditions. An exceedingly important consideration is

the fact that, in varying degrees, quinine is a poison to all forms of protoplasm; as a result, even medicinal doses will produce a diminution in the number of leucocytes and will destroy many erythrocytes. Many other cells of the body, as well as the ferment bodies, will have their efficiency and activity lowered by this drug. Obviously these incidental results are usually negligible in comparison with the advantages conferred by quinine in malaria; but they are not negligible whenever sufficiently compensatory manifestations are not normally determinable.

Other physiological reactions must also be taken into account. On the central nervous system there is exerted an increasing depression, preceded in some cases by an irritative stimulation. This is occasionally accompanied by giddiness, which may increase to considerable mental confusion. Two characteristically specific activities are those on the eye and the ear. In the eye degenerative changes are set up, in both the retinal cells and the optic nerve, resulting in marked optical disturbances and contraction of the visual field. In the ear similar degenerative changes are initiated in the spinal ganglia of the cochlea, whence come the subjective ringing and roaring complained of under quinine administration. These changes seem to be transitory in their nature, it not having been clearly shown that permanent damage ordinarily results.

Very little direct effect appears on the heart and other organs of circulation. Respiration may be accelerated somewhat, from an assumed centric action; this condition becomes reversed after excessive doses. The alimentary tract is more or less irritated, resulting frequently in nausea, less often in vomiting. Both the liver and the kidneys are mildly irritated.

At times there seems to be an indefinite stimulation of the muscular system, followed by repression and weakness. There is also an inconstant action on uterine muscle, resulting uncertainly in rhythmic contractions. Its possible usefulness in parturition is largely offset by its ulterior effects on both mother and child, as well as by its indeterminate effects.

With not a few persons possessing idiosyncrasy, quinine produces alarmingly marked symptoms of distress; dyspnea, vertigo, delirium, and unconsciousness. Such results having followed administration, of a single one grain dose, it is incumbent on the practitioner to determine experimentally each patient's reaction previous to the prescribing of large antimalarial doses.

An Operation for Relief of Painful Anterior Arch of the Foot.—Roland O. Meisenbach (*Amer. Jour. Orthoped. Surg.*, April) advances an operation in the rigid reversed arch of the foot, where there is a depression of the second, third, and fourth metatarsal heads, flexion of the corresponding toes, deep seated calluses, faulty action of the tendons, and localized pain, which is not relieved by other measures. The operation consists of an osteotomy of the second, third, and fourth metatarsal bones, about three cm. from the metatarsophalangeal joint, raising of the anterior arch by pressure, and the holding of that position by pads and a cast.

A New Method of Formaldehyde Disinfection.

—Fernand Gand, at a meeting of the Académie des sciences (*Presse médicale*, March 16, 1916), recommends, for the disinfection of clothing, commercial formaldehyde, poured into a saturated solution of potassium permanganate. The mixture soon becomes hot and gives off abundant fumes of high diffusive power, which rapidly penetrate the clothing. The procedure can be very simply applied by placing the clothing in a large barrel and connecting the latter by means of a tube or pipe with a small barrel in which the disinfecting mixture has been placed.

Treatment of Cerebrospinal Meningitis.—Marcel Labbé, Zislin, and Cavaillon, in *Bulletin de l'académie de médecine* for March 14, 1916, refer to the treatment of cases in which antimeningitis serum fails because of obstruction in the cerebrospinal canal, the serum being thereby prevented from reaching the infected cerebral meninges. In a little girl of eleven years suffering from meningococcic cerebrospinal disease, intraspinal injections of the serum, begun rather late, at first appeared to place the child on the road to recovery. Later, recrudescence took place and resumption of the injections became necessary. The cerebrospinal fluid cleared up, but the general condition became worse and signs of cerebral meningitis, such as intermittent strabismus, delirium, and convulsions, appeared. An opening into the skull was made near the frontoparietal suture, a little to the left of the median line. Turbid fluid containing numerous meningococci issued through a needle passed into the lateral ventricle. Twenty c. c. of serum was introduced, and the child soon began to improve. Four days later, fresh puncture into the ventricle yielded a clear fluid free from meningococci; eight c. c. of serum was introduced. On the succeeding days the rigidity of the neck diminished, consciousness returned, the pulse improved, convulsive attacks ceased, sphincter tone was regained, food was more easily taken, and recovery seemed assured. Sudden syncope then took place and the child died.

Acid Autointoxication in Infancy and Childhood.

—John Lovett Morse (*Boston Med. and Surg. Jour.*, April 20) says that the cause of the symptoms in acid intoxication being the withdrawal of bases from the organism as the result of an excess of acids in the system, it is evident that the treatment indicated is the introduction of alkalis into the system to neutralize the acids in the body and to allow the reaccumulation of the bases that have been abstracted. The best alkali to use is sodium bicarbonate, which may be given by mouth, by rectum, subcutaneously, or intravenously. It is preferable to give it by the mouth if it can be retained. It is best given in water, but, if desired, the taste may be disguised by orange juice or grape juice. It is seldom wise to make the concentration of the solution stronger than one to twenty, and usually it is better to make it one to thirty or one to sixty. Stronger solutions are almost certain of themselves to cause vomiting. The general feeling is that as much soda should be given as possible, but it is probable that excessive amounts of soda may of themselves cause vomiting and diarrhea, perhaps

poisoning. The solution may be stronger when given by the rectum, but not usually stronger than one to ten. It is more often retained when given by seepage than by enema. It is useless to try to give soda in this way when there is diarrhea. When sodium bicarbonate is given subcutaneously, a two per cent. solution should be used; when given intravenously a four per cent. solution is better. The amount to be given must depend on the age and size of the patient. Practically the usual treatment is the free administration of a five or ten per cent. solution of sodium bicarbonate in a ten per cent. solution of dextrose, both by mouth and rectum. In his experience the immediate and thorough clearing out of the intestinal tract has seemed to have more effect on the outcome in cases of acid intoxication secondary to infections or to diseases of the intestinal tract, than any other single procedure.

Treatment of Suppurative Arthritis of the Knee.

—G. Fieux, in *Presse médicale* for March 9, 1916, refers to the feeling of uncertainty and anxiety which still prevails among surgeons as to the proper treatment of infected wounds of the knee joint. Even where examination suggested a complete or virtual absence of bone injury, early and extensive drainage has too often been followed by a period of apparent good condition or betterment, then a widespread return of infection amenable only to amputation, the patient even then sometimes succumbing. Observation of such cases has convinced Fieux that the defect in the present treatment is inefficiency of drainage. Pus is retained in the serous cavity, notwithstanding the presence of large permeable tubes, and this is due to the fact that behind and around the drains, the serosa becomes completely shut off, the articular cavity being replaced by a spongy, purulent mass. To avoid this, Fieux substitutes for arthrotomy and drainage an arthrostomy or marsupialization of the synovial membrane. In beginning acute arthritis a single opening has appeared sufficient. Before or after extraction of the projectile, according to circumstances, a crucial incision, each branch of which measures five to six cm., is made on the external aspect of the limb, in part above the level of the knee. Pus having escaped, the joint is explored with the finger and irrigated with tepid saline solution at low pressure. The apices of the four flaps formed by the crucial incision are then reflected on their respective bases, with the serous coat outward, and sutured to the skin so that an opening into the joint sufficiently large to admit the thumb freely is formed. A flat dressing is placed over the opening and the limb is immobilized in a position of slight external rotation, to favor issue of the septic fluids. Where the operation has been late, and the long cul-de-sac beneath the quadriceps no longer communicates freely with the joint, a second opening is made over the upper portion of this sac, sometimes extending twelve to fifteen cm. above the patella. Finally, in cases of suppurative arthritis treated vainly for weeks by large incisions and the customary drains, with tracts of suppuration between the muscles, unexpectedly favorable results were at times obtained by adding to the two preceding measures removal of the patella.

Treatment of Acute Enteritis.—Lassablière, in *Bulletin de l'académie de médecine* for March 7, 1916, reports his experience in the treatment of 256 cases of acute enteritis met with in soldiers in active service in the trenches. These were cases of colon bacillus enteritis, the organisms of true dysentery being absent from the stools. The condition was, however, often a severe one, six to thirty movements taking place in a day, glairy masses being noted in seventy-two per cent. of the cases, and blood in fifty-one per cent., sometimes in association with tenesmus and a poor general condition. The best treatment proved to be the daily administration of one to two litres of a milk mixture obtained by diluting one part of condensed milk with four parts of rice water. In seventy-two cases this preparation was given alone, without other food or medicament. As a result, the number of stools was brought down to one a day after two to four days. Glairy masses and bad odor of the stools rapidly disappeared. The advantages of this over the ordinary form of treatment were shown in that, whereas among the seventy-two cases receiving the new treatment the average period of stay in the hospital was fifteen days, among thirty-two cases placed on water, bouillon, and the usual drugs the average period was twenty-six days. Opiates may doubtless with advantage be combined with the milk and rice water treatment in cases with sharp colicky pains, and calomel and lactic ferments in cases with malodorous stools.

Preventable Forms of Mental Disease and How to Prevent Them.—E. Stanley Abbot (*Boston Med. and Surg. Jour.*, April 20) divides mental disease into six great groups of psychoses, feeble-mindedness, dementia præcox, manic depressive psychoses, psychoses due to destructive diseases of the brain, toxic psychoses, and a more or less heterogeneous group, and discusses the prevention of each. The greater part of feeble-mindedness is hereditary, so to prevent it he would prevent the matings of defective persons by segregating the women, as the male defective is of comparatively little menace in this particular respect. If instead of playing happily with others a child keeps by itself; does not seem able to get on common ground with other children; gets absorbed in its own day dreams and fancies and resents being called out of them; is sensitive and takes knocks and disappointments as slurs or injustices, resents them, broods over them and regards itself as a martyr; nurses its grievances in its own breast, not confiding in others; keeps its thoughts to itself; when its chosen occupation is denied, goes off by itself with a sense of injury and does not try to take up another—it is more likely than other children to have dementia præcox. The best way to prevent this psychosis is for parents and teachers to begin, at the first appearance of these traits, unremitting, tactful, and sympathetic efforts to get into the little mind, to understand its point of view, to suggest happier and healthier ones, to lead the child to more objective and so more healthful contacts and interests, to teach more practical substitutions and aims, better ways of reacting, and better attitudes toward persons and life. These better ways cannot be imposed from without; they

must grow from within if the reformation is to be accomplished and the faulty habits of adjustment are to be overcome. Manic depressive psychosis, he thinks, is due to overfatigue and believes that a large part of the cases may be prevented by sufficient rest and food, so the person would not get too tired. Much of organic brain disease is due to senile arteriosclerosis, which we do not know how to prevent, unless possibly by a moderate, temperate life, but about a third may be traced back to syphilis, and the prevention of these means the elimination of that disease. Toxic psychoses are due very largely to liquor drinking; some to indulgence in other drugs. The method of their prevention is evident. Of the miscellaneous psychoses a small part would be prevented by the means taken to prevent the others that have been mentioned, but for the rest we do not know enough about their nature or their causes to direct specific efforts against their occurrence. In conclusion, he says that an indeterminate but very large amount of feeble-mindedness can be prevented; that of the insanities proper, the alcoholic and drug psychoses and general paralysis, a fifth of all the cases occurring each year can be absolutely prevented; that a large proportion, possibly a half or three quarters, of the fatigue psychoses might be avoided; that possibly a small proportion of the dementia præcox and arteriosclerotic psychoses might be obviated, and a small proportion of the remaining forms might be prevented.

Treatment of Human Rabies.—So far as is known rabies is always fatal once it has developed, and the few recoveries reported under various forms of treatment are open to serious doubt respecting diagnosis; hysteria may almost perfectly simulate true rabies. A case of this type is reported by Frank S. Fielder (*Journal A. M. A.*, April 22, 1916) in which prompt recovery followed the injection of a single dose of ten grains of quinine and urea hydrochloride. Two other cases, both of positively proved rabies, were treated without avail. In one a small dose was injected intraspinally with the production of complete motor and almost complete sensory paralysis of the lower extremities, which lasted until death. A third case of proved rabies was treated with injections of phenol, as suggested by Haberman, but also without avail. Neither of these drugs was of any material value.

Trichloracetyldiphenoldiiodide.—This complex substance was introduced by T. A. Wallace (*Long Island Med. Jour.*, April, 1916) some twenty years ago as an internal and local antiseptic. It is soluble in water to the extent of seven per cent, and is not very irritant, so that it can be injected intramuscularly in dose up to three c.c. without much local pain. The drug has given favorable results in many instances of systemic and extensive local infection, such as puerperal sepsis; when applied locally in a solution of one dram to the pint proves an efficient dressing in all forms of infection. In erysipelas rapid recoveries followed the local use of the drug combined with injections made into the affected region. Eiboes secondary to chancrels were treated with the best results; it is also an invaluable means for skin sterilization prior to surgical operation.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

November 1, 1915.

Localization of Foreign Bodies, by Oskar Weski.—The problem of localization of foreign bodies in the tissues can be simplified and the task set the surgeon lightened by a simple procedure. After the location of the foreign body by means of x rays, the spot should be marked by the injection of a dye, by means of a cannula made for the purpose and bearing on its upper end a spirit level, whereby it may be thrust into the tissues in an absolutely vertical direction. Along its course it is marked in fractions of a cm. to show the distance from its point and it bears a movable flange which can be set at any desired distance. The patient should be accurately placed in the same position as that in which the x ray photographs were taken and the skin marked for precise external localization. Then the cannula should be thrust in to the required depth and in the proper place to permit its tip to reach the region of the foreign body. The obturator should then be withdrawn and one c. c. of a ten per cent. solution of pyoktanin in normal saline should be injected. As the cannula is withdrawn slowly the track of its passage should be stained with a few drops of the same blue solution. On operation the surgeon has but to follow the dyed track to the deposit of dye and he will at once reach the immediate region of the foreign body. The dye is devoid of toxicity and is antiseptic. Where a horizontal approach is required, the level on the head of the cannula can be so adjusted as to show the proper line for its insertion.

MEDIZINISCHE KLINIK.

February 27, 1916.

Damage to the Eyes in Methyl Alcohol Poisoning, by Birch-Hirschfeld.—Poisoning may result from the ingestion of methyl alcohol, inhalation of its vapor, or possibly from absorption through the skin. There does not seem to be any relation between the amount of alcohol and the damage to the eyes, or other toxic symptoms. Personal peculiarities and susceptibilities are important in determining the ocular damage. The condition should be suspected when sudden, severe visual disturbance occurs combined with central scotoma, narrowing of the peripheral visual field, and evidence of optic neuritis. Other symptoms due to the alcohol are referable to the gastrointestinal tract such as nausea, vomiting, and diarrhea, with which headache is often associated. Many methods of treatment of the acute condition have been suggested with the view of hastening the elimination of the alcohol, but none has proved of certain value. After the blindness has once appeared, and depending upon its extent and severity, there may be more or less gradual recovery of a limited visual capacity, but there is usually permanent damage, even total blindness.

March 5, 1916.

Adrenaline Eye Test and Lymphocytosis in Diagnosis of Cardiac Affections, by H. Curschmann.—The differential diagnosis between simple cardiac neuroses and cardiac disturbances having an

underlying basis in hyperthyroidism is important but not easy. On the basis of symptoms referable to the circulatory system, differentiation is often impossible. Many of the cases of thyroid origin occur in patients who do not show the common distinctive evidences. The occurrence in the blood of an abnormal lymphocytosis or some degree of eosinophilia has been stated to be pathognomonic. Curschmann offers evidence in contradiction of this statement, but maintains that lymphocytosis and eosinophilia are very often valuable as supplementary evidence in cardiac neurosis of underlying hyperthyroidism. The more important differential evidence, favoring the diagnosis of thyrotoxicosis, is the presence of lasting mydriasis following the instillation of two drops of a one in 1,000 solution of suprarenin into the conjunctival sac. The dilatation, when positive, begins usually within half to three quarters of an hour, quickly reaches maximum, and lasts ten to eighteen hours. Associated with it is a marked diminution or total absence of convergence miosis, although the light reflex is preserved. Thyrotoxic cardiac neurosis should be treated as hyperthyroidism. Other forms of cardiac neurosis should be treated as neurasthenia.

Prodromal Symptoms of Cerebral Hemorrhage, by Heinrich Kirsch.—The particular type of individual in whom apoplexy is likely to occur is short, fat, has a very short neck, is decidedly plethoric, past fifty years of age, and usually over indulgent in food. In twenty-seven per cent. of 110 such persons, death resulted from cerebral hemorrhage, while there were only four per cent. of deaths from this cause among 700 obese individuals. In the apoplectic habitus the prodromal evidences of cerebral hemorrhage include long standing high blood pressure; pulse of high tension; enlargement of the area of cardiac dullness; evidences of beginning sclerosis of the cerebral capillaries and renal vessels; and gastrointestinal disorders. The symptoms of beginning cerebral vascular changes are headaches, vertiginous attacks, disturbed sleep, impaired memory, motor disturbances of hands, feet, and tongue, transitory speech defects, etc. Albuminuria of slight degree is usually the initial evidence of vascular changes in the kidneys. Meteorism and many other less frequent symptoms indicate involvement of the intestinal vessels. In persons presenting some of these prodromal symptoms various exciting factors as nervous, mental, or physical stress are prone to lead to apoplexy.

BULLETIN DE L'ACADÉMIE DE MEDECINE.

[February 28, 1916.]

Gastric Syphilis Simulating Cancer, by G. Hayem.—An artist, sixty-four years of age, consulted the writer on account of an epigastric tumor which, he had been told, required radical operative treatment. A hard, bulky mass forming a visible projection below the ensiform cartilage was noted. This mass was tender throughout, immovable, and apparently fused with the liver. Symptoms had been present for eighteen months, and had consisted of pain in the left flank and back and a drawing sensation across the abdomen at the epigastric level. The weight had diminished from eighty-six to seventy-six kgms., but the patient was still

able to eat well, and had previously been slightly obese. The chief manifestation was pain, which was nearly constant, independent of food, and so violent as to require the use of acetylsalicylic acid up to four grams a day for several months, together with chloroform water, cocaine, etc. The patient denied syphilis, but forty years before had had an erosion of the glans penis which took several weeks to heal, and was not followed by an eruption. There were no other signs of syphilis. Mixed treatment in the form of mercurial inunctions and potassium iodide in increasing doses by rectum was given, without effect. The Wassermann test was negative. Injections of 0.02 gram of mercury benzoate on alternate days, however, soon caused marked improvement, the mass becoming impalpable, pain disappearing, and the liver receding. After the thirtieth injection the patient was practically well. The gastric analyses in this case had suggested cancer, but the results of specific treatment left no doubt as to the true nature of the condition. Stress is laid on the severity of the pain—which finally led the patient to take morphine—and the lack of anemia and cachexia as clinical peculiarities of the case suggesting syphilis rather than cancer.

Bluish Spots Due to Lead Droplets and Their Diffusion from Powder Burns, by Ducellier.

—Recent experiences in military practice have shown that a rifle bullet travelling at high speed and striking against a hard stone or metallic parapet is apt to be melted by the heat set free at the moment of impact and transformed into a spray of finely divided molten lead, which may imbed itself in the face or hands of an individual in close proximity at the time. Thick cloth is sufficient to protect against this form of injury, the penetrating power of the lead dust being very slight. The bluish spots caused by it on exposed skin surfaces are similar in appearance to powder burns caused by the firing of a small arm at close range, and may lead to the suspicion of self injury to escape further military service. Ducellier points out that a proper conclusion as to the nature of the injury can be quickly reached by making an x ray picture, which, in the case of imbedded powder grains, shows normal transparency of the local tissues and in the case of imbedded lead spray, a definite agglomeration of tattoo marks, due to small lead droplets of irregular size, irregularly grouped in the dermis and sub-jacent tissue layers.

March 14, 1916.

Etiology of Dysentery, by Tribondeau and Fichet.—The bacilli of the Morgan group, hitherto considered pathogenic only in epidemic infantile diarrhea, are to be included among the bacterial forms that are capable of causing dysentery in adults. In a series of forty-eight cases of dysentery with positive stools among soldiers of the French Oriental Expeditionary Force, ten showed the dysenteric ameba, twenty-three the Shiga organism, two the Y bacillus of Hiss, and no less than thirteen, organisms of the Morgan group. The latter are aerobic or facultative anaerobic organisms, of variable motility, which neither the serum of patients, nor any other dysenteric serum, agglutinates. Injection of 0.2 c. c. of a bouillon culture of the freshly iso-

lated germ into the peritoneum of a guineapig kills the animals in five hours, the autopsy showing ecchymotic spots on the colon, with edema of the mucosa and epithelial desquamation. Ingestion and intrarectal injection of the organism in guineapigs produce no effect. These animals, as well as rabbits, can be easily vaccinated against the organism by injection of increasing doses under the skin, then intravenously and intraperitoneally. The blood of animals thus immunized agglutinates the organism, and their serum possesses preventive and even curative properties if injected in time and in sufficient amount. The same organisms were found in five cases of dysentery at Toulon, France.

PRESSE MÉDICALE.

February 28, 1916.

Value of the Widal Test after Antityphoid Vaccination, by Maurice Salomon.—In view of the fact that agglutination of the typhoid bacillus by the serum of those subjected to antityphoid vaccination constantly occurs, some observers have held that the Widal test is devoid of value in persons thus vaccinated. Salomon's studies of a large number of parallel blood cultures and Widal tests have convinced him that this is not entirely the case. While the blood culture yields early diagnostic information in two thirds of the typhoid or paratyphoid cases in which the temperature is very high, and in one half of those in which fever is not high, there remains a large proportion of cases in which repeated blood cultures give, for some obscure reason, negative results throughout. Where the temperature is below 39° C., or the disease is in its later stages, there is an even chance that the blood culture will be negative. In cases in which the diagnosis remains uncertain, Salomon places confidence in the Widal test, provided that the limit of dilution signifying a positive test is placed at one in 500. Numerous observations showed that subjects who have received three or four prophylactic injections generally give a positive test at a dilution of one in fifty, but much less frequently at one in 100, and practically never at one in 500. These findings are apparently not at all influenced by the period of time elapsed since the protective inoculations. Where, in a subject vaccinated against typhoid, a positive serum reaction at one in 200 for the A or B paratyphoid organism is obtained, this reaction has the same diagnostic value as though the subject had not been previously vaccinated against typhoid. By these applications of the Widal test, some febrile cases which would otherwise have to be labelled "gastric disturbance" or "obscure infection," can be properly diagnosed, isolated, and treated.

BRITISH MEDICAL JOURNAL.

April 1, 1916.

Gas Gangrene With Proof of Blood Infection, by G. T. Mullally and J. W. McNee.—The victim sustained a bullet wound of one arm and gas gangrene appeared at the site of the wound two and a half days later. Two days before the appearance of gas gangrene he received an injection of antitetanic serum and a definite area of gas gangrene appeared at the site of this injection on the same day as in the wound. A third local area of gangrene

appeared at the site of a hypodermic injection of pituitrin. All three areas were quite distant from one another. Blood cultures taken after the development of the areas of gangrene grew the typical gas bacillus, which was also cultivated from the local areas. Recovery followed amputation of the wounded arm. The proof of blood infection in this case is absolute and explains the appearance of gangrene at the two points of minor injury from hypodermic injections.

LANCET.

April 4, 1916.

Strains of Tubercle Bacilli From Sputum, by A. Stanley Griffith.—This is a summary of the findings covering the isolation and examination, both cultural and by inoculation, of a total of 212 different strains of tubercle bacilli from human phthisis. All the strains isolated, except four, were either typical human or typical bovine organisms. Organisms isolated from lupus also fell typically into one or the other classes and differed from those from pulmonary lesions only as to virulence. The four atypical strains isolated corresponded to type in virulence and differed from type only in certain of their cultural characteristics. That these cultural differences were not accidental or artifacts was proved by very extended subculture and animal passage. The cases from which they were obtained showed no clinical anomalies. Provisionally these four new strains could be classed among the group of human tubercle bacilli. Of all 212 strains of bacilli from sputum only three were of bovine type, and in each case the sputum never yielded anything but the bovine variety.

Pain in Renal and Vesical Lesions, by David Newman.—In the second installment of this communication the causes of pain in the bladder are reviewed. Any diseased condition of this organ may give rise to local pain, but there is usually little pain unless either the trigone or the neck of the bladder is involved. Constant pain is generally dull, aching, and situated behind the symphysis; it is encountered in encysted calculus and chronic prostatitis. Papilloma, colon bacillus cystitis, and tuberculosis involving the anterior wall are remarkably free from pain. When the latter condition is found at the neck of the bladder the suffering may be intense. Referred bladder pain is usually found in the region of distribution of the third and fourth sacral segments, that is, over the sacrum, the hips, and in the perineum.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

April 15, 1916.

Bacteriology and Experimental Production of Oophoritis, by Edward C. Rosenow and Carl Henry Davis.—Employing the newer bacteriological methods perfected by themselves, the authors studied the flora of a large series of cases. Experiments were also made on animals to test the virulence and selectivity of the action of the organisms isolated. In the majority of the specimens a modified form of streptococcus was found, either in pure culture or mixed with other organisms. These organisms were isolated from many cases in which there was no history of previous pelvic infection,

and in one case they were isolated from the fibrocystic ovaries of a young woman with imperforate vagina. The probable origin of the ovarian infection in most cases seemed to have been through the tonsil or other distant portal. The origin of the ovarian infection as secondary to some distant focus was further supported by the fact that the patients suffered from appendicitis, arthritis, or cholecystitis.

Etiology of Common Colds, by George B. Foster.—As the result of studies on human beings, Foster was able to isolate a living, filterable, ultra-microscopic virus from the nasal secretions during attacks of common colds. This virus showed evidence of multiplication when cultivated according to the methods of Noguchi, and proved infective to healthy volunteers. It was infective even after subculture and dilution, so that the original secretion was present in a dilution of not less than one in 90,000. The author is conservative in his conclusions, but his evidence that a certain type of common cold at least is caused by a living, ultramicroscopic, filterable virus is very strong.

Flagellate Protozoa in Dysenteric Diarrhea, by B. W. Rhamy and F. A. Metts.—Studies of the intestinal flora in a number of cases occurring epidemically and sporadically in Indiana revealed a flagellate organism, *Trichomonas intestinalis*. The symptoms resembled those of ordinary dysentery, and in some instances the condition became chronic. Some of the patients developed pellagroid skin lesions, and a marked eosinophilia. Emetine and salol sufficed to cure the condition and free the stools of parasites in comparatively brief time.

April 22, 1916.

Diagnosis of Enteric Fever by Agglutination Tests, by Wilburt C. Davison.—It has been stated that the only trustworthy way of diagnosing typhoid fever in one who has been inoculated at any previous time, is by blood culture and total and differential leucocyte counts. Davison, working with the quantitative methods of agglutination elaborated by Dreyer, shows that this statement is not correct. The method employed is a macroscopic one and the technic is not difficult. About three months after antityphoid inoculation, the agglutination titre falls so slowly that there will be no appreciable change revealed by successive determinations at brief intervals. On the other hand, in the presence of typhoid infection repeated quantitative determinations, made several days apart, will reveal marked changes in the titre. These changes may be either a fall in the titre or a rise, depending largely upon the stage of the infection. Usually the titre increases for the first three weeks of an active infection and then falls to its original level, at first rapidly, later gradually. If two successive determinations at an interval of four or five days give approximately the same readings, typhoid infection can be excluded.

Complete Syphilitic Alopecia, by Lloyd Thompson.—The case is reported of a man twenty-three years old who began to show alopecia two weeks after the appearance of the initial lesion of syphilis. In two months there was not a hair on his body. Antisyphilitic treatment with salvarsan and mercury failed to check the loss of hair and, although the Wassermann reaction became negative, the alopecia remained absolute.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held January 20, 1916.

Dr. WALTER B. JAMES, of New York, in the Chair.

Serum Diagnosis of Syphilis.—Dr. HOMER F. SWIFT said that although the application of the Wassermann reaction had become one of the most common diagnostic procedures, there were still occasionally heard objections as to its value. It had been thought that the reaction was due to a true antigen antibody (complement combination), but the discovery that lipoid substances also gave fixation with syphilitic serums showed that there was a new, or rather heretofore unrecognized mechanism in immunity. This with the fact that as certain other diseases also gave positive reactions with so called Wassermann antigens, caused the confusion and doubt which had arisen. The true nature of the reaction was not understood, nor could it be satisfactorily explained in terms which were used in other immune reactions, but it had been of more value in proving the wide extent of syphilis and the relative efficiency of therapeutic agents than any other measure.

In performing the test, five different biological substances were employed, four of which might be considered as reagents which had not the fixed value of chemical bodies, but varied in their properties according to the method of preparation, age, manner of preserving, and other factors which were not understood. The problem was to grade the strength of the various components so that the highest percentage of specific reactions might be obtained and at the same time the minimum number of nonspecific reactions. Because of the lack of uniformity in performing the test, the results should be judged from the clinical viewpoint. The most satisfactory reactions were performed in a laboratory which was in close touch with the clinical material from which emanated most of the serums tested; in such a laboratory the controls were not alone the serums which were introduced especially for the purpose, but many others tested each day.

If the reports from a laboratory varied to any marked degree when the serums from a group of patients were submitted from time to time, it was safe to conclude that the methods employed in that laboratory were not well standardized. Keeping in mind that it was possible to grade the intensity of the reaction, as either too sensitive or too weak, it was well to know that whatever level was chosen could be maintained closely by paying attention to the following points: 1. To have a certain standard for the various components of the hemolytic system which must be tested each day; 2, to use several antigens and compare a new one with old ones of known value before accepting; 3, by inserting as controls not only serums which had on the previous day given strong positive and completely negative reactions, but also a serum which had given partial fixation. This was the most important control, for by means of it they were always able to determine whether the reactions were of approximately the same intensity from day to day. This uniform level of the reaction was especially required when the

serum of a patient was to be tested after the provocative injection of salvarsan.

In regard to types of antigens, practically the only variation from the technic which had stood the test of time, had been the substitution of various forms of lipoids for the extracts of syphilitic livers, originally used as antigens. The antigen with the most constant value was the cholesterol reinforced alcoholic extract of human or guineapig hearts, which also gave the highest percentage of positive reactions in all stages of syphilis, but especially the late forms; it also persisted longer in the serum of a patient under treatment. The chief criticism brought against it was that it gave too high a percentage of positive reactions in nonsyphilitic patients, but with proper precautions the occurrence of nonspecific reactions was rare.

Occasionally they encountered a serum which gave a positive reaction with one method or antigen and negative with the others, and repeated tests with serum obtained at different times from the same patient showed the difference to be constant. This paradoxical reaction emphasized the necessity of testing each serum with at least two and better three or more different antigens.

It was well recognized that the Wassermann reaction was not a specific reaction for syphilis, but one highly characteristic of the disease, and that positive reactions were found in a fairly high proportion of some other diseases, but it was safe to call the reaction nonspecific only if the percentage of positive reactions exceeded the percentage found in all people. In the Wassermann there were group reactions as well as in the other diseases caused by spirochetes, viz., yaws and relapsing fever, also trypanosomiasis and malaria which reacted positively and were amenable to salvarsan therapy. It was well established that during the period in which numbers of the malarial parasites were in the circulating blood a positive Wassermann could be obtained, but this disappeared rapidly under genuine therapy. In tuberculosis, malignant disease, and diabetes the reaction had been reported positive, but this might often be explained by the presence of a concomitant syphilis. In certain of the acute infections, such as scarlet fever, pneumonia, and poliomyelitis, a transient positive reaction was occasionally encountered, though it disappeared with, or shortly after the crisis, but a positive reaction in the cerebrospinal fluid of these patients was never encountered. Occasionally the blood of uremic patients reacted positively, which was not necessarily due to the uremic state, for syphilis was doubtless a contributing etiological factor in many cases of Bright's disease.

The demonstration of *Treponema pallidum* in a suspicious ulcer proved the lesion to be syphilitic; the demonstration of a positive Wassermann reaction proved that generalized distribution of the virus had taken place, and the earlier diagnosis was made and treatment instituted, the better was the chance of complete eradication of the disease. When an untreated individual in the primary stage showed a positive Wassermann reaction, he was the subject of generalized syphilis. The appearance of a positive reaction usually occurred in the third week after exposure, and as that was the most

favorable period for treatment, it was important to realize the comparative value of the Wassermann reaction and spirochete search.

It had been found that combined treatment with salvarsan and intramuscular injections of mercury affected the reaction more rapidly and permanently than did the administration of either alone. The reaction disappeared more rapidly in the early stages of the disease than in the late ones, but disappearing reactions in late syphilis were better indicators of sufficiency of treatment than in the early stages. Little attention should be given to negative reactions in the first year of the disease, and treatment should be continued for ten or twelve months. A persistent positive reaction indicated the presence of syphilis somewhere in the body, and in the first three or four years treatment should be continued until the reactions remained negative. With reactions that could not be influenced, a course of treatments should be given annually. In aortitis, persistent reactions while the patient was under mercury and salvarsan disappeared upon the continued administration of iodides.

In conclusion, the Wassermann reaction should be regarded as a biological response to the activity of the syphilitic virus in the body, a reaction not specific but highly characteristic of the disease, and it should be recognized that it might occur in certain other conditions which should be considered if there was doubt that syphilis was playing a part in the illness. Because of the variability in the various reagents and lack of uniformity in performing the test in various laboratories, it was essential to have close cooperation between the laboratory and the clinician, for the clinician always should be the interpreter of the reaction.

Study of the Cerebrospinal Fluid and Its Value to the Practitioner.—DR. GEORGE DRAPER said that in order to discuss intelligently the cerebrospinal fluid in syphilis, it was necessary to consider certain points which might sound almost truisms, but which perhaps, therefore, should be seized upon and held the more firmly. In the first place syphilis was a general systemic infection by *Spirocheta pallida*. The body's reaction to the invasion was unusual in the development of a partial immunity, so that the disease tended to become chronic with localizing areas of infection. Extremely acute reaction might occur. But the important point was that syphilis was not a disease of the skin, of the heart, of the bones, or of the central nervous system any more than typhoid fever was a disease of the intestines, or rheumatic fever a disease of the joints. Syphilitic immunity was at present not understood, but it appeared that there was a very definite immunity developed during the long course of the malady, as witnessed the latent periods, the disappearing of the spirochetes from the blood and the localization of the disease. Since the introduction of salvarsan and the appearance of the amazing phenomena of Herxheimer and nerve relapses, it had been suggested that isolated foci of infection, which lay dormant under the influence of the immunity induced by active lesions elsewhere, showed increasing activity when the immunity stimulating spirochetes of those other lesions were killed by salvarsan. These four generalizations indicated

clearly that syphilis in the human subject was a biological problem, one so complex that it must be attacked by every effort of clinical observation and the more accurate biological methods.

One of the latter methods was the lumbar puncture and the study of the spinal fluid. The time had come when hesitation to use this procedure should cease. The technic was simple, safe, and practically painless. Under no circumstances, however, should the diagnostic puncture be made with the patient in any but the horizontal position in bed. Four examinations to which the fluid was subjected were the cell count, globulin determination, Wassermann reaction, and Lange gold sol test. Any changes from the normal must be looked upon with suspicion, no matter whether the serum Wassermann was negative and the patient honestly denied knowledge of the infection. Such changes were, 1, definite increase of pressure; 2, multiplication of cells; 3, positive globulin, no matter how faint, and, 4, positive Wassermann reactions in amounts of one c.c. or less. It was clear that a lumbar puncture was an absolutely necessary part in the diagnosis and treatment of the early days and weeks of the disease.

In conclusion the speaker summarized as follows: 1. The cerebrospinal fluid showed changes in 100 per cent. of the early cases. 2. The globulin test was the first to appear positive and the last to go. 3. There might be marked pathological changes in the field of cases of late syphilis for long periods of time before any signs or symptoms developed. 4. All cases of frank tabes, paresis, cerebrospinal syphilis, etc., had pathological fluids. 5. In a certain group of syphilitics with vague nerve disturbances, the spinal fluid might be normal in all points except the globulin. In such instances the isolated globulin findings became highly suggestive that there was a meningeal involvement of a syphilitic nature. A provocative treatment should be instituted in these instances. 6. Under treatment pathological fluids could be brought to normal, but the globulin was the last pathological change to disappear. 7. Examination of the spinal fluid was absolutely essential to the proper care and study of general syphilitic infection.

Value of the Colloidal Gold Test in the Diagnosis and Prognosis of Syphilis of the Central Nervous System; Value of Microscopical Diagnosis by Dark Field Illumination.—DR. JOHN A. FORDYCE said that the conception of syphilis as a general infection had been a process of gradual evolution largely due to clinical observation. The methods of precision elaborated in this field of medicine had not only confirmed these observations, but had added so much exact knowledge during the past ten years that a notable epoch in a real conception of the disease had been made. It could not be emphasized too frequently that the fate of the syphilitic individual depended largely upon the early diagnosis of his infection and the intensity with which his treatment was carried out in the first six months. It was in the accomplishment of this purpose that the modern aids to diagnosis had rendered the practitioner valuable service. It was impossible for even a trained observer to recognize by his sense of sight and touch alone all that could be revealed by the laboratory. Chancroids fre-

quently harbored the organism of syphilis and owing to the longer incubation period of the latter did not develop their characteristic features until after the expiration of two or three weeks; or they might entirely fail to develop any induration. The secretion of all these lesions should be searched for *Treponema pallidum* and, failing to find it, a favorable prognosis should be withheld until repeated examinations, including the Wassermann reaction, had been made.

Initial lesions were so protean in appearance that atypical chancres would frequently go unrecognized without this means of corroboration. The dark field was especially valuable in developing chancres before they acquired their clinical characteristics, as their nature might be confirmed in a few minutes. The promptness with which treatment could be instituted in these cases and their favorable prognosis were obvious.

The examination of the spinal fluid enabled the determination of the activity of the luetic process in the brain or cord, the various pathological types affecting the central nervous system and, in many cases, the differentiation between these and non-luetic infections. Cases were cited to show how the tabetic syndrome could be simulated by the multiple neuritis of diabetes or alcoholism, and the real nature of the trouble revealed only by the spinal fluid analysis and the blood test. On the other hand, patients with syphilitic involvement of the central nervous system and suffering from obscure pains, febrile attacks, irritability, gastric and rectal crises, memory failure, etc., were often treated for years for neurasthenia, rheumatism, neuritis, surgical affections, and various other conditions.

In the light of more recent investigations an analysis of the spinal fluid was not complete unless the colloidal gold test was performed in addition to the Wassermann reaction and a cytological and chemical examination; as a rule, there was a parallelism between it and other positive findings in the fluid. The typical parietic curve had been met with in every case of paresis examined and in three cases had been reversed by treatment to the luetic curve. This improvement, however, did not run parallel with the abatement of clinical symptoms, as he had a patient who, in addition, was negative in all the other laboratory findings and was slowly deteriorating in spite of treatment pushed to the point of tolerance. Definitely syphilitic processes, such as cerebral endarteritis, abortive or stationary forms of tabes, and some types of cerebrospinal syphilis might give a completely negative Wassermann. It was in these cases that a supplementary gold test was of value in demonstrating the luetic nature of the condition. Its greatest value, however, was in distinguishing between paresis and the conditions which simulated it, as well as its prognostic significance in tabetics who showed no mental impairment but gave a parietic curve. He cited a number of patients with tabes in whom such typical cerebral disorders as writing and speech defects, tremor and memory defects were absent, but who gave with gold chloride a complete decolorization in the first five to eight tubes. While these cases had not been observed long enough to warrant

definite pronouncement as to the prognostic significance of the parietic curve, post mortem findings had taught that the anatomical changes in paresis might long antedate clinical manifestations. He felt that in patients who were under continuous observation, especially those who were receiving intraspinal treatment, where the fluid could be examined at regular intervals, the presence or the development of the parietic curve should excite a strong suspicion that later these patients might develop the clinical syndrome of paresis, and he always advised the family or business associates of such patients of the possibilities in the case, though active treatment might anticipate, delay, or arrest the degenerative cerebral changes.

Dr. SYDNEY R. MILLER said that the ground had been very thoroughly covered in the papers of the evening, but at Doctor James's suggestion it might be interesting briefly to state the point of view at present held in the clinic of the Johns Hopkins Hospital. The opportunity seemed especially fortunate by reason of the fact that within the past week a paper had been read before the Johns Hopkins Medical Society by a physician from New York in which the views presented were diametrically opposed to those outlined that evening. They were to the effect that inasmuch as the Wassermann reaction was a nonspecific one, since it was often absent in cases known to be luetic clinically and by reason of the fact that the conception of the treatment of syphilis had really been very little modified since the introduction of the test, and since the same serum examined by five different observers frequently yielded widely divergent results—therefore the reaction was dangerous, of little clinical value, and probably had better be left alone. The speaker held that there could be no argument concerning the nonspecificity of the reaction in the Ehrlich sense of the term. There was little danger of seeing yaws, recurrent fever, and frambesia in this part of the world. It was interesting, however, as had been pointed out by Doctor Swift, that these diseases were etiologically and biologically closely related, and it therefore might reasonably have been predicted that a positive Wassermann reaction in these conditions would not be infrequent. Practically the only other disease which had ever given questionable results was malaria, but this condition was practically always easily ruled out by finding the malaria parasites and, in the failure of this, a course of quinine, followed by a second Wassermann, usually decided a doubtful case. As a result of the experience of five different laboratories, he had come to feel that an unequivocal, positive Wassermann reaction, preferably with three, but not less than two antigens, in a technic suitably controlled, in which accuracy of result had not been sacrificed to delicacy of method, was clinically specific evidence of existing syphilis. The point which needed the greatest emphasis, however, was that the closest cooperation must exist between the laboratory worker and the clinician on the ward. There was nothing particularly remarkable about the fact that cases known to be clinical lues, from time to time gave negative Wassermann reactions, even in the absence of antiluetic therapy.

With reference to the statement that the Wassermann reaction gave discordant results in the hands of different observers, though using the same antigens in testing the same serums, it should be pointed out that in the endeavor to simplify the technic of the original test and devise time saving methods, numerous modifications had been made, a number of which were lacking in the essential details described by Wassermann. This could scarcely be interpreted as an error inherent in the method, but undoubtedly was a strong argument in favor of its universal standardization.

The fallacy of the statement that the treatment of syphilis had not been advanced since the introduction of the Wassermann reaction, became apparent to any one who calmly analyzed the statement. Since the Wassermann reaction came into existence, more known luetics had been intelligently and persistently treated than ever before, particularly after they passed into the symptomless stage of the disease. Moreover, more unsuspected conditions due to syphilis had been discovered and treated than was ever possible prior to the laboratory method of diagnosis. No doubt cases had been treated which had not been syphilis, but had been diagnosed as such owing to the faulty application or interpretation of a Wassermann test. But the harm done by such misplaced therapy was nothing compared with the good that had been achieved on the great mass of unfortunate sufferers.

Just a word might be said here of the paradoxical reactions referred to by Doctor Swift. Out of a series of approximately 1,500 Wassermann reaction tests in which each serum or spinal fluid was tested against three different antigens, the results were parallel absolutely in over ninety-seven per cent. In seven instances fixation was given alone by the cholesterinized human heart antigen. In all of these a subsequent lumbar puncture revealed the fact that the patient was suffering from some type of central nervous system syphilis. This brought up two points which needed particular emphasis: 1. That a suspected spinal fluid should not be regarded as negative unless it was so when ten times the original volume suggested by Wassermann was used in the reaction; 2, the fact that physicians should demand a report which clearly stated against how many antigens and in what amounts a spinal fluid or serum had been tested.

The cases referred to by Doctor Draper in which weak globulin reactions were the only evidence of some underlying abnormal condition, were extremely interesting and suggestive. Similar findings had been noted at Johns Hopkins, where in general it had been found that positive globulin tests were most frequently the earliest signs of central nervous system syphilis and the last evidence of its existence to succumb to suitable treatment, the colloidal gold reaction excepted; in testing for increased globulin content, they had been impressed with the superiority of either the Ross-Jones or Pandey test, preferably the latter, by reason of the fact that but one drop of spinal fluid was necessary to give an immediate and decisive answer. This reaction, described originally in 1910, deserved a much wider application. In their experience it had not proved over sensitive.

Dr. E. L. KEYES, Jr., agreed most enthusiastically with all that Doctor Swift had said. The other two papers expressed the individual views of advanced workers on topics still under discussion, while Doctor Swift's contribution was a masterly résumé of established knowledge. It was interesting to note, in reference to the globulin test, that Doctor Miller's opinion did not quite agree with one of the speakers, but the Wassermann and the spinal fluid tests required no defense when properly and intelligently performed, and they had been of the greatest assistance to the clinician. But the difficulty the clinician encountered was with the widespread use of these tests leading to a widespread misunderstanding of their meaning and the fact that too much dependence was often placed upon them. For instance, he had recently seen a patient who had been treated with salvarsan some months before for the relief of a positive blood Wassermann. Unfortunately the resulting negative blood serum findings led to the abandonment of treatment and the omission of the intensive mercurial course necessary to prevent neurorecidivism. One year after the salvarsan injections he had a relapse of syphilis in the nervous system, which was doubtless excited by the salvarsan, either because insufficient salvarsan was given, or because it was not guarded by intramuscular injections of mercury. Then there arose a second difficulty; the negative Wassermann still persisted at the time of neurorecidivism and hence, at the very moment when the patient most needed intensive treatment, he was given pills. Six months later he was sent to Doctor Keyes to have lesions patched up which by this time were perhaps irremediable. Such was the result of "a little learning" in handling such refined instruments as salvarsan and the precise methods of serum diagnosis in syphilis.

Dr. E. D. FISHER said that his treatment of the subject would be from the clinician's side almost entirely, as he was not in line to speak of the laboratory work already so ably presented, but he thought that both were necessary for diagnosis. As a clinician, however, he would make the diagnosis very much more surely from clinical observation than from laboratory findings, though he could not do without the latter. Study of the nervous system had established a pretty sure knowledge of it clinically. Apparently every case of primary syphilis gave some findings of a pathological nature from the initial lesion in the cerebrospinal fluid, but syphilis had a selection for different organs of the body, not especially for the nervous system, and probably not more than ten per cent. of patients affected with syphilis had disease of the nervous system. Outside of syphilis there were a great variety of diseases of the nervous system. The selection of certain parts of the nervous system by the syphilitic virus was one to be considered; at times it remained entirely vascular and involved the meninges; at others it affected the cell structures of the nervous system, giving a different type of disease. Mott, of London, thought these classes were different and that the vascular might pass into the parenchymatous.

In regard to the early symptoms of syphilis affecting the nervous system, those conditions almost

invariably cleared up. The laboratory supported the clinician in the diagnosis of vascular lesions being curable in a case of cerebrospinal syphilis. By watching certain changes in the cerebrospinal fluid and the blood, it might be possible to say, of such a case that it was one which was in the passing stage from cerebrospinal syphilis into general paresis. When that could be shown by the laboratories, a long advance would have been made in diagnosis, and it was hoped that this very accurate stage would eventually be reached.

Dr. S. POLLITZER shared the feelings already expressed in regard to the thoroughness of the presentations, but he might be excused on the ground that he was a clinician who had been in close touch with the laboratory for many years. In regard to the colloidal gold test, he had gone over that a few years ago when it was new, and he could say that it was a method of the greatest utility when it worked; but he doubted if the method would ever be extensively used because of the great difficulty of standardizing and preserving the solutions.

It seemed to him that a practitioner who saw cases of syphilis in the first stage and who failed to establish a positive diagnosis by examining for the spirochete was guilty of gross negligence. The time to attack syphilis with the greatest prospect of cure was in its early stages; he had never seen a case of syphilis properly treated in the first three months of the disease which was not cured later. The only way possible to make a positive diagnosis was by means of a demonstration of the spirochete either with the dark field microscope, or by the India ink method.

As to spinal fluid examination, the great majority of syphilitides showed evidence of irritation of the central nervous system and of changes in the spinal fluid within a couple of months of infection, but very few afterward developed disease of the central nervous system. To administer intraspinal treatment in the early stages of syphilis was an unjustifiable procedure. According to present knowledge, the time to examine the spinal fluid was after the patient had been under antiluetic treatment for a year or two and before dismissing him as cured, or in the case of a patient whose Wassermann remained persistently positive despite thorough and prolonged treatment. It had been his privilege to read the first paper on the Wassermann test in America nine years ago at a meeting of the academy and soon after that he began having the Wassermann done on his patients, having had between four and five thousand cases. He did not hesitate to say that there had been no single test in the whole range of medicine of the importance and value of the Wassermann. It should be interpreted with some intelligence, of course, but the syphilologist would be at sea without it in the diagnosis and treatment of syphilis. Sometimes, however, the Wassermann and his own clinical observations were not in harmony and sometimes the Wassermann was proved wrong when he had it repeated, the test not being done automatically and being, of course, subject to the human factor of error. In cases of great importance and always when the test and the clinical observations were not in accord, the test should be repeated. The duty of the practitioner in regard

to having the Wassermann test made, and by a reliable laboratory, the duty to examine for spirochetes, the duty to examine the spinal fluid in the later stage of syphilis, were so obvious that nothing he could say could emphasize it sufficiently.

Letters to the Editors.

AN APPRECIATIVE SUBSCRIBER.

BUTTE, MONT., April 24, 1916.

To the Editors:

I am still a subscriber to a great many medical journals, and was in the past to many others, which I have dropped for the reason that I considered it a waste of time trying to discover something of value. I also subscribe for the *Medical Record*. Your JOURNAL takes precedence, and I wish to congratulate you on the selection of your men and the subjects you publish. Hoping you may long continue with the good work, I remain,

R. C. MONAHAN, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Autoplastic Bone Surgery. By CHARLES DAVISON, M.D., Professor of Surgery and Clinical Surgery, University of Illinois, College of Medicine; Fellow of the American College of Surgeons; Surgeon to Cook County Hospital and University Hospital; and FRANKLIN D. SMITH, M.D., Clinical Pathologist to University Hospital. With 174 illustrations. Philadelphia and New York: Lea & Febiger, 1916. Pp. v-369.

The authors of this small volume are to be congratulated upon their success in gathering into compact form the salient principles of this new branch of surgery and giving the reader a clear idea of the pathology and technic associated with the transference of autoplastic bone grafts. While recognizing that the transplantation of bone is not a new procedure, the authors rightfully hold that in its present form it has come recently into great prominence and bids fair to supplant all other methods of treating ununited fractures. The chapters devoted to the histology of bone regeneration are most instructive and represent the literature as well as the individual investigations of the authors. There is a generous supply of x ray pictures to illustrate the conditions before and after the insertion of grafts for various bone defects in different parts of the body. There was a real need for a systematic treatise on this modern branch of surgical technic, and the authors have succeeded in filling this want in a most satisfactory way.

Maladies des Organes Génitaux de l'Homme. Par PIERRE SIBILLAC, Professeur Agrégé, Chirurgien de l'Hôpital (ambroisie); et PIERRE DESCOMES, Professeur Agrégé, Chirurgien des Hôpitaux de Paris. Avec 114 figures intercalées dans le texte. Nouveau Traité de Chirurgie. Publié en fascicules. Sous la direction de A. LE DENTU, Professeur honoraire de clinique chirurgicale à la Faculté de médecine. Membre de l'Académie de médecine; et PIERRE DELBET, Professeur de clinique chirurgicale à la Faculté de médecine, Chirurgien de l'Hôpital Necker. XXXII. Paris: Librairie J.-B. Baillière et Fils, 1916. Pp. 684.

The thirty-second volume of the new treatise on surgery, edited by Le Dentu and Delbet, is devoted to diseases of the generative organs in the male. It is written by two practical surgeons and professors of surgery in Paris, both of whom bring wide experience to the preparation of the volume. The matter is arranged in a most systematic way and each subject is taken up in great detail. It is especially valuable for the practitioner who desires complete knowledge of the pathology, symptoms, and modern treatment of

any particular affection. For the medical student it goes too much into detail. It should be welcomed as a notable addition to the special works in the field of andrology. The illustrations cannot be said to have received the same attention as the text. They are few in number and not very well executed. Although of minor importance compared with the written matter, we feel the lack of plates, photographs, and diagrams which are helpful in impressing the various lesions upon the reader's mind.

The Obstetrical Quiz for Nurses. A Monograph on Obstetrics for the graduate and the Undergraduate Nurse in the Lying-in-Room. By HILDA ELIZABETH CARLSON. New York: Reban Company, 1915. Pp. vi-316. (Price, \$1.50.)

The need for an obstetrical quiz compend for nurses is fulfilled by the volume compiled by Hilda Elizabeth Carlson, a treatise which abounds in valuable information for the nurse in the lying-in room, both in private practice and before her graduation. No detail essential to successful nursing in confinement work seems to have been omitted, every phase being discussed in a clear and logical manner. The nurse is prepared for every emergency and is guided toward many improvisations.

A chapter on infant feeding is especially praiseworthy, and is followed by an important one on the dietary. The use of scopolamine morphine in labor and nitrous oxide gas oxygen anesthesia, also a very complete list of abbreviations, conclude the monograph. The kit of an obstetrical nurse is not perfectly equipped unless *The Obstetrical Quiz for Nurses* is listed with its contents.

A Brief Bibliography of Books in English, Spanish, and Portuguese, Relating to the Republics Commonly Called Latin American With Comments. By PETER H. GOLDSMITH, Director of the Pan-American Division of the American Association for International Conciliation. New York: The Macmillan Company, 1915. Pp. xix-107.

This little paper covered book of 107 pages is just what its title implies, and the comments are brief, instructive, and to the point. It is indexed according to countries and subjects, while the actual reading matter is paragraphed with the author's name placed at the beginning followed by the title of the book, its date of publication, etc.; in small print below is a second paragraph devoted to the comments. The author explains that the list of works is confined to those obtainable in the libraries of New York city.

Interclinical Notes.

Among the things noted in the *Survey* for April 29th are that Federal quarantine rules in the port of New York; that syphilitic infections have been halved since Cincinnati put the snuffers on her red lights; that English Quakers, not wishing to bear arms, have established a notable ambulance service; that organized work for mental hygiene has made great progress in two years; and that preventive work among children is advocated to meet the rising death rate from heart disease.

* * *

"Temperance is essentially a quality established within one's self, while prohibition is a measure designed to achieve the superficial results of temperance through the exercise of a superior force." These true words are from an article, *Prohibition or Temperance*, by L. Ames Brown, in the *North American Review* for April. "The whole lesson of Americanism, as applied to the drink problem, is that our progress has been in the direction of temperance, of self control, of restraint, instead of prohibition. Mistled by their uneducated enthusiasm, some of the prohibitionists are working upon theories of Americanism which do not comprehend that the only prohibition that could comport with our traditions would be one preceded by utter self control." Were it not that prohibitionists usually abstain from tobacco, we should tell them to put that in their pipe and smoke it.

* * *

We knew a physician once who tried to lead hard drinkers by easy steps to temperate or total abstinence. He had two leading rules for those beginning to reform: 1. Never take a drink before sunset; 2. never drink on two

consecutive days. He maintained that observance of these rules inculcated a certain amount of self respect; that the sober second day, and a third day without liquor till sunset, sobered a man thoroughly and allowed him to do a little clear headed thinking. Very often indulgence was postponed indefinitely because there was no impulse to break a pledge which did not exist; the patient could begin any day thereafter at twilight without feeling that he had broken his word and so lost some of his self respect. The thought, "I can begin again to make a beast of myself as soon as it is dark," made the victim feel rather silly. Perhaps the doctor overestimated the value of his method, but *a priori* it sounds pretty well.

* * *

The *Saving Shadow*, told in the *Wide World* by H. J. Shepstone, is an old story, but a mighty good one, well worth retelling. It has served as a basis for many a short story; it is not often that the tremendous science of astronomy comes to the aid of a man accused of a crime. The army doctor plays an important, if not a sensational role in the *Marchwood Ghost Mystery*, by Captain H. L. Ruck Keene, D.S.D. The "little medico" is an Irishman, but the ghost is that of a Scotchman. Strange how among this hard headed race the supernatural finds a proportion of believers larger than among any other civilized people of the globe.

* * *

The United States Supreme Court, according to John A. Fitch, in the *Survey* for April 15th, is to decide on the length of the workman's day; eleven years ago, the court gave two conflicting decisions, one in Utah, where it upheld an eight hour day for miners, the other in New York, where it was unable to see why bakers should not work longer than ten hours. Mr. Fitch believes that the brief to be presented this year is logical and overwhelming in its evidence. The acquisition of English is considered to be the key to citizenship.

* * *

What an Englishman thinks of the French is a striking article in the *Outlook* for April 12th, by Herbert Ward; like all people who know the French well, Mr. Ward thinks very highly of them. There is an amusing story of an Italian soldier being taken prisoner by two Austrian soldiers; all three turn out to be naturalized Americans, and, lured by the account of the admirable cooking and other comforts of the Italian army, the two Austrians constitute themselves prisoners of the Italian and accompany him back to his regiment, all three talking good United States.

Meetings of Local Medical Societies.

MONDAY, May 8th.—New York Ophthalmological Society; Society of Medical Jurisprudence, New York; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, May 9th.—New York Academy of Medicine (Section in Neurology and Psychiatry); Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady; Medical Society of the County of Rensselaer; Buffalo Academy of Medicine (Section in Medicine); Newburgh Bay Medical Society; New York Obstetrical Society (annual); Onondaga Medical Society.

WEDNESDAY, May 10th.—New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital, Brooklyn; Schenectady Academy of Medicine; Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society; Rochester Academy of Medicine.

THURSDAY, May 11th.—New York Academy of Medicine (Section in Pediatrics); Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society; Brooklyn Pathological Society; Blackwell Medical Society of Rochester; Jenkins Medical Association, Yonkers (annual); Buffalo Ophthalmological Club; Jamestown Medical Society; Society of Physicians of Village of Canandaigua; Cayuga County Medical Society.

FRIDAY, May 17th.—New York Academy of Medicine (Section in Otology); Society of Ex-Interns of the German Hospital in Brooklyn (annual); Flatbush Medical Society, Brooklyn (annual); Eastern Medical Society of the City of New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending April 26, 1916:

Banks, Charles E., Senior Surgeon. Reported at bureau April 25, 1916, for special temporary duty on safety first train. **Collins**, G. L., Surgeon. Will proceed to Duquesne, Pa., to assist in studies of the health of steel workers. **Francis**, Edward, Surgeon. Granted eight days' additional leave of absence from April 4, 1916; directed to take temporary charge of the marine hospital at Savannah, Ga., during the absence of Passed Assistant Surgeon J. R. Ridlon. **Glanville**, W. E., Assistant Surgeon. Return to home in New York, stopping en route at Washington, D. C. **Heiser**, Victor G., Surgeon. Granted one year's leave of absence without pay, from March 1, 1916. **Hurley**, J. R., Passed Assistant Surgeon. Granted sixteen days' leave of absence on account of sickness, from April 3, 1916. **Lanza**, A. J., Passed Assistant Surgeon. Ordered to proceed to Butte, Montana, in connection with studies of mine sanitation. **Lauck**, W. J., Scientific Assistant. Ordered to proceed to Spartanburg, S. C., for duty in investigations of pellagra. **Lumsden**, L. L., Surgeon. Authorized to visit St. Louis rural sanitation laboratory, when necessary, in connection with studies of rural sanitation. **Ridlon**, J. R., Passed Assistant Surgeon. Ordered to proceed to Montgomery, Ala., for temporary duty with State Board of Health in bacteriological work. **Stewart**, G. McG., Acting Assistant Surgeon. Directed to proceed to Puerto Mexico, Mexico, via Galveston, Texas, for duty during the summer quarantine season. **Stiles**, C. W., Professor. Detailed to conduct a sanitary survey of the city of Winston-Salem, N. C. **Stromquist**, Walter G., Sanitary Engineer. Directed to proceed to Cincinnati, Ohio, for duty in studies of stream pollution. **Wagenhals**, Herbert H., Sanitary Engineer. Directed to proceed to Cincinnati, Ohio, for duty in studies of stream pollution.

Boards Convened.

Board of commissioned medical officers convened at the Marine Hospital, Stapleton, N. Y., April 24, 1916, for the physical examination of an Acting Keeper, United States Coast Guard, to determine his fitness for promotion to the grade of keeper. Detail for the board: Senior Surgeon G. W. Stoner, chairman; Passed Assistant Surgeon O. P. Knight, recorder.

Surgeon B. W. Brown and Passed Assistant Surgeon W. M. Bryan detailed for duty on a Coast Guard Retiring Board at Chelsea, Mass.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending April 29, 1916:

Birmingham, Henry P., Colonel, Medical Corps. Relieved from duty as surgeon, Eastern Department, effective May 15, 1916, and will repair to Washington, D. C., and report in person to the surgeon general of the army for duty in his office. **Bradley**, Alfred E., Lieutenant Colonel, Medical Corps. Relieved from duty at headquarters, Eastern Department, to take effect on or about June 1, 1916. **Lyster**, William J. L., Major, Medical Corps. Relieved from duty in the office of the surgeon general, effective about May 15, 1916. **Marietta**, Shelley U., Captain, Medical Corps. Granted leave of absence from duty from April 25 to May 1, effective about October 4, 1916. **Mason**, Charles F., Lieutenant Colonel, Medical Corps. Upon relief from duty with the Panama Canal, will proceed to Governor's Island, N. Y., and report to the commanding general, Eastern

Department, for duty as assistant to the surgeon and sanitary inspector of that department. **Metcalf**, Albert W., Jr., First Lieutenant, Medical Reserve Corps. Will proceed to Fort Myer, Virginia, and report not later than April 30, 1916, to the commanding officer of that post for temporary duty, and upon completion thereof, return to his proper station. **Sharpe**, Herbert H., Captain, Medical Corps. Granted leave of absence for two months, to take effect upon his arrival in the United States. **Tarleton**, Leeson O., Captain, Medical Corps. Granted leave of absence for twenty days, effective upon his arrival in the United States after his relief from duty in the Philippine Islands; granted leave of absence for one month and ten days, effective on or about October 6, 1916. **Williamson**, Llewellyn P., Captain, Medical Corps. Designated as the medical officer to accompany the Army War College personnel during its history and staff rides to begin May 10th and to end on or about June 17, 1916, and will report in person at the proper time to the president of the War College for duty accordingly.

Births, Marriages, and Deaths.

Born.

Gibson.—In Allenhurst, Ga., on Saturday, April 22d, to Dr. and Mrs. Benjamin H. Gibson, a son.

Married.

Cobleigh-Jones.—In Berlin, Mass., on Saturday, April 22d, Dr. Henry R. C. Cobleigh and Miss Sybil Beatrice Jones. **Dunavan-Wright**.—In Chicago, Ill., on Monday, April 17th, Dr. Louis W. Dunavan and Mrs. Elizabeth M. Wright. **Randolph-Chesterman**.—In Crookston, Minn., on Wednesday, April 19th, Dr. Wilson Randolph and Miss Meda Chesterman.

Died.

Bates.—In East Setauket, N. Y., on Thursday, April 20th, Dr. J. Ferdinand Bates, aged eighty-two years. **Chandlee**.—In Baltimore, Md., on Wednesday, April 19th, Dr. Henry Chandlee, aged sixty-two years. **Choate**.—In Salem, Mass., on Sunday, April 23d, Dr. David Choate, aged eighty-eight years. **Godson**.—In Harmon-on-the-Hudson, N. Y., on Saturday, April 22d, Dr. George H. Godson, aged fifty-six years. **Gunn**.—In Des Moines, Iowa, on Saturday, April 15th, Dr. John A. Gunn, aged sixty-seven years. **Hancock**.—In Henderson, Ky., on Thursday, April 20th, Dr. David O. Hancock, aged fifty years. **McDermott**.—In Los Altos, Cal., on Sunday, April 16th, Dr. William P. McDermott, aged eighty-five years. **Marden**.—In Claremont, N. H., on Sunday, April 2d, Dr. Albert L. Marden, aged sixty-seven years. **Moody**.—In Mobile, Ala., on Sunday, April 16th, Dr. Henry A. Moody, aged seventy-four years. **Peck**.—In Brandon, Vt., on Friday, April 21st, Dr. Charles W. Peck, aged seventy-five years. **Ritchie**.—In Mechanicsburg, Pa., on Sunday, April 23d, Dr. George F. Ritchie, aged fifty years. **Simmons**.—In Louisville, Ky., on Friday, April 21st, Dr. Nathan R. Simmons, of Lexington, Ky., aged seventy-three years. **Smith**.—In Tuskegee, Ala., on Monday, April 17th, Dr. Milton M. Smith, aged sixty-eight years. **Stein**.—In New York, on Tuesday, April 25th, Dr. Richard Stein, aged fifty-five years. **Stewart**.—In Berne, Switzerland, on Monday, April 17th, Dr. Robert W. Stewart, aged fifty-five years. **Stiles**.—In Owego, N. Y., on Friday, April 21st, Dr. Charles L. Stiles, aged eighty-one years. **Studer**.—In Los Angeles, Cal., on Friday, April 7th, Dr. Joseph Studer, aged eighty-seven years. **Sweet**.—In Worcester, Mass., on Sunday, April 23d, Dr. Elisha W. Sweet, aged seventy years. **Thorn**.—In Toledo, Ohio, on Thursday, April 13th, Dr. Samuel Springate Thorn, aged eighty-four years. **White**.—In Philadelphia, on Monday, April 24th, Dr. James William White, aged sixty-five years. **Wills**.—In Washington, Ga., on Thursday, April 13th, Dr. Thomas J. Wills, aged fifty-four years. **Wolpert**.—In Elizabeth, Ind., on Tuesday, April 18th, Dr. William I. Wolpert, aged fifty-five years. **Yandell**.—In Laconner, Wash., on Friday, April 14th, Dr. Henry Yandell, aged eighty-two years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 20.

NEW YORK, SATURDAY, MAY 13, 1916.

WHOLE No. 1954.

Original Communications.

CARBON DIOXIDE BATHS.

Observations on Their Action,

By SIMON BARUCH, M.D.,

New York,

Consulting Physician, Knickerbocker and Montefiore Hospitals;
Hydrotherapeutist, Sea View Hospital; Consulting Hydrothera-
peutist, Bellevue and Allied Hospitals; Professor of Hydro-
therapy (1906-1913), College of Physicians and Sur-
geons, Columbia University.

During a visit to Nauheim, in 1913, I was privileged by courtesy of Baron Von Frankenberg, director of Bad Nauheim and Geheimrat Eser, the chief bath inspector, who furnished me the subjects and bath facilities, to make some observations upon the action of Nauheim waters on the cutaneous circulation. With the assistance of Dr. A. J. Wittson and a local artist, photographs were obtained before and after plain and natural mineral baths. The result of these observations was presented at his request by Professor Groedel, of Nauheim, before a congress of balneologists in Carlsbad.

After presenting the photographs, Professor Groedel said: "Baruch, of New York, has recently made some experiments with several baths in Nauheim and found that the scrotum with its peculiar well developed muscle fibre network contracts more intensely in the carbon dioxide bath than in the ordinary bath of the same temperature. He concludes that the same effect must be produced in the entire cutaneous surface. I here present to you two photographs, one of which is taken after a sweet water bath, the other after a flowing Sprudel carbon dioxide bath of the same temperature. You will see plainly the stronger folding of the skin of the scrotum after the Sprudel bath." I shall not here comment upon Doctor Groedel's disagreement with my view, leaving it for discussion before the approaching State Medical Society meeting. In order to confirm the Nauheim findings I repeated the observations in Saratoga Springs with its carbon dioxide waters on a more extensive scale. These observations are herewith presented—I am indebted to Dr. A. W. Ferris, superintending director, who furnished some of his laborers and gave me access to the baths and assisted me otherwise, also to Dr. A. Sherman Downs for blood pressure records and assistance.

I. The first series of experiments was made at the bath house on Philadelphia Street, which is supplied abundantly, through a subterranean conduit, with carbon dioxide water

from the Hathorn Spring No. 1. The subject was a man twenty-two years of age, taken from the manual work he was engaged in. The temperature of the water was 31° C. (87.8° F.), which is below the average Nauheim bath temperature, and the duration was ten minutes, which is above the average of the Nauheim bath when administered in cardiac cases. I selected this lower temperature and longer duration for the physiological experiment on a normal individual. Photographs were taken after each bath, after the entire body, except the scrotum, had been rapidly dried without friction. The pulse, temperature, and blood pressure were also recorded. A bath of forty gallons city water containing eight pounds sodium chloride and ten ounces calcium chloride was prepared. The young man was found not to be normal; but without being aware of it his pulse was 90; mouth temperature 99° F. It was later ascertained that he was a cigarette habitué, who inhaled the smoke. His blood pressure was, systolic 120, diastolic 80. Unfortunately his sphygmogram was spoiled by imperfect varnish.

Figure 1 represents the appearance of the scrotum before a saline bath of forty-five gallons of plain water, in which was dissolved sodium chloride eight pounds, and calcium chloride ten ounces, which is equivalent to the saline bath of Nauheim.

Figure 2 shows conditions after this bath. The scrotum was somewhat retracted; the skin was somewhat cyanotic, i. e., reaction was not good. These effects are attributable to the cooling action of the evaporating saline water and consequent thermic action upon the skin. This type of bath formerly prescribed at a higher temperature, 34° to 35° C., and of shorter duration, eight minutes, in Nauheim, as a preliminary measure, under the long established impression that it rests the heart is now advised by Groedel as a placebo in desperate cases. The shorter duration naturally diminishes the thermic action, a point that is too often disregarded.

II. The next bath prepared, after rest of an hour, was with Hathorn No. 1, water at the same temperature and the same duration, viz. 87.8° F. and ten minutes without salines. The subject had been to dinner and smoked again, but felt well. His pulse was 90, temperature 99° F., and his blood pressure was systolic 120, diastolic 80, before the bath of 138 per cent. carbon dioxide saturation. After this bath his blood pressure was, systolic 115, diastolic 65. The sphygmogram presented below, though imperfect, does not show as much diastolic after as before the bath. The appearance of the scrotum after this bath is well depicted.

The constringing action upon the dartos is quite in evidence. There are distinct rugæ and there is no retraction of the testicles, because the cremaster

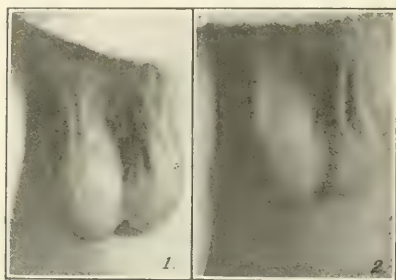


FIG. 1.—Before saline bath, 82° S. F.

FIG. 2.—After bath.

(striped fibre) is unaffected by reason of the warming effect of the gas bubbles. Reaction was fine, the entire body presenting a bright red appearance.

III. After he had rested half an hour, covered with

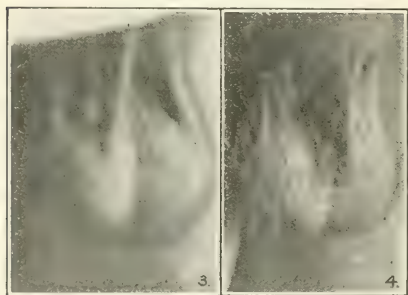


FIG. 3.—After bath, CO₂ 138 per cent, 82° S. F.

FIG. 4.—After bath, CO₂ 138 per cent, with sodium chloride, 8 pounds; calcium chloride, 10 ounces.

a blanket, the next bath was prepared with Hathorn No. 1, same temperature, 87.8° F. and duration ten minutes. Carbon dioxide saturation was 138 per cent. and there were added sodium chloride eight

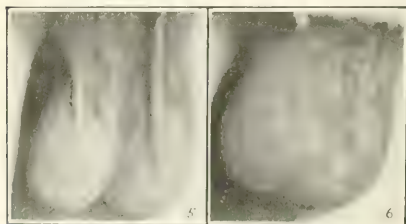


FIG. 5.—Before bath, CO₂ 121 per cent, 87° S. F.

FIG. 6.—After bath.

pounds, and calcium chloride ten ounces, to approximate the strongest Nauheim Sprudel. The patient's pulse had improved—the rate was eighty a minute,

temperature 98.6° F., diastolic still pronounced (Fig. 7). Blood pressure was systolic 120, diastolic was 80. He asserted that he felt well.

Here we see some retracting effect of the cooling saline solution which has not been entirely overcome by the warming gas bubbles. The rugæ are plainly visible, however. Reaction is good, the skin is red, and pressure displacement of blood is quickly compensated by its rapid return.

The pulse represents a decided improvement, being dicrotic and abnormal before the bath; the

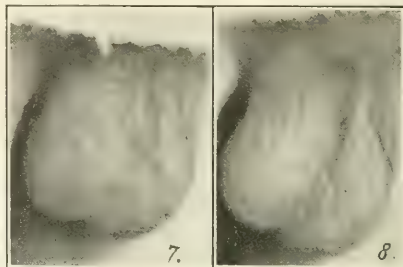


FIG. 7.—Before bath, sodium chloride, 7 pounds; calcium chloride, 10 ounces, 60° F.

FIG. 8.—After bath.

aortic notch and dicrotic wave became normal and the rate fell from 80 to 76.

The experiments were continued at the High Rock Bath House.

IV. Figures 5 and 6 are from photographs taken from another subject, J. D., aged eighteen years, who was in normal condition and came over to me from his manual work. He was placed in the bath of water, from the High Rock Spring, 121 per cent. saturation (note that this is seventeen per cent. less than Hathorn water), temperature 86° F. (30° C.),

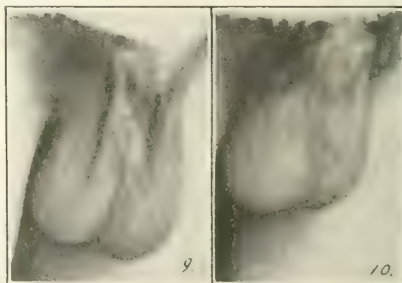


FIG. 9.—Before bath, CO₂ 121 per cent, 40 gallons with sodium chloride, 10 pounds; calcium chloride, 10 ounces.

FIG. 10.—After bath.

which, it may be noted, is colder than any hitherto given. The effect is plainly evidenced.

The action on the striped cremaster under cold is to retract the testicle and the effect of the carbon dioxide upon the dartos is to produce rugæ which are here narrow on account of the retraction.

V. Figures 7 and 8 show the effect of bath at 60° F. of forty gallons of plain water in which

sodium chloride, six pounds, and calcium chloride, ten ounces, were dissolved.

The object aimed at, viz., to warm and relax the patient was accomplished as shown in the soddien

VI. The last of the series was intended as a test of tolerance of the healthy subject under the equivalent of a strong Sprudel bath. The temperature was 86° F. The High Rock Spring water

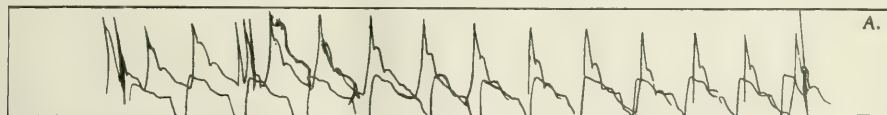


CHART A.—Pulse of one individual 1906 to 1915.

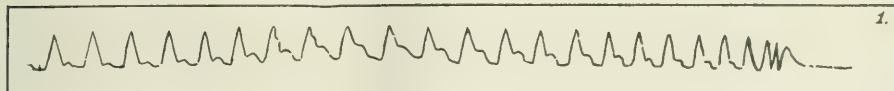


CHART 1.—J. M., age twenty-two years; May 24, 1915, pulse 90, mouth temperature 99° F., systolic blood pressure 120, diastolic 80. Before bath CO₂ 138 per cent., temperature 87.8° F.

CHART 2.—J. M., after bath. Systolic blood pressure 115, diastolic 65.

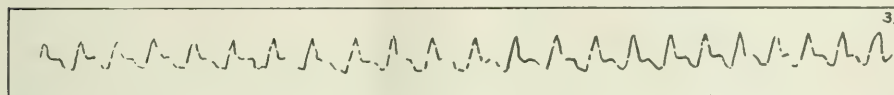


CHART 3.—J. M., taken one hour after Chart 2. Pulse 80, temperature 98.6° F. Systolic blood pressure 120, diastolic 90. Bath ordered temperature 87.8° F. CO₂ 138 per cent. plus sodium chloride 8 pounds, and calcium chloride 10 ounces.

CHART 4.—J. M., taken half an hour after Chart 3. Pulse 76, temperature 98.6° F. Systolic blood pressure 118, diastolic 60.

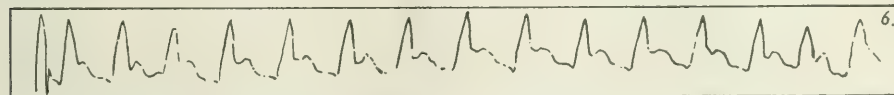
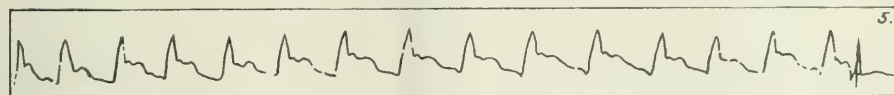
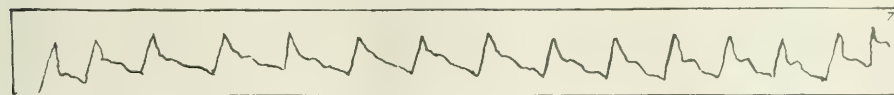


CHART 5.—J. D., age eighteen years. Pulse 74, systolic blood pressure 115, diastolic 70. Saline bath ordered. 6 pounds sodium chloride, 10 ounces calcium chloride, 40 gallons of water.

CHART 6.—J. D., after bath. Pulse 90, systolic blood pressure 115, diastolic 70.



appearance of the scrotum and its enlargement. The effect on the pulse is clearly shown in the sphygmogram, the abnormal pulse being converted into a dicrotic one.

measured 121 per cent. saturation, and the strongest saline addition was made in forty gallons of water; sodium chloride, eleven pounds; calcium chloride, ten ounces. The duration was the same—ten min-

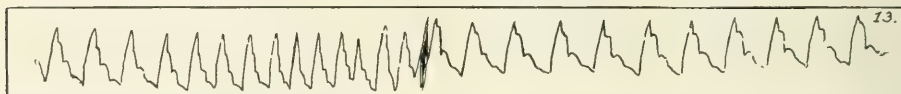
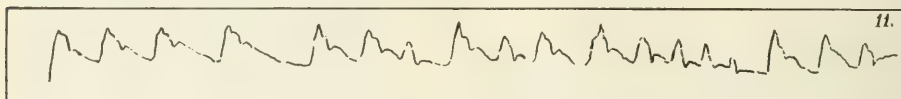
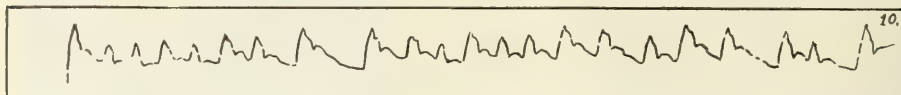
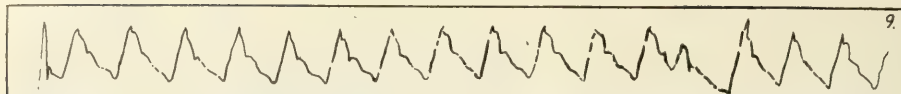


CHART 9.—S. B., aged seventy-five and a half years, October 25, 1915. Pulse 82, systolic blood pressure 140, diastolic 90. After bath temperature 90° F., sodium chloride 6 pounds, calcium chloride 10 ounces, in 40 gallons of water.

CHART 10.—S. B., October 26, 1915. Before bath temperature normal, pulse 86, intermittent and fibrillating; systolic blood pressure 130. Bath ordered CO₂ 123 per cent. plus sodium chloride five pounds, calcium chloride five ounces, in 40 gallons of water.

CHART 11.—S. B., October 26, 1915, after bath pulse 86, still intermittent and fibrillating, but improved, systolic blood pressure 130.

CHART 12.—S. B., April 15, 1916. Showing intermittent pulse, when at rest, while patient was suffering from indigestion.

CHART 13.—S. B., April 5, 1916 (instrument not wound up well at first.) Pulse 80, systolic blood pressure 140, diastolic 90.

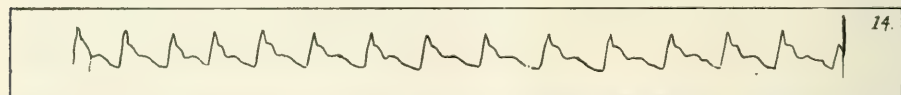
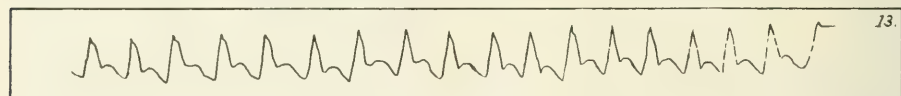


CHART 14.—Dr. B., March 31, 1916, upper tracing, before treatment, pulse 88. Lower tracing, after treatment: tepid bath, 80° F., general fan douche, 25 seconds; pulse 84.

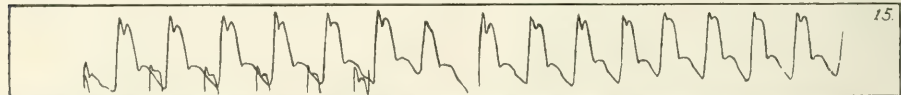


CHART 15.—Mrs. M., aged 36 years; pulse 66. March 22, 1906, at Paso Robles, Cal. Double aortic and mitral disease.

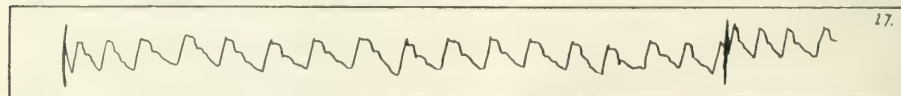
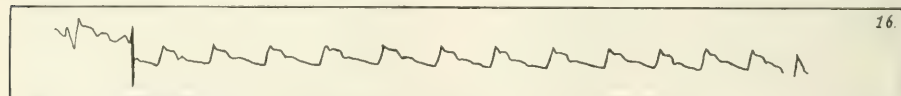


CHART 16.—S. B., June 1, 1906. "Lagging heart," before treatment.

CHART 17.—S. B., June 8, 1906, after treatment by NaCl and light, followed by jet and fan douche at 75° F.

CHART 18.—S. B., June 29, 1906, after treatment of Schott movement (3), pulse 64.

utes. The result was a revelation. The patient had a slight chill during the last moments of the bath, and when he was removed the skin was cyanotic.

The action upon the dartos is here entirely overcome by the effect upon the cremaster of the cold and saline evaporation. There are no rugæ, but the strongest retraction of the testicle. It may be asked why this result is more pronounced than in the colder bath at 86° F. It may be partly due to the relaxed condition of the patient, produced by the preceding warm bath. The sphygmogram tells its own story:

In Chart 10 we see an absolutely normal pulse converted into a dicrotic one.

This singular effect of a bath, which is regarded in Nauheim as the most stimulating, was amazing to me, and I looked in vain for an explanation why the second and third experiments with Hathorn water, 138 per cent. carbon dioxide, produced the characteristic stimulation, while the bath with 121 per cent. gas and three pounds less salt failed to do so, until Mr. Herbert Ant, chemist of the Reservation Commission, remarked incidentally in a conference several months later on the subject of arranging the Saratoga waters to approximate more closely the Nauheim waters, that the addition of the salines to the carbonic acid water present in the tub produced so much chemical action that a great deal of gas was driven off. Now it became plain to me that it was due to the smaller carbon dioxide content of the High Rock water (121 per cent.) and greater loss of gas, when the chloride of sodium and calcium (thirty-three per cent. stronger than in Bath III) was added. In fact, I have, since that time, discovered a decided evolution of heat from this faulty mode of mixture. It follows that the explanation of the depreciating action of this last bath may be found in the loss of most of the carbon dioxide, which is really the stimulating element of the bath.

Mr. Herbert Ant suggested, in order to avoid this loss of gas incident to the addition of salines, to dissolve the latter and pour them into the tub before the carbonic acid water was introduced. I find that this almost completely prevents the loss of gas. This incident proves how important are the minutest details in the administration of hydrotherapeutic procedures for successful therapeutic results. It may also serve as a lesson for the preparation of artificial Nauheim baths.

The foregoing illustrations must be interpreted in accordance with the anatomy and physiology of the scrotum. The latter is supplied with three sets of muscles, the cremaster externus, made up of striated fibres, and the internal cremaster and dartos, made up of nonstriated fibres. The striped cremaster when made active by reflex (sexual) excitation, raises quickly the testicle as it does after thermic excitation, while the dartos acts more slowly, throwing the skin into rugæ and, as with all smooth muscular fibre, contraction endures longer. According to Arthur Hirschfeld, who made some experiments on the scrotum with cold and warm water at my suggestion, in Brieger's clinic, "these two movements are so different that one may after a few trials say immediately which contraction is due to striped and which to unstriated muscle."

Professor Groedel, of Nauheim, is not convinced that the constricting action manifested by carbon dioxide baths upon the scrotum through its sensitive dartos is likely to be in evidence in other parts of the skin. But he furnishes no reason why this physiological action may not in milder degree be manifested in other parts of the body, in which the same type of muscular fibre is demonstrable, as shown by the best anatomists. Certainly the action of carbon dioxide and cold on the dartos may be reproduced by intense cold which produces cutis anserina on all parts of the body. Why may we not reasonably accept the same action in milder degree upon the latter, though not demonstrable any more than that from a less intensely cold bath would be?

A word regarding the sphygmograph as an instrument of value. I am aware that the Jaquet polygraph and similar registering instruments have superseded it. I had the latter with me, but failed to bring it into action despite the fact that I had used it successfully at the Montefiore Hospital on the previous day. I rejoiced, therefore, that I had taken the precaution to bring the old reliable Dudgeon with me, that has served me well for twenty years. Those who oppose the sphygmograph probably have not had sufficient practice with it. This instrument will disappoint any one who expects to make a diagnosis of organic heart lesions with it, an error to which Dudgeon refers in his descriptive little book. The practised eye soon learns to recognize when the instrument is applied correctly and is functioning properly. I find it valuable for comparative studies of the pulse.

51 WEST SEVENTIETH STREET.

MINERAL BATH THERAPEUTICS AT MOUNT CLEMENS.

*The physical and chemical nature of the waters,
their physiological action and their therapeutic
application in the treatment of
diseased conditions.*

By W. T. LUNGERHAUSEN, M. D.,
Mount Clemens, Mich.

The title of this article is a frank commendation of the close touch of the editors of the NEW YORK MEDICAL JOURNAL with the present demands of the profession for timely literature on pertinent subjects. Having followed the attitude of the profession toward the subject of mineral baths during the last twenty years, always with a hopeful anticipation of a general appreciation of the inherent merits of this branch of therapeutics, I am glad to present this interesting subject to the readers of the JOURNAL. In the limited space at my disposal I shall attempt only a cursory review of principles and theories immediately concerned, trusting that a perusal of the article may stimulate a desire for a more intimate working knowledge of a remedial agent that is gradually winning its way to acceptance in the face of lack of information on the part of the profession at large. There is, furthermore, the additional incentive to the work in the knowledge that a widely diffused understanding of

the nature of this line of treatment will inevitably bring all our patients with intelligent instructions, and thereby aid the local members of the profession to stamp out the questionable practices that must be stigmatized as commercialism and quackery, practices that are seemingly inseparably connected with the early growth of resort treatment.

In discussing the nature of a powerful natural remedial agent such as the Mount Clemens mineral water, the equivalents of which have enjoyed a very general acceptance by the profession abroad, and are considered as highly valued forces in their armamentarium, I wish to disclaim any intention of heralding the mineral bath treatment as a panacea, but, on the contrary, propose to define its limits according to established physiological and pharmacological data.

If, in the field of political, civic, and business activities, we are consciously complimenting Europe in adopting principles of efficiency, preparedness, etc., I surely shall not be offending against the accepted standard of neutrality in briefly acknowledging our indebtedness to the old world for the results of her labors in this special branch of therapeutics.

The recognition of the curative nature of mineral waters in this country has, in fact, been a replica of the experience abroad. At first a matter of accidental and empirical discovery by their action on man and beast, then long gratefully accepted by the laity in ever widening circles of tests, at last an indifferent medical profession was forced to notice this particular helping hand of Nature. But, once accepted, skillful research has placed this branch of therapeutics on a thoroughly scientific basis, careful application of which has enlarged the curative benefits of hydrotherapeutic and balneotherapeutic procedures, beyond all measure. The idea of resort treatment as originated and practised at Carlsbad, Marienbad, Vichy, Aix, and the many other old spas abroad, has been growing all these years of their existence and has begotten an appreciative response in the understanding of the peoples of the countries in which these resorts flourish. But we, of the new continent, in this feature of our growth—the particular instance of resort treatment—have likewise been quietly growing and achieving until we refuse longer to be considered merely a “chip of the old block,” but are sufficiently virile in our individuality not to fear the most scrutinizing comparisons with the parent stem. Indeed, we are more than competent, in this instance, to maintain our proverbial independence, and can show many accomplishments distinctly our own.

Unfortunately, the profession of this country have persisted in considering this branch of therapeutics so hopelessly special or blindly “last resourceful,” that our schools and textbooks make only perfunctory mention of places and methods. But the magnitude of this force in maintaining the health of the nation is now so great that no physician professing the use of modern methods and means can longer afford to hide behind the old cloak of scorn or indifference. Such attitude must surely mean a loss of prestige as well as income, for the practical results accomplished among increasing thousands of cases, can but attest a certain incompetence of any

physician who persists in refusing to keep in touch with so important a branch of therapeutics.

There are a few books on the subject in English, but knowing that the busy practitioner shies at the suggestion of a volume of special reading matter, I am pleased to present the following brief exposition of the subject, hoping that it may be the means of introducing the remedial virtues of the water to the practical notice of a wider circle of professional patronage and thereby hasten the day when it shall be its own criterion of excellence, and make comparison with foreign resorts a thing of the past.

Appended will be found an analysis of the Mount Clemens mineral water.

PHYSICAL AND CHEMICAL NATURE OF THE WATERS AND THEIR LITHOLOGICAL AND GEOLOGICAL SOURCE.

According to the system of nomenclature most widely current in balneological circles, the Mount Clemens mineral water may be designated as a sulphodibromomuriated saline, the term being thus self explanatory. Its lithological sources are the strata known as the Monroe Beds, consisting mainly of dolomites, calcareous and argillaceous marls, associated with anhydrite and rock salt. It is quite impossible to refer to the original source of the mineral water in terms of centuries or other divisions of human standards of time. Such events of a geological past cannot be defined in years, but must be thought of as ages or periods when some rock or mineral accumulated, or an extinct plant or animal was dominant on earth. The period of the Monroe Beds is that of the Salina and Lower Helderberg of the Silurian epoch of the Paleozoic age. At that time Michigan was covered by an excessively salt sea, bounded on the north and east by a continent, on the west by lowlands, and separated from the main bed of the sea on the south by a great bar or reef which seems to have been just awash. This latter condition in its boundary, whereby at high tide it received daily additions from the main body of the sea while the atmospheric conditions of the area at the time were those of a hot, dry climate, facilitating evaporation, furnishes the geological *raison d'être* for the eventual deposit of gypsum, and the concentration of the bitters or more soluble salts of the sea water. Later settlements and upheavals of these strata resulted in a basin shaped form wherein these heavier salines in solution naturally gravitated to the deeper centre, which centre is the point of attack in the borings for our local wells. These wells penetrate to a depth of a thousand to fourteen hundred feet. The water is raised by pumping methods and is then artificially heated for bathing purposes. The immediate surface temperature of the water is 56° F., its specific gravity 1.116, and the reaction faintly alkaline. The solid constituents of a bath of sixty-five gallons reaches the astounding total of 125 pounds. The sodium chloride contributes largely to the specific heat of the water, and is likewise the governing factor for its osmotic equivalent in contact with living tissues. The calcium and magnesium chloride, and magnesium bromide and iodide compounds of very uncertain stability, probably furnish the nascent chemical activities in the therapeutic application of the water.

A close scrutiny of the analysis will evidence a wide range of electrolytic dissociation, revealing cations: Sodium, potassium, magnesium, calcium, ferrum, cobaltum, lithium, ammonium, strontium, rubidium, cesium, aluminum; and anions: Hydrocarbonate, chlorine, sulphate, bromine, iodine, hydrosulphide, hydroselenide, and hydrotelluride.

PHYSIOLOGICAL EFFECT OF THE BATHS.

In analyzing the effect of a mineral bath, we are led into fields of knowledge concerned with laws and phenomena incidental to the most fundamental processes of living protoplasm. The degree of success and limitations encountered are therefore commensurate with existing attainments in the field of physics, chemistry, biology, and physiology, as applied to the phenomena of vital processes. In no other branch of therapeutics is the clinician forced to so great a diversity of scientific endeavor for a complete understanding of the results. But if it is one of the most complicated branches of medicine for interpretation, it is also for that very reason one of the most interesting, and it enjoys the comfortable backing of age old merits empirically established.

The field of operation necessarily selected in the administration of a mineral bath is the skin; not, however, as integument or protective covering of the body, the condition of which is chiefly described in terms of cleanliness, but the skin with its immense expanse of terminal nerve endings, blood and lymph capillaries and sweat glands, an organ of varied physiological activities and powerful spheres of physiological influence. With the tremendous exposure of terminal nerve filaments, practically an extension of central and sympathetic nerve ganglia, it offers direct paths of qualitative and quantitative influence on the governing control of central nervous energy, affecting alike functions and processes of the lowest as well as the highest import to the bodily economy. In the volume capacity of its blood capillaries, it furnishes a reservoir of almost unlimited capacity for the relief of internal congestions. In its lymph capillary system, most aptly called the "drainage system" *par excellence* of the body, subject to the same conditions of nervous control governing the vasoconstriction and vasodilatation of the blood capillaries, it offers an immense field of influence on metabolic waste disposal. A stimulation of its sweat glands offers an efficient means of greatly increasing the normal amount of evaporation from the surface of the body, at the same time furnishing an additional medium of considerable import for the excretion of various metabolic toxins. All this considered in conjunction with the fact that the idea of a bath conveys a conception of a feeling of luxury, of sedation and exhilaration, without any trace of repugnance, makes the mineral bath unequalled for elegance and range of action as a method of therapeutic administration.

A mineral bath registers its effect by a fourfold variety of stimulation: Thermic, mechanical, chemical, and physicochemical. For an explanation of its thermic and mechanical effects, we are indebted to the science of hydrotherapy. The chemical and physicochemical stimulations are its distinctive characteristics, and carry us into the province of balneotherapy. Although it is quite impossible to assign

definite limits of credit to the hydrotherapeutic, in distinction from the balneotherapeutic in the general effect of a mineral bath, we may, nevertheless, for purposes of analysis, indicate in general terms their respective fields of action. As the therapeutic application of a mineral bath involves a very limited range of temperature, and its technic is distinctly selective in its employment of accessory hydropathic procedures, I shall limit my explanation of the hydrotherapeutic phenomena to the thermic and mechanical effects actually involved and inseparably connected with the more important balneotherapeutic effect as a whole.

Let us discuss, first, the alterative baths, baths designed for their effect on the general metabolic processes of the body. The range of temperature for such baths will be from 98 to 108° F. The primary thermic effect of such a temperature, gradually raised from the lower to the higher, or maintained at an intermediate degree, will be a vasoconstriction of skin capillaries, followed by an immediate vasodilatation of the capillaries, affecting principally the venous circulation. The general blood pressure is lowered as a result of the lowered pressure in the ventricles, the capacity of the dilated skin capillaries being sufficient to accommodate one half to two thirds of the whole body blood. The high saline content of the water, proportionate to the amount of salines in solution, interrupts heat radiation from the surface of the body, and gradually raises the bodily temperature from one degree to three degrees during the ordinary course of the bath, which varies from fifteen minutes to an hour. The rise of temperature in the body is particularly effective in promoting the zymotic action of all the body ferments, thereby stimulating the general *Stoffwechsel* or exchange of materials, in all the tissues. The rate and volume of respiration are increased, partly because of its function in eliminating the carbon dioxide which has been increased by the general increase in waste combustion, and partly because of an effort on the part of the heat mechanism to readjust the temperature of the body by increasing the evaporation of water, normally one of the functions of expiration, varying in amount from 300 to 800 grams in twenty-four hours. The rise of body temperature stimulates the sweat glands to increased activity. The mechanical effect of friction and massage increases all of the thermic effects above described.

The field has now been prepared for the chemical and physicochemical action of the salines of the bath. Owing to imperfection of laboratory methods and insufficient research, as well as the impossibility of direct investigation of the processes of cell metabolism, an interpretation of these effects must still be conjectural and anticipatory. An absorption of salines through the skin into the circulation is pretty generally denied by physiologists as well as pharmacologists. That the salines of a bath at the temperatures mentioned do, however, penetrate the skin to the depth of the nerve endings registering sensations of pain, is attested by the very general sensation of smarting experienced in the first few moments of the bath. To account for this penetration of the skin, it is not at all necessary to presuppose a maceration of the horny layer. My own explanation is

as follows: The thermic effect of the water has stimulated the sweat glands to increased activity, which means a dilatation of the canals communicating with the surface of the skin. Now the column of water in these canals may in turn serve as the path of entrance for the salines, the two aqueous solutions merely mixing according to simple laws of diffusion. Once having reached the depth of the nerve endings registering pain, it follows without question that the salines are in a position to act directly on the various other functional nerve endings, as well as on the endothelial cells of the capillaries and lymph spaces. A primary effect must therefore be the influence on the physiological rhythm of the cells within the range of contact and immediate nervous influence. The venous hyperemia excited by the thermic stimulation of the water will have raised the osmotic tension of the tissues supplied by the dilated capillaries, and the direct contact of the salines with the delicate living membrane represented by the endothelial cells, all that separates blood and lymph spaces, will necessarily stimulate the osmotic current between these two fluids, thereby greatly facilitating the function of the lymph as the flushing fluid for the terminal tissue exchanges. The reflex chemical stimulation of the salines, whereby they act upon the metabolic processes of the deeper tissues and organs, stimulating secretory as well as excretory functions, are equally well apparent to clinical observation, although still undefined as to exact nature. Whether the sodium, potassium, calcium, magnesium, and iron cations, or the chlorine, bromine, iodine, hydrocarbonate, and sulphate anions are of greater potency in bringing about these dynamic effects, must be determined by future investigation.

The effects of a so called "tonic bath" combine the alterative effects of the water at temperatures thermally indifferent to the body, closing with a vasoconstriction of the superficial capillaries by a brief thermic stimulation at temperatures ten degrees, twenty degrees, or thirty degrees lower than the normal body temperature. Such vasostimulation strengthens the general circulation as well as promotes an immediate increased resistance of the body toward the harmful effects of chilling, by restoring the normal tone of the skin capillaries.

A peculiar effect of the high concentration of the water is the deposition of the salines on the skin in the form of an exceedingly fine powder, the amount of which accumulates with each succeeding bath, and practically means a continuance, in varying degree, of the characteristic chemical stimulation of the bath. The presence of the salts on the skin is plainly felt and seen, and the normal perspiration of the skin will emit the characteristic sulphurous odor of the water for some considerable time after the completion of a course of baths.

During a course of mineral bathing, the skin of many individuals may show acute erythematous eruptions, the so called "bath exanthemata" familiar to all physicians in touch with such cures. A misguided tradition has come to consider them the result of an excretion of uric acid through the skin. They are simply the result of too vigorous procedures in the matter of temperatures and mechanical

friction in the baths, the relaxed skin capillaries failing to regain their normal tone after the bath procedure.

THERAPEUTIC APPLICATION OF THE BATHS. GOUT AND RHEUMATISM.

The terms are here used in their generally accepted sense, embracing a variety of more or less complete inflammatory conditions primarily the result of toxic irritations of the affected tissues. Except in the acute articular, specific, and gonorrheal variety, where the toxins are of bacterial origin, the toxic irritant is the product of incomplete oxidations in the normal course of metabolism, the chemical nature of the endogenous poison and the intensity of its action, as well as the tissue affected defining the limits for the customary clinical classification, such as chronic, rheumatic, or gouty arthritis, myositis, neuritis, etc. In addition to the primary faulty metabolism, the clinical problem presents itself as post-inflammatory conditions, infiltrations, transudations, exudations, with resultant swellings, adhesions, contractures, and ankylosis, involving chiefly joint, muscle, and nerve structures, and causing more or less painful impairment of the affected parts.

For a complete analysis of the effect of the Mount Clemens waters in their application to the treatment of rheumatism, I must refer the reader to the paragraph on physiological action of the water. Some repetition at this point in applying the physiological effect to a special case, is inevitable. In its application to the treatment of rheumatic conditions, the Mount Clemens water meets the necessity for an increased stimulation of the physiological processes of metabolism, particularly zymotic excitation and excretory elimination. The thermic effect of the baths in inducing a general hyperemia of the skin, relieves congestion of the deeper parts, and the consequent reduction in the tension of the tissues of the affected parts means a removal of pressure on the nerves supplying the parts, resulting in a relief of pain. Furthermore, the thermic effect in relaxing white fibrous tissue, the chief element of ligaments and tendons, contributes to the release of stiffened joints and muscles, the increased freedom of movement thus attained in turn favoring the mechanical stimulation of the circulation of the affected parts. The pronounced hyperemia and the increased blood supply, favor conditions for the resorption of exudates, accomplished principally through phagocytic action. All ferments are at their optimum at temperatures two or three degrees above that of the normal body temperature. The high saline content of the water at the customary bath temperatures, in raising the body temperature the required two or three degrees, furnishes a powerful zymoexcitor stimulation, thereby facilitating a full completion of metabolic oxidations, and reaching the primary factor at the bottom of all rheumatic disturbances. The osmotic stimulation of the salines registers its effect in an increased absorption into the blood and lymph capillaries of the toxic endogenous products clogging the tissue cells. The reflex stimulation, of a nascent chemical nature, shows in an acceleration of the deeper organic metabolic processes. The increased elimination by the sweat glands is not only the water of the blood and tissues, but in all probability, to a

considerable degree, represents water as an end product of the increased metabolic oxidations. The other end products of oxidation, the carbon dioxide and urea, likewise show an increase through their normal channels of elimination.

In cases complicated by valvular lesions or myocardial affections, where high temperatures might endanger compensation, the foregoing effects are attained by increasing the length of exposure in the baths. The heat of the bath and the mechanical stimulation of the salines of the water induce the desired hyperemia. In cases where a faulty carbonous digestion, with concomitant excessive intestinal fermentation, furnishes a source of absorption of toxic products, an internal course of salines is of material assistance to the cure.

DIABETES MELLITUS.

In the treatment of this grave nutritional disease the Mount Clemens waters are deserving of a far greater vogue than is their portion at present. The plea for a wider acceptance in this instance is not based upon theoretical adaptability alone, but is amply justified by actual experience. It is not only in the mild forms that the baths are fruitful of beneficial results; the cases that occur mostly among the middle aged are frequently associated with a gouty diathesis and obesity, with no increase of thirst and elimination of urine, no evidence of emaciation, and yielding readily to diet and proper physical exercise; they are equally marked in their effects on the clinically severe cases occurring among young adults, where the excessive thirst and hunger, the extreme emaciation, enormous quantities of urine and high percentage of sugar in the urine, form a symptom complex of perplexing stubbornness for general medical treatment. Whatever theory of etiology is accepted, the clinical fact remains that a morbid change of first importance in these severe cases, is the increased arterial tension, the result of disordered innervation or of changes in the bloodvessels themselves. In the application of the baths, this condition is made a point of first attack. The slow pulse and subnormal temperature, the dry skin with its disposition to various eruptive conditions, the pruritus, the neuritic and neuralgic pains and muscle cramps, are all fair game for the therapeutic effects of the baths. The glycolytic ferments, like the other metabolic ferments, in attaining their highest degree of activity under a slight degree of pyrexia, must respond to the general thermic stimulation of the baths.

OBESITY.

In the treatment of obesity, the Mount Clemens régime enjoys no small degree of fame. Although it is customary to speak of a resort treatment as a cure, this of course is not meant to imply that the particular patient benefited will forever enjoy immunity from a given disorder or diseased condition, irrespective of future habits of living or environment. In this particular instance the term is qualifiedly applicable, and its votaries are enthusiastic in their recommendations of Mount Clemens, in proportion to their perseverance in and adherence to absolutely inflexible rules of diet, exercise, and skin hygiene.

The plethoric form of obesity, a chronic supernu-

trition with reduced oxidation processes in the cells, the result of a disturbance in the balance between food assimilation and amount of work energy yielded, is good material for treatment. A reduction of the amount of food and liquid intake, the body maintained on a nitrogen support with an increased combustion of fat, through increased muscular work and increased heat combustion excited by hydiatric procedures of low temperatures, with aqueous depletion by hydiatric procedures of high temperatures, readily reduces the accumulated adipose. As the motive force for a cure in these cases is mostly a matter of vanity and temperament, the interest in the permanence of the cure is apt to be subject to fits and spasms, with an eventual surrender to the demon comfort.

The anemic variety represents a low degree of oxidation, whereby, in spite of a moderate food intake, there is an accumulation of fat. The indications are for a hunger diet, a reduced fat and liquid intake, but sufficient proteid, symptoms of nervousness and weakness being the danger signal. The thirst of these patients is always a bone of contention with their medical adviser, and they must be made to understand that it is purely a subjective feeling and not an index of a bodily need for water. The water, if given cold and carbonated, will quench the thirst in much smaller quantities and will also increase diuresis. A more frequent complication with fatty infiltration and fatty degeneration of the heart in these cases, requires greater care in adjusting the baths and hydiatric procedures. An immediate tonic effect must follow all depleting procedures. As this class of patients is always more or less conscious of various vital consequences of their fat encumbrance, any appreciable demonstration of a cure will inspire a sincere and lasting co-operation in the prescribed régime, at whatever cost and sacrifice of comfort and leisure.

DISEASES OF THE HEART AND BLOODVESSELS.

There is a prevalent notion that the Mount Clemens waters are contraindicated in every form of heart disease. This belief is probably based upon various unhappy experiences, the result of incompetent advice or interference by bath attendants, or the self advised course of the misguided victim. It will be readily understood that a dilated heart, just within the bounds of compensation, or a myocardium weakened by the toxins of an infectious disease or by a fatty degeneration or infiltration, may easily break down under the strain of a sudden and prolonged high temperature bath. But this is purely the fault of the technic and not of the water. On the contrary, the high saline content of the water gives it large potentialities for the treatment of cardiac dilatations and myocardial affections. The mechanical and chemical stimulation of the superficial heart, as represented in the skin capillaries, by the mineral baths at 95 to 98° F., is a tremendous force for the relief of venous stasis in the internal organs, and, when combined with friction and frequent alternating effects of lower temperatures of brief duration, is a splendid stimulant for the dilated heart. Such baths combined with graduated exercises and properly adjusted liquid intake, never fail to show a demonstra-

ble diminution in the area of heart dullness with evidences of improved circulation through the resulting hypertrophy. Naturally, this line of treatment is one of the most interesting features of our resort practice, and with more intelligent cooperation on the part of bathing guests, and less presumption on the part of bath attendants, we shall eventually furnish statistics showing a merit for our waters second not even to Nauheim in the treatment of cardiac affections.

In the latent form of arteriosclerosis, more properly termed arteriorrhigosis, accompanying a variety of pathological processes entailing distention of the bloodvessels, and probably the result of vasomotor excitability, the baths adjusted to promote relaxation of the superficial circulation with general sedative effect, record many gratifying results. The sedative effect of the water facilitates the necessary abstinence from central nervous stimulants such as tobacco, alcohol, and coffee. Where the small vessels already show evidence of true sclerotic degeneration, the baths must be adjusted with greater caution, but are still of great service in meeting symptomatic conditions. In their general effect in stimulating metabolic processes they greatly promote the absorptive effect of the iodine treatment sanctioned for this condition.

NEURITIS OF THE BRACHIAL PLEXUS AND BRANCHES; SCIATICA.

Although neuritis has already received mention under the heads of various constitutional disorders, the particular involvement of the sciatic nerve deserves special mention, both because of its profound effect on suffering and incapacitation for the unfortunate victim as well as for the truly miraculous relief afforded by the bath treatment. We may exclude the pressure variety due to growths in the pelvis or caries of the hip joint, a diagnosis of which no longer escapes the observation of modern practice and cases of which therefore reach us only because of failure of previous consultation with the home physician. We are therefore concerned here with a genuine rheumatic inflammation and infiltration of the nerve sheath and interstitial connective tissue. In the treatment of this painful affection, the sitz bath at high temperature is the procedure *par excellence*, dissolving adhesions with contiguous structures, relieving the pressure of congestion in the surrounding muscles, and stimulating the absorption of the infiltration in the sheath and interstitial connective tissue of the nerve. The sufferer from this affection literally begs to stay in the water all day. A sitz bath at temperatures of 106 to 108° F., however, presupposes a sound heart and uninvolved bloodvessels, for it is the severest of all bath procedures and therefore calls for close supervision on the part of the attending physician. With the active process safely checked, the necessary manipulations for overcoming the inevitable contraction and shortening of the nerve trunk, are applied in the tub with a great diminution in cost of pain and succeeding soreness and lameness.

The same effects are attained in the treatment of neuritic affections of the brachial plexus and its branches, by local packs with hot mineral water followed by a tonic bath.

LUES.

Mineral bath therapeutics has always enjoyed high repute in the treatment of syphilis. In the treatment of this infection, the merits of the Mount Clemens water are second to none. The baths are of tremendous therapeutic assistance in facilitating both the administration and the effect of the specific remedies, as well as in exerting their characteristic influence on the various inflammatory conditions and general constitutional defects associated with the progress of this disorder. By stimulating the general *Stoffwechsel* (metabolism) and the various functions of elimination, we are enabled to administer the necessary mercury and iodine in doses that seem fabulously large to the physician unacquainted with the waters in their application to specific treatment. Increased assimilation and quick elimination keep a maximum quantity of these remedies in circulation, constantly available for their specific effect on the toxins and diseased conditions of the tissues, thereby facilitating a maximum therapeutic effect without overstepping physiological limits with salivation and other characteristic symptoms of the toxic effects. Time and again cases that have shown a very limited toleration for the specific remedies at home, and as a result have made very little progress toward recovery, have come under our observation, and under the general stimulating effect of the baths, have gradually acquired a very high degree of toleration with striking results. The methods of administration of mercury are inunction and intramuscular injection, both of which lend themselves well to resort practice, whereas for various reasons they are not so applicable for home treatment. But in any event, it is the administration of the specific remedy, by whatever method, that is the necessary feature of the treatment, whether applied at home or at a resort, and as the same is commonly extended over a varying period of many months, with alternating periods of rest, the physician originally in charge must welcome the opportunity effectually to renew the interest of his patient in a normally tiresome periodical administration of a necessary remedy.

A glance at the formula of the water will readily explain its powerful germicidal effect, which makes it a medium in which any known germ could not possibly exist longer than an instant. This fact disarms any possible criticism of the bath therapy as a possible means of spreading specific contagion. Out of consideration for the proper and universal repugnance to possible contact with tubs and towels used by patients with so called open sores and eruptive discharges, the respective managers of the various bath houses have set aside separate tubs to be used only for these cases, and the bath attendants are subject to rules calling for the most scrupulous care in the disposal of the towels, sheets, blankets, etc., used in such cases.

BATH TECHNIC AND LENGTH OF COURSE.

The characteristic effect of the water being a chemical and physicochemical stimulation of the skin, with its various nerve endings and blood and lymph capillaries, the most effective means of furthering such stimulation is to be found in the exposure to an immersion bath, the temperature and

length of time consumed to be governed by individual factors of reaction, cardiac involvement, general strength, and skin sensitiveness. After the completion of every thermal effect, the normal tone of the skin capillaries is restored by a brief application of lower temperatures, the degree of which is adjusted to individual conditions. Accessory hyriatic procedures, such as sitz baths, vapor and hot air baths, sheet packs, local packs, showers, douches, and blanket sweats are available to meet special conditions.

The period of treatment is spoken of as "a course of baths." In Mount Clemens this course has come to be considered as covering a period of three weeks, or twenty-one baths. This, however, is a very misleading, arbitrary arrangement, for it will be readily understood that each individual case must be a law unto itself in this as well as in every other particular. A daily bath might be suitable for one patient, whereas the next will make better progress by interrupting the course every third or fourth day with a day of rest. Where one patient will have derived the benefit sought for in ten days or two weeks, another may call for a course of thirty, forty, or even a hundred baths before the desired results have been attained. An interruption of even a week or two may become necessary in certain cases, where otherwise no time limit is imposed, but where the effect of the treatment has been temporarily neutralized or even completely antagonized by a spell of homesickness or an intrusion of worries from whatever source.

Diet, exercise, and recreation, out of doors and gymnastic, adjusted to the capacity of the patient, and under conditions precluding the excitation of relapses or acute exacerbations in affected joints, muscles, and nerves, with long hours for rest and sleep, complete the régime for these cures as practised in Mount Clemens.

PSYCHIC EFFECT OF RESORT TREATMENT.

No therapeutic measure can be said to be independent of psychic suggestion. In the matter of resort treatment it may sometimes be a factor of very great importance.

Certain contributory influences incident to the change of locality and new environment of the bathing guest, play an important role in the general effect of resort treatment, more or less applicable to all cases. First of all the city of Mount Clemens, as the site of the bath houses, must necessarily contribute its psychic effect as the new environment of the bathing guest. The comfort and luxury of perfectly appointed hotels, the relaxation of informal social intercourse with fellow guests, the deep vibrations incident to the discovery of new affinities, and the corresponding agitation of the knitting corner of the lobby, always redolent of the perfume of innocuous resort gossip, the more intellectual recreation of a hand at bridge or a stimulating turn to a favorite waltz or two step measure, the time, opportunity, inclination, and recommendation for out of doors diversions, such as walking, driving, riding, golfing, tennis, baseball, rowing, canoeing, motor boating, sailing, fishing, hunting, motoring, are all nicely suited for promoting the care free state of mind so greatly desired for the proper cooperation of physician and patient. The very term, guest, is

significant in implying the wholesome event of a journey into new surroundings, a departure from the daily contact with business worries, the petty annoyances of domestic routine, and the tiring exactions of social duties. In this capacity the beautiful little city represents a nice adjustment of rural quiet and repose with metropolitan comforts and conveniences. The shaded walks and well groomed lawns, the clean pavements and picturesque country drives, the vine embanked river, and the attractive lakeside clubs, the equable climate of both winter and summer, show Nature's own stamp of approval and man's enterprising acceptance.

In the matter of dietary restrictions, the environment of resort practice in contributing evidence of a general interest in this factor of treatment, and results proving its efficacy invites a much more sincere and faithful cooperation on the part of patients than is likely in home practice. Just how little or much these various factors will contribute to the cure, naturally depends upon the temperament of the individual.

The following analysis is the work of Mr. John Meyer, of Mount Clemens:

PHYSICAL CHARACTER.

Temperature .....	.....13.61° C., or 56.5° F.
Reaction .....	.....Faintly alkaline
Specific gravity .....	.....1.116

CHEMICAL CONSTITUENTS.

	Grams in 1000 c. c., or one litre.	Grains in one U. S. gal.	Grains in one Im- perial gal.
Hydrogen sulphide	0.14720	8.51041	10.26071
Hydrogen selenide	0.00018	0.01047	0.01263
Hydrogen telluride	0.00027	0.01574	0.01888
Carbonic acid, free	0.14878	8.69022	10.43172
Carbonic acid, half combined	0.03185	1.86033	2.23216
Calcium carbonate	0.06568	3.83609	4.60675
Magnesium carbonate	0.00561	0.03406	0.04066
Ferrous carbonate	0.00596	0.34819	0.41784
Cobaltous carbonate	0.00112	0.06530	0.07839
Calcium sulphate	1.55660	91.09819	109.35237
Calcium hyposulphite	1.13461	7.80260	9.41821
Sodium sulphite	0.00579	40.64125	48.78549
Sodium selenite	0.00533	0.31122	0.37371
Sodium tellurite	0.00574	0.33529	0.40241
Sodium chloride	97.81765	5713.65182	6838.61638
Potassium chloride	7.94225	463.01670	556.88366
Lithium chloride	0.04665	2.72483	3.27081
Ammonium chloride	0.17624	10.29402	12.35717
Calcium chloride	80.10109	4678.80376	5616.12046
Magnesium chloride	41.30309	2306.75932	2889.06499
Magnesium iodide	0.01460	0.85266	1.02363
Magnesium bromide	1.21730	71.10401	85.35296
Strontium sulphate	0.01300	0.75916	0.91130
Sodium borate	0.03790	2.21372	2.65739
Aluminum chloride	0.02975	1.73764	2.08594
Sodium silicate	0.01457	0.85006	1.02147
Sulphur, in suspension	0.00712	0.41584	0.49916
Ferrous sulphide, in suspension	0.00521	0.30561	0.36591
Rubidium	Trace	Trace	Trace
Cæsium	Trace	Trace	Trace
Total	231.42974	13518.09703	16227.08698

THE VALUE OF THE SPRINGS AT SARATOGA.

By A. SHERMAN DOWNS, M. D.,
Saratoga Springs.

From the earliest time the medicinal value of the waters of Saratoga has been known and appreciated. Even at that early day, antedating the Revolution, when Sir William Johnson was borne on his litter by his faithful redskins to drink the High Rock Spring, called by them the Medicine Water of the Great Spirit, and for a long period after, an ever increasing number of people sought out this spring in what was then a wilderness, for the healing properties of the water.

As the years advanced, however, and Saratoga became more and more a resort, it was not for the medicinal value of the springs that the throngs centred here, but rather because the place had become the most fashionable watering resort in America. The history of its gaiety, its gambling, and its racing is well known, and the desultory and unscientific use of the waters was productive of little good. It was aptly said, after this era, when more attention was paid to fashionable gaiety than to careful administration of the waters, "that during the years the springs were most visited, the waters were employed more because of certain established fashions, than with an intelligent idea of the proper use of specially selected waters to meet definite disease or conditions."

Following this era of fashion, came a time when the very life of the springs was threatened. This was due to the commencement of pumping of the waters to secure and sell the carbonic acid, which has always supersaturated the mineral waters. Numerous bores and artesian wells were drilled, veins were reached from which dry gas escaped from the rock crevices, or water was pumped out by the million gallons and wasted after the separation of the valuable gas, for which there was a ready market at a high price. The level of the mineral water all through the region lowered as the pumping progressed, until wells ceased to flow and many springs seemed exhausted.

This commercialism existed many years, before the highest court decided that it was illegal. Fortunately, at this juncture, the State of New York stepped in and acquired all mineral rights and made a State Reservation of the valley of the springs, and has thus conserved these valuable waters for the "healing of the people."

Perhaps in Saratoga a greater number of mineral springs exists than is generally known. They may be grouped as follows:

1. Saline-alkaline of various strengths, comprising Hathorn No. 2, Hathorn No. 3, Orenda, Coesa, Hathorn No. 1, Ditch Well No. 2, Island, Shonts No. 3, Peerless, and Emperor—all cathartic waters containing large quantities of sodium chloride.

2. The alkaline-saline waters, with alkalinity predominating over the salinity: The Geyser, Minnonobe, and several others still undeveloped—all table waters; the Geyser is decidedly diuretic.

3. The ferruginous or chalybeate, including Columbian, Karista, and Congress.

All the waters are naturally surcharged with carbonic acid, and are radioactive. I believe great care should be exercised in establishing a cure at these springs. Every semblance of quackery should be eliminated and the public protected from charlatans, who like particularly to exploit their ideas at these resorts. The cure should be scientifically conducted. I have urged the New York State Commission in charge of the springs of Saratoga to make two definite cure seasons: the first to commence May 1st, and end July 31st; the second to commence September 1st and end December 1st. The month of August, when the races are being held in Saratoga, is not an ideal time for patients to take the cure; to those who can come only at this time, however, assurance can be given that they will be accommodated. During the

months of May, June, July, September, and October, ideal conditions exist for taking the cure. The hotels and boarding houses provide diets suitable to individual cases as prescribed by the physician in charge. Attractions in the way of music in the Casino and parks, golf, good motor roads, graded walks, and fine bracing air from the foothills of the Adirondacks should be mentioned.

Regarding the value of these waters in the treatment of various diseases, I am convinced, from close observation extending over several years, that great good may be derived from their proper use externally, as given in the various forms of baths, and internally, with the cathartic waters and the alkaline-saline group properly prescribed. But hand in hand must go a carefully planned and systematic régime, in which the patient cooperates thoroughly with the physician.

Leaving generalities and coming to particulars, permit me to cite a case or two:

CASE I. H., from Massachusetts, aged fifty-three years, occupation, manufacturing; family history good. Personal history: About five years previously, noticed shortness of breath upon exertion, but paid little attention at the time. During the following winter condition grew worse and he consulted a physician, who at the earliest opportunity sent him to Nauheim for treatment. He remained six weeks, was greatly benefited by the baths, and returned home. He said that the relief lasted about six months, when he felt the symptoms returning. He was advised to return to Nauheim for another course. So gratified was he at the result that he visited this resort annually and placed himself under the best medical care. Last spring, when conditions in Europe prevented his return, he wrote to me inquiring about the facilities for taking Nauheim baths in Saratoga. He finally decided to go to one of the best known sanatoriums where he heard the artificial Nauheim baths were given, writing me that if he did not get the results he expected, he would come to Saratoga for treatment. After four weeks' trial of these baths, without benefit, he came to Saratoga.

Examination showed a markedly dilated right ventricle with decided myocardial changes; dyspnea so great that he was unable to walk up the slightest elevation, or on the level for any distance; blood pressure, systolic 115, pulse 80, and of poor quality. He was excreting less than the normal amount of urine; no albumin; appetite poor, and extremely weak; Wassermann negative.

Great care was exercised in the treatment of this case. Personal supervision of the bath was given. At the end of the first week there was no appreciable improvement. During the second week, however, he made a decided gain, which continued until he left Saratoga. At that time he was able to walk to my office from his hotel, also to walk a mile with some elevation, resting once each way. There was a marked contraction of the right ventricle and a rise of nearly ten points in the blood pressure. He left Saratoga, saying that he had received the same benefit from the baths and régime that he had abroad. He was given no treatment other than the baths, which were the regular Nauheim series of twenty-four. He was given the graduated walking exercises when his condition had improved sufficiently to warrant it. The cathartic waters were used when indicated and a carbonated table water was given daily. His diet, rest, and hours for sleep were all carefully prescribed and he carefully followed all instructions.

There is no claim of cure in the foregoing case, but it fully illustrates that in organic diseases of the heart the trouble is often arrested and the patient made comfortable for some time by this treatment.

CASE II. G., aged sixty years, occupation given as contractor, was referred to me last summer by a prominent New York physician. His was a similar case to Case I, with marked myocardial changes, dyspnea on exertion, extreme weakness, blood pressure 125.

A thorough and careful régime was given this patient and a course of Nauheim baths was prescribed. He remained through the summer with marked improvement, and was able later to walk many blocks with comfort, and with very little dyspnea. His physician told me that the patient returned to New York greatly improved and more than pleased with the treatment received at Saratoga. I recently learned from his physician, however, that some six months later he died suddenly, without attendance.

I simply mention these two as very serious cases of the myocardial type so frequently met with in these resorts, and as severe as any that have come under my observation.

Cases of cardiorenal conditions are also certainly improved. The alkaline water being diuretic, forms a pleasant beverage at frequent intervals during the day. The baths increase peripheral circulation, relieving internal engorgement, and slightly lowering blood pressure. It is not any one factor in the treatment of these cases, but a combination of the whole régime that produces the improvement.

While it is only fair to acknowledge that most cases of arteriosclerosis are associated with some kidney lesion, I have found that all of the numerous cases I have observed have made a marked improvement under the treatment here, which consists, as previously stated, in carefully regulated diet, rest, exercise, baths, and drinking of the waters.

We do not state that any one of these is a specific or that the organic lesion is really cured, but the condition of the patient is greatly improved, the distressing symptoms are relieved, he functions better, is built up, and no longer feels the necessity of constant use of the nitrites which so many carry in their pockets. Many patients, upon going away, are alive to the value and importance of the treatment, much of which they continue at home.

In functional diseases, such as many of the simpler forms of gastrointestinal disorders, gout, simple anemia, nerve fag, results of overwork, and many of the so called rheumatic cases, the treatment at the springs is especially adapted.

At the Lincoln bath house, modern equipment has been installed for giving the various forms of baths, douche tables of the Baruch type, trained attendants to give colonic flushings, and attendants specially trained for the Nauheim treatment. There is an abundance of mineral water naturally supersaturated with carbonic acid. Accommodation can be obtained for giving 700 baths a day.

The Kayderosseras bath house, smaller, contains all of the foregoing equipment and can furnish 500 baths a day. At the Hathorn Spring, the Central Drink Hall, all the mineral waters may be obtained. The cathartic waters are prescribed and taken at the spring.

With regard to the waters of Saratoga, among the numerous springs we have those characteristic of Vichy, Kissingen, Brückenau, Carlsbad, and Homburg, which furnish the material for giving all the treatments of the European spas. This statement should be qualified, however, by the fact that the Saratoga waters, as administered in the tub, naturally contain a much higher saturation of gas, though not quite as high a percentage of mineral, as some of the European wells. For example, in giving the brine bath of the Nauheim series, we have to add

six pounds of salt and thirteen ounces of calcium chloride to each bath. It should be remembered, however, that in Saratoga we are possessed of the strongest carbonated waters in the world, and I am thoroughly convinced that the carbonic acid is the most potent factor in the Nauheim bath. The high gas content of the baths of Saratoga is not due to the fact that our springs are more highly carbonated than those of the European spas, but to the fact that economy is observed and specially designed equipment has been installed which makes these baths possible.

Dr. Paul Haertel, director of the Balneological Institute of Bad-Kissingen, who was commissioned by the State Reservation Commission to investigate the Saratoga waters, made the statement that the "mineral springs of Saratoga were unexcelled in the world."

139 CIRCULAR STREET.

THE OERTEL SYSTEM OF GRADUATED EXERCISE,

As Carried Out at Hot Springs, Arkansas,

BY WILLIAM H. DEADERICK, M. D.,

Hot Springs, Arkansas,

Visiting Physician to the S. I. Memorial Hospital

The complaint has often been made that there is no suitable watering place in America where we may send patients with heart disease with the same confidence that we send tuberculous patients to a sanatorium, and that resort physicians fail to apply natural therapeutic means with scientific exactitude.

With the realization of our local resources of climate, topography, and government ownership of the reservation, a committee of the Hot Springs Garland County Medical Society during the past year took up, with the representative of the Department of the Interior, the question of laying out a course for the Oertel system of graduated exercise. The government having, in the past few years, spent thousands of dollars on its system of roads and footpaths through the scenic reservation, readily consented to add the finishing touches to complete the system. These consisted of:

1. A careful survey to determine the degree of the slant and altitude.
2. The placing at short intervals of stone markers appropriately numbered and colored.
3. The preparation of a small map with routes colored to correspond to the stone markers. From the back of the map may be determined at any numbered and colored stone marker the distance, degree of slant, and the altitude.

The course was prepared with the purpose of giving four degrees of slant from almost level to very steep. Along all routes are placed benches at brief intervals, and a plentiful supply of pure spring water is pumped to the top of the mountain. It will be possible to prescribe the amount and degree of walking and hill climbing to the minutest detail.

The extent of the Federal reservation, improved with roadways and foot paths, will permit the expansion of the present system to a considerable degree.

Our course was patterned after that established

THE WATERS AT PASO ROBLES.

BY MARK C. MYERS, M. D.,
Paso Robles, Cal.,
Medical Director, Hot Springs Hotel.

The waters at Paso Robles Hot Springs, like many hot springs in California, beside containing chemical elements in solution, are radioactive. They also have free sulphuretted hydrogen and carbonic acid. The springs whose waters are most used here are known as the sulphur springs and lithia springs.

The sulphur springs have been used for years as drinking water in cases of indigestion, where there are a torpid liver and intestinal fermentation, the magnesium sulphate and sodium sulphate being in sufficient quantity to act as a mild saline laxative, while the sulphuretted hydrogen and carbonic acid may act as an intestinal antiseptic to some degree.

The spring known as the Lithia Spring is about fifty degrees stronger in all salts than the sulphur springs, and contains five times more carbonic acid to the cubic foot. This is the spring over which the mud bath house has been erected, with vats for holding the decomposed vegetable mud, and warming and cleansing vats, the former for accustoming patients to high degrees of temperature—106° to 108° F.—before they enter the mud, and the latter for cleansing purposes. The entire duration of the mud bath is from nine to twelve minutes. Patients are left two minutes in the preparatory tank; five to eight minutes in the mud proper; and two minutes in the cleansing tank.

With this bath, and the liberal administration of the water, chronic rheumatic joints improve in most cases, some very rapidly, others not so satisfactorily. Patients suffering from gout and arthritis deformans get relief from the pain usually in from seven to twelve treatments.

The dyscrasias, with indefinite pains in different parts of the body, and with high blood pressure, soon show relief, with a diminution of the headache, and marked reduction in the blood pressure.

I am of the opinion that free perspiration in the carbonic water has a great deal to do with this, as the consensus of hydrotherapeutists is that carbonic acid, in contact with the skin during a water bath, does increase metabolism decidedly.

In cases of elusive pains of the muscles, joints, and nerve tracts, where an etiological factor is hard to locate, either the eliminating qualities, or the radioactivity of the water, or some unknown element that seems to enter into or combine with the other medicinal qualities, gives marked relief.

On the other hand, treatment by the nonmineral waters does not seem to give such prompt relief. In the first few days of this treatment the pains may be aggravated, as though some kind of a reaction was taking place. Most patients who have this apparent increase of pain and stiffness, derive more lasting benefit than those who do not.

The sulphur baths and water have a sufficient amount of carbonic acid to cover the entire body with gas bubbles in about four minutes, and this gas must stimulate the nerve centres, as the reaction in the tub of this water is more quieting to the action of the heart than a bath in a tub of plain water at the same temperature.

LONGITUDINAL INVERSION OF THE COLON.*

BY ROBERT T. MORRIS, M. D.,
New York.

The operation of Lane for short circuiting the colon and the operation of colectomy are both severe procedures. Some of us have been experimenting with methods which would accomplish the same practical result, so far as removing colonic toxic influences were concerned. There is no doubt that an entirely new vista has been opened by Lane, no matter whether we accept his rather enthusiastic views or not. Any pioneer with imagination needs watching. He likewise needs critical attention of a good sort for that part of his work which is new.

The study of focal infections is one which is to engage the attention of the medical profession more and more. In this line of observation we are to find explanation, not only for infections of the joints and for certain obscure lesions of the vital organs, but we are to bring up the whole question of physical decadence under microbic influence. We are to determine the extent to which focal infections are responsible for distant constitutional effects.

There is no question that the colon carrying an excess of bacteria of many kinds has been responsible for distant effects to an extent of which we were not cognizant in the past. The prompt relief or disappearance of certain neuroses, and even of certain psychoses as a result of some of the more severe operations of the school of Lane, will stimulate us to devising milder means for attaining the same end. As a matter of fact, there are one or two charlatans who have seized upon the idea of thorough colonic flushing, and who are obtaining practical results, which are by no means to be overlooked by members of the regular medical profession.

Some years ago, Blake devised a method for infolding the wall of the distended cecum, and it seemed to me that we might extend this idea to include practically the whole colon, leaving simply room enough for the passage of mucus.

When we are to dispose of the colon in this way it is desirable to make a short circuit of the bowel between the cecum or lower ileum and a part of the sigmoid colon. This first step is accomplished in any one of the easier ways. The next procedure consists in carrying a silk or linen suture in mattress form between two lines of longitudinal muscle of the colon in such a way as to invert the wall of the colon and to retain it in the folded-in position. This procedure narrows the lumen of the colon longitudinally, but we at once perceive a tendency for pouching of parts of the colon which lie between longitudinal muscle bands. They bulge and escape from the suture.

In order to overcome this feature a suture is introduced which we may call the accordion suture. The accordion suture traverses two or more protruding colonic pockets and then is brought back upon itself in such a way that when the suture is tied these pockets are compressed very much as the folds of an accordion would be compressed when the instrument

*Read at the sixteenth annual meeting of the American Therapeutic Society, held in San Francisco, Cal., June 21 and 22, 1915.

is closed. A series of the accordion suture introduced rapidly just beneath the peritoneum or through the muscle coat, not only disposes of the bulging parts of the colon, but shortens the bowel very decidedly.

The procedure is not practical for patients who have a fat, heavy omentum, or large masses of fat epiploic appendages. This condition, however, is one which we are not so apt to find in the class of patients who are suffering from chronic colonic toxemia. They are more apt to be of the thin, nervous type.

We shall sometimes find it necessary to divide one leaf of the great omentum in order to carry the suture properly, but when the omentum is thin and devoid of fat such division is not necessary. The question which arises in my mind is whether these sutures will remain permanently in place, and if the adhesions which follow suturing will maintain the bowel in its new form. We all know the natural tendency for structures to return to normal conditions. In cases in which I have employed this method the colon apparently has not escaped, but I have no way of determining that point.

Patients have been benefited immediately as a result of the operation, but I cannot state that the benefit is greater than that which would follow an ordinary short circuiting operation, without the added feature of colonic inversion.

I hope that others will add their data when the time comes for making a fuller report upon the subject.

THE FIVE GLASS CATHETER TEST.

Its Practical Application,

By ABR. L. WOLBARST, M. D.,
New York,

Consulting Genitourinary Surgeon, Central Islip State Hospital;
Visiting Genitourinary Surgeon, West Side German and
Beth Israel Hospital Dispensaries; Etc.

In April, 1906 (1), and in 1912 (2), I described and reported a multiple glass test for the determination of the source of pus and shreds in the male urethra. This test has been used extensively by urologists who have found it possessed of the advantages of simplicity, accuracy, and ease of performance. Thompson Walker (3) and Georges Luys (4) have both mentioned it favorably in their excellent textbooks.

A recapitulation of this "five glass catheter test" and a demonstration of some of its uses may not be amiss at this date. It is performed as follows: The patient presents himself with a full bladder, having retained the urine several hours—the longer the better. The meatus is cleansed so as to remove adherent secretion. The anterior urethra is first irrigated with a bland solution or sterile water, the washings being collected in a clean receptacle held between the legs. Either a hand syringe or an irrigator may be employed. I prefer the former. In the average case of chronic urethritis, from three to five ounces of irrigating fluid are usually sufficient thoroughly to empty the anterior urethra of its inflammatory products. The washings are poured into a clean glass cylinder, which we design-

ate Glass 1. One or more subsequent washings determine the fact that the urethra is absolutely clean as far backward as the cut-off muscle. The clean washings are poured into a second cylinder, which is designated Control glass 2.

A sterile catheter of fine calibre is now introduced into the bladder. This constitutes the unique feature of this test. An ounce or two of urine is now drawn off into Glass 3. This is the bladder urine, obtained without contact with the posterior or anterior portions of the urethra. If this urine is clear and sparkling, as normal urine should be, we know, beyond peradventure, that the bladder and upper urinary tract are not the source of the pus or shreds. The catheter is now withdrawn, and the patient voids an ounce or two of urine into Glass 4 (posterior urethra). It is evident that pus or shreds passed in this urine, must of necessity originate in the posterior urethra, both the bladder and the anterior urethra having been eliminated. If the prostate is normal, however, the urine passed by the patient over the cleansed anterior urethra will of necessity be as clear as that drawn from the bladder via the catheter.

A further step is to massage the prostate vigorously, and have the patient urinate in Glass 5. This gives us the "massaged prostatic urine." And if we desire to proceed with further refinements, we may strip each of the seminal vesicles separately, each time having the patient void his urine into Glasses 6 and 7 respectively. I do not attach much significance to the last two glasses, as a rule, because of the inherent difficulty of separating the prostatic from the vesicular secretions.

We are thus enabled to obtain washings from the anterior urethra, posterior urethra, and bladder in a most unmistakable and certain manner, in addition to the urine obtained after massage of the prostate and stripping the vesicles.

In the event that the urine drawn through the catheter from the bladder is not perfectly clear, we are unable to say whether the inflammatory products originated in the bladder or upper urinary tract, or have regurgitated from the deep urethra. This can easily be determined by this test. The catheter remaining *in situ*, the bladder urine is drawn off (Glass 3), leaving the viscus empty. We now irrigate the bladder with a bland solution, until the washings come out clear. Four to six ounces of sterile water or boric solution is injected into the bladder, and the catheter is withdrawn. The situation is now exactly the same as when clear urine was drawn off, except that the bladder contains clear fluid instead of clear urine. The patient urinates and the remainder of the test proceeds as above described.

I might state that the source of blood in the urine can be determined in a similar manner by this test, with the exception that renal or ureteral hematuria must be determined by the additional employment of the cystoscope and ureteral catheter. The same applies to pus that has its origin in the upper urinary tract. The important fact is to be noted, however, that the five glass catheter test prepares the way for the investigation of the upper tract, by eliminating the lower urinary tract as the possible source of the blood or pus. Practical application

may be seen in connection with a few illustrative cases.

CASE I. This patient had been treated for acute and chronic gonorrheal urethritis for seven months. By that time, there was no discharge at the meatus, but the urine was full of pus, which resisted all local treatment applied to the bladder and deep urethra. The test resulted as follows:

Glass 1 (anterior urethra) contained a few mucous shreds, no pus.

Glass 2 (control).

Glass 3 (bladder urine obtained via catheter) full of thick, white pus. Bladder irrigated, cleansed, and filled with boric solution.

Glass 4 (fluid passed by the patient) perfectly clear.

Glass 5 (fluid passed by patient after massage of prostate) clear.

We therefore concluded that the pus had its origin in the bladder or higher up. Cystoscopy revealed a large vesical calculus and pus descending in large quantity from the left kidney. Cystotomy and nephrectomy were followed by complete recovery.

Comment. Were it not for the evidence obtained by the introduction of the catheter, as employed in this test, it would have been impossible to determine whether the pus in the urine had its source in the prostatic urethra or higher up. As a matter of fact, the attending physician erroneously assumed throughout the entire seven months of treatment that the pus was derived from the deep urethra.

CASE II. This patient had been treated for more than a year for chronic urethritis, characterized by recurring attacks of painful prostate and pyuria every three or four months. The test made at the height of one of these recurrences, resulted as follows:

Glass 1 (anterior urethra) contained but a few shreds; no pus.

Glass 2 (control).

Glass 3 (catheterized bladder urine) clear, except for a few shreds; bladder irrigated, cleansed, and filled with boric solution.

Glass 4 (fluid passed by the patient) clear, except for a few shreds.

Glass 5 (fluid passed after prostatic massage) slightly cloudy.

Glasses 6 and 7 (fluid passed after stripping vesicles) contained much pus and large clumps of detritus, in which gonococci were found.

Vesiculotomy (by Dr. J. B. Squier) revealed a right distended vesicle, from which nearly two drams of pus escaped on incision.

Comment. In this case, the test revealed in the most simple and emphatic manner, that the pus in the urine came neither from the prostate nor from higher up, but from the seminal vesicles. This was proved on operation, when the pus sac was opened and drained. The patient thus far has been free from recurrence for more than six months.

CASE III. This man complained of blood in the urine, which appeared and disappeared at irregular intervals. No pain at any time. The test, made during one of the attacks, resulted as follows:

Glass 1 (anterior urethra) no blood.

Glass 2 (control).

Glass 3 (catheterized bladder urine) contained minute streaks of blood, pointing to fresh oozing into the bladder; bladder irrigated, cleansed, and filled with boric solution; catheter withdrawn.

Glass 4 (fluid passed by the patient) very bloody.

Glass 5 (fluid passed after prostatic massage) contained normal prostatic secretion streaked with blood.

Posterior urethroscopy revealed a small papilloma in the postmontane space, to one side and back of the verumontanum, from which the oozing of blood could be observed.

Comment. Without this test, I cannot imagine how the determination of the source of the blood could be made so readily and accurately.

CASE IV. This patient complained of pus in the urine and pain over the bladder region. History of gonorrhea several years previously; no discharge. The test resulted as follows:

Glass 1 (anterior urethra) clear; not a single shred.

Glass 2 (control).

Glass 3 (catheterized bladder urine) perfectly clear, except for a few fine comma shaped shreds.

Glass 4 (urine passed by the patient, catheter having been withdrawn) contained very little pus; just enough to fog the urine.

Glass 5 (urine passed by patient, after massage of prostate) contained much pus and many large clumps.

Comment. In this case, the diagnosis of prostatitis was readily and correctly made. It is interesting to note that prostatic massage brought forth the pus which the mere passage of urine without end-straining did not reveal, thus confirming the view that straining at the end of urination often acts as a prostatic massage and squeezes the inflammatory products from the infected follicles into the terminal urinary flow.

CASE V. This man was treated for cystitis, because he had pus in his urine; no pain; there was neither history nor evidence of gonorrhea. The test resulted as follows:

Glass 1 (anterior urethra) clear washings; not a single shred.

Glass 2 (control).

Glass 3 (catheterized bladder urine) contained much pus; irrigated, cleansed easily, and filled with boric solution.

Glass 4 (fluid passed by patient) clear.

Glass 5 (fluid passed after prostatic massage) clear, except for normal prostatic secretion.

Comment. It was evident that the pus had its origin neither in the urethra nor the prostate; nor in the bladder, owing to the fact that the viscus became clean at the first lavage. The cystoscope and ureteral catheter showed that the pus was derived from the right kidney, which proved to be tuberculous.

CASE VI. This patient had a profuse persistent discharge, with considerable pus in the urine, for ten months. Gonococci were numerous, both in the discharge and in the centrifugated urinary sediment. The test resulted as follows:

Glass 1 (anterior urethra) much pus.

Glass 2 (control).

Glass 3 (catheterized bladder urine) clear.

Glass 4 (urine passed by the patient) contained much pus.

Glass 5 (urine passed after prostatic massage) same as Glass 4.

Comment. In this case, the test revealed the pus coming from both portions of the urethra, none from the bladder, and little or none from the prostate.

The practical applications of this simple test are so many and so varied that it is difficult to illustrate them all, or even most of them. The cases described above are characteristic of their respective classes, each case showing how striking is the information which it reveals even in obscure and complicated conditions. I firmly believe that a more widespread knowledge and employment of the five glass catheter test, as herein described, would result in more accurate diagnosis and consequently more satisfactory therapeutic results, in difficult and obstinate lesions involving the lower urinary tract. This applies to the determination of the source of blood as well as pus.

REFERENCES.

1. *Medical Record*, April 25, 1909.
2. *International Clinic*, 1, 2nd S., 1012.
3. THOMPSON WALKER, *Gonorrheal Nardoni*, page 611.
4. GEORGES LUY'S: *Traité de la blennorrhagie*, page 129.

THE IMMUNE RESPONSE IN PULMONARY
TUBERCULOSIS.*

BY ELLIS BONIME, M. D.,

New York,

Chief, Immunotherapy Department and Lecturer on Surgery, Poly-
clinic Medical School and Hospital.

Tuberculin has been used in phthisis more extensively than in any other form of tuberculosis, and the results have been published in nearly every corner of the globe. However, we cannot help but gain the impression in reading these reports that tuberculin has been applied as a last resort, and that the incipient case is considered easy of cure either through climate, sanatorium treatment, or rest and hyperalimentation; in short, the hygienic-dietetic régime reigns supreme and tuberculin is considered only when other methods seem to have failed.

In Germany, however, the value of tuberculin in early cases of pulmonary tuberculosis has been recognized, and its increased use there has already effected a marked diminution in the death rate from the disease. So marked has this reduction been that the public demand for sanatoriums where tuberculin is administered has become general; and as a result, ninety per cent. of all institutions in Germany where pulmonary tuberculosis is treated are now using tuberculin along with hygienic and dietetic measures.

Unfortunately, we cannot wait for a similar public demand in this country, for the origin of public education in Germany regarding the use of tuberculin is to be found in the accurate statistics kept by the government. In this country, statistical records of diseases and of causes of death are in such a state that the public is not in position to compare the results obtained by the use of tuberculin in one community with the results obtained without its use in another community. It is therefore useless for the medical profession in this country to await a public demand for tuberculin. On the other hand, it remains for the general practitioner to awaken to the great truth that confronts him and to help educate the public in the value of tuberculin.

Not only is it the duty of the medical profession to impress upon the public the value of tuberculin as a cure, but also to make clear that its use will not interfere with regular employment and that the chief danger in pulmonary tuberculosis lies in neglect.

We know that the human race possesses a natural immunity against tuberculosis. Most of us have had a lesion some time or other during our lives and have reacted with an immune response sufficient to overcome the disease before we were aware even of its presence. Only a minute percentage have no immune response, or so very little that they die of the hasty form of the disease.

Those of us in whom the disease progresses slowly, proving fatal in months or years as the case may be, evidently possess immune response, but not in sufficient degree for a cure. The defense, while strong enough to prevent an overwhelming defeat, yet must slowly retreat, losing ground, until exhaustion sets in, bringing the fatal end. It is in this latter class that outside reinforcements can turn the tide of battle in favor of the defense. It is also evi-

dent that the sooner the reinforcements are brought into play, the more surely will they prove effective, as we all know that outside aid is of no avail when exhaustion has supervened.

Let us examine into the nature of the immune response. In the case of tuberculosis it is exactly as in the case of all other infections. The immune response consists in the formation of antibodies in answer to the stimulation of an invading organism. The antibodies are carried in the circulation until they reach the invading organism with which they combine. This combination is brought about by the special affinity that exists in the invading organism for the particular antibody. A biochemical union takes place between the antibody and the invading organism, rendering the organism harmless or causing its utter destruction.

In the case of tuberculin, the antibody is a lysin. The combination of the lysin with the tubercle bacillus forms a biochemical combination which differs from other infections in that it forms as byproduct a protein poison which is highly toxic to the host. The toxicity thus brought about is responsible for the hypersusceptibility in tuberculous persons.

Thus it is clear that the very protective mechanism that we possess against infection is to a great extent neutralized by a poisonous byproduct which it creates. This poison may even outweigh the beneficial result of the protective mechanism.

Fortunately, we possess a means of rendering an individual tolerant to a protein poison by beginning with a dose of the poison that will fall short of a constitutional reaction, and slowly increasing the dose.

Tuberculin, like all vaccines, stimulates an immune response. This fact is admitted, even by the opponents of tuberculin therapy. It therefore remains for the proper technic to make tuberculin assist in the protective mechanism of the host against tuberculous invasion. This technic must consist mainly of so balancing the amount of immune response with the amount of toxin it produces that we get the maximum amount of protection the immune response can afford, accompanied by the least amount of toxicity created through its action.

The trouble with the technic, as used abroad as well as in this country, is that it is so very complicated that the least mistake might bring about severe reaction; also, there is no definite method of determining the application to individual requirements. All this has inspired a fear of the employment of tuberculin in the hands of the majority of doctors and has limited its field very closely to the specialist. Severe reactions are so apt to occur through complicated technic that a host of contraindications have been set forth, embracing cases where severe reactions might be greatly injurious.

With the advent of simple technic, such as we now use at the New York Polyclinic Hospital,¹ a new era is dawning for immune therapy in tuberculosis. The technic is very simple in its application and still possesses the element necessary for a therapeutic result. It also lends itself to every form of tuberculosis and to every grade of individual hypersusceptibility.

24 EAST FORTY-EIGHTH STREET.

*Read before the physicians at the Associated Tuberculosis Clinics and Hospitals of Hudson County, N. Y., March 13, 1917.

SURPRISES FOR THE DIAGNOSTICIAN
REVEALED BY THE PATHOLOGIST.*BY WALTER G. BAETZ, M. D.,
Woodhaven, N. Y.,

Formerly Physician, Ancon Hospital, Canal Zone.

The tabulation of the exceptional and the rare has often been credited to idle and morbid curiosity. Yet, as we analyze more carefully, we are forced to the conclusion that even the study of the anomalous and the unusual is of decided value. Recall but for a moment the investigation of fetal malformations and its value to embryology. In offering this excuse for presentation of a collection of more or less exceptional failures in clinical diagnosis, that have come to autopsy in this hospital during the past five years, I might, with some justice, be accused of carrying my illustration to extremes. Nevertheless, it is undoubtedly true, that in the art of diagnosis, rare anomalies and abnormalities, though in the minority, enter frequently enough to be disturbing. Usually it is the inexperienced or ill trained diagnostician who thinks of the unusual first, but some of the following cases will demonstrate that even the very unusual must not be entirely forgotten in the daily routine. Cases which cannot be classified as exceptional, are instructive in that they show some of the gross errors made. These errors are in several instances ludicrous, in many humiliating, and in a few tragical. In almost all of them a perusal of the clinical records gives a clue to the cause of error in diagnosis, be it a mistake of omission or commission or both. With these few introductory remarks I shall proceed immediately to the subject of this paper.

So far as feasible these cases have been arranged in anatomical groups according to the organ or system of organs that was found to be the chief site of the fatal disease. The general infections and intoxications were considered first, followed consecutively by the cerebrospinal, cardiovascular, pulmonary, gastrointestinal, hepatic, splenic, pancreatic, and neoplasm groups.

The first case of the general infection group is fortunately a unique one in the history of this hospital. A young negro adult was admitted with a serious infection of estivoautumnal malaria. He was given bihydrochloride of quinine by hypodermic injections and died on the sixth day. The diagnosis of estivoautumnal malaria received a bad blow when a gas bacillus infection was found at necropsy to be present in the quinine hypodermic site in the left thigh. The clinician had probably paid too little attention to the pain the patient had complained of following the injection of the quinine. The next case was also one of an adult negro who was sent to the hospital with the provisional diagnosis of pellagra. He gave a history of having been ill for a month with dysentery and a sore mouth. The physical examination revealed an exudative stomatitis and pharyngitis. There were no visible ulcerations, but the gums were spongy and bleeding. The patient was very toxic. Perianal excoriations were present. The tongue was denuded and fiery red. In view of the history and these findings, the pro-

visional diagnosis of pellagra seemed justifiable, even in the absence of a dermatitis. Before further examination could be made, this patient had a convulsion and died unexpectedly twenty-four hours after admission. The autopsy seemed to corroborate the clinical diagnosis of pellagra until the cultures taken post mortem proved the case to be a most unusual diphtheria infection.

The following case shows how easily one infection obscures another. This patient was admitted in a comatose state with a temperature of 104.5° F. A blood film showed the rings of estivoautumnal malaria. An hour later the patient died. The autopsy proved the malaria infection, which was chronic, but also showed that the acute illness causing death was typhoid fever and not malaria. This danger of attributing a patient's illness solely to the malarial parasites that may be found in his blood is always present in those parts of the tropics where practically all natives harbor parasites. Another acute infection proved to be acute miliary tuberculosis at autopsy. The clinician had only ventured a diagnosis of acute undetermined infection and bronchopneumonia. The unusual feature of this case consists in the fact that a carefully performed lumbar puncture failed to produce the desired fluid. The reason was very evident when an absolutely dry cord, full of tubercles, was found by the pathologist. Not infrequently we hear the diagnosis of "dry cord" made when the operator fails to obtain fluid. Seldom is his diagnosis sustained at the post mortem examination. In another case the diagnosis of disseminated tuberculosis was correctly made, but the secondary diagnosis proved to be a very unusual error. On admission the patient was in the last stages of his generalized infection. When the abdomen was palpated, a tender mass the size of one's fist was found in the right lower quadrant, directly over the psoas line. Keeping in mind the infection with which the patient was moribund, it was easily decided that this tumor was a psoas abscess. At necropsy the "psoas abscess" turned out to be a congenital fusion of the right and left kidney.

The following two cases show that the primary disease may be immediately recognized, but the diagnosis of the cause of death becomes a failure because the secondary signs and symptoms are misconstrued. The first patient came to the hospital suffering with an infection of the right arm. A plastic pleurisy and pulmonary infiltration were also noted. The patient died rather suddenly with a profuse pulmonary hemorrhage. Instead of reasoning that the pleurisy, the pulmonary infiltration, and the pulmonary hemorrhage were the results of a septic embolus, the clinician dissociated cause and effect by making a diagnosis of cellulitis, plastic pleurisy, and pulmonary tuberculosis with hemorrhage. The second case of this type was an injury case readmitted to the hospital. The man's previous history was that of a fall between two cars. Contusion of the back was diagnosed at the time. A skiagraph was not made. An extensive callus formation of the spine in the lumbar region threw grave doubts on this diagnosis, though the patient was not incapacitated at any time. Some weeks later, he began to complain of pain in the back; he manifested a

*Read at the one hundredth meeting of the Medical Association of the Canal Zone.

septic temperature and pus was found to be present in the urine in great quantities. On examination a palpable tender kidney was found. The spinal exostosis was marked at this time, but was only slightly painful on pressure. The original injury to the spine was consequently disregarded and a diagnosis of pyonephrosis, arteriosclerosis, and chronic nephritis was made. The autopsy revealed a fracture dislocation of the lumbar spine. This injury site had become infected, presumably after the patient had been discharged, following his original admission for injury. A septicemia was the cause of death. The palpable and tender kidney which had misled the internist was found to be nothing but a simple ptosis of that organ. Another case of septicemia was diagnosed cerebral syphilis and estivo-autumnal malaria. The clinical diagnosis was undoubtedly correct, as far as it went, for the asexual parasites of malaria were found in the blood films of the patient and his Wassermann test was positive. The presence of facial palsy, Kernig's sign, ankle clonus, paresthesias, anesthesias, and coma pointed to central nervous disease. Nevertheless the pathologist showed that, without doubt, death was due to septicopyemia. The original focus of the purulent infection, unknown to the clinician, was found to be a chronic, solitary ulcer in the cecum. Still another case of septicopyemia in this series was diagnosed clinically as pernicious malarial fever and meningitis. It is highly improbable that any previously untreated patient will die of malarial fever whose blood film, carefully stained and examined, fails to show the parasite. This case was diagnosed pernicious malaria in the face of negative blood findings. Another factor in the failure of diagnosis was the inadequate examination of the feces. The fatal pyemia was caused by an extensive ulcerative colitis, acute and chronic. A single microscopic feces examination was charted as being negative. A white blood count of 7,000 seems to have prejudiced the clinician against a purulent infection hypothesis. The last case of the generalized infections is a pneumococcus meningitis that was diagnosed tertiary syphilis and cerebral softening. A positive Wassermann test proved that the diagnosis of syphilis was undoubtedly correct, but a lumbar puncture would have shown that the cerebrospinal symptoms were due to a pneumococcus infection of the meninges and not to syphilitic endarteritis and softening.

The second group of this series is comprised of five cases whose disease localization was in the brain. The first was a solitary abscess of the right occipital lobe in an adult. There was normal temperature and the white blood count ranged from 8,000 to 14,600. All the classical signs of intracranial pressure were present. A Wassermann test made with the spinal fluid was found to be negative. Then 0.6 gram salvarsan was given intravenously as a therapeutic test. The immediate improvement was so striking that the diagnosis of cerebral abscess was abandoned for the one of cerebral syphilis. Four days later the patient died in acute delirium and the autopsy revealed the primarily suspected abscess. The other case of brain abscess was one of multiple foci throughout the right frontal and the left parietal lobes. It occurred in an infant of thirteen months.

The history obtained was one of illness with diarrhea and vomiting for one month. The white blood count was 10,400. The baby died within three days. Anemia and diarrhea were the only tangible clinical findings during that time. The next case is an example of a not infrequent error and one that we must grant is difficult to avoid. An adult patient was admitted, suffering with acute maniacal excitement and frequent generalized convulsions. There was high fever and a leucocytosis. Focal cerebral signs were absent. The patient died on the third day and in the absence of a better diagnosis, "acute undetermined infection" was offered. The pathologist found multiple hemorrhages, deep and superficial, in the brain. The post mortem Wassermann test was positive. Other internal evidences of syphilitic infection were also noted anatomically.

In the next case the clinical diagnosis really overshoot the mark. The post mortem examination presented softening of the brain following embolism from a syphilitic valvulitis. The clinician had mistaken the syphilitic aortitis for the more advanced stage of aneurysm. The cerebral signs of convulsion and hemiplegia were interpreted as cerebral hemorrhage and softening. The Wassermann test was negative. Another very interesting case of brain involvement, which again shows the risk of attributing a serious disease symptom complex entirely to the malarial parasites that happen to be found in the peripheral circulation, is the following. A tropical negro boy, seven years of age, was admitted in a semicomatose state. The history given by the mother was that he had been sick for three weeks with palsy of the left arm and leg. Ten hours before seeking hospital treatment the boy had begun to vomit and had lapsed into semicoma. When roused he spoke disconnectedly and in a decidedly slurring fashion. The white blood count was 13,600. The thermometer registered 100° F. After a tedious search, estivoautumnal parasites were found in the patient's blood. We read of a good deal of pernicious malaria producing local palsies and hemiplegias, but the pathologist usually finds a better explanation for such definite focal signs. Keeping this bit of experience in mind, we subjected the patient to a spinal puncture in addition to treating him for pernicious malaria. Although the cerebrospinal fluid proved negative both in culture and cytology, the pressure was so decidedly increased that when the patient died on the third day, a diagnosis of simple meningitis was given preference over the malaria diagnosis. The autopsy brought to light a cystic parencephalus involving the pons, crus cerebri, medulla, and cervical portion of the cord. Internal and external hydrocephalus were marked. A chronic malarial infection with a few parasites in the spleen and the bone marrow was found, and the possibility of another delusion concerning malarial hemiplegia had been dispelled by the pathologist.

Let us now proceed to the review of a number of cases that can be classed in the cardiovascular group. The first three cases are a reminder of how easily septic embolism escapes notice when the ulcerative cardiac focus, if present, gives no physical signs or is overlooked. There is hardly another one single pathological entity that can cause more rapid and diverse signs and symptoms than an em-

bolus. In none of these three cases was there any physical evidence found to cause suspicion to be directed to the endocardium as the origin of the trouble. In all three the diagnosis was based on the effect and not the cause. One was diagnosed cerebral hemorrhage, another meningitis, and a third "acute undetermined infection." As to diversity of signs and symptoms, aneurysms are not far behind emboli. The only reason that they are not missed more often, clinically, is that they usually give ample time for examination and observation. As a class by themselves they contribute rather heavily to our gross errors in diagnosis. The Wassermann test has been found positive in sixty-nine per cent. of our cases. A negative test is rather unfortunate in those cases (and they are many) in which ante mortem evidence of syphilis cannot be demonstrated. The first case was that of an aneurysm of the transverse arch, which obstructed the venous channels of the neck. Death came with rupture of the sac into the right pleural cavity. The clinician primarily diagnosed aneurysm with intrathoracic pressure, but finally changed his diagnosis to organic heart disease and jugular thrombosis.

Next follows an aneurysm of the thoracic aorta eroding the spinal vertebrae and producing transverse compression myelitis, and another of the abdominal aorta eroding the lumbar portion of the spine. The former was diagnosed acute transverse compression myelitis of unknown etiology, and the other lobar pneumonia. The lobar pneumonia was found to be a terminal massive bronchopneumonia. This patient had been the rounds of a number of physicians and the pain he had complained of had been variously diagnosed as lumbago, neuritis, and sprain of the back. Another recent aneurysm patient of unusual interest was admitted to the ward badly cyanosed and breathing like an asthmatic. He gave a history of having suffered with dyspnea for the past ten days. Physical examination revealed subcutaneous emphysema of the entire body down as far as the hips. The lungs, in addition to the asthmatic breathing under the air filled subcellular tissues, were so emphysematous that a satisfactory examination was impossible. Infiltration of one apex was suspected. At times the patient seemed to improve and the absorption of the air in his subcutaneous tissues would progress. Then he would again have severe attacks of dyspnea which left him exhausted and distended with air. In one of these attacks he died, the twenty-fourth day after admission. The diagnosis was pulmonary rupture, asthma, and emphysema of the lungs and subcutaneous tissues. The solution at autopsy was simple enough. An aneurysm the size of a lime, springing from the aortic arch, had compressed and eroded the trachea. The violent respiratory efforts had produced enough negative pressure in the chest to rupture the right apex at the site of an old tuberculous focus. Subcutaneous emphysema and a slowly forming pneumothorax were the consequences. Syphilitic manifestations in the arterial system were plentiful. A case somewhat simulating this one was an aneurysm of the innominate compressing the trachea and the right auricle. Chronic emphysema and bronchitis was the diagnosis. When sudden death occurred, "organic dis-

ease of the heart" was added. In all these aneurysm cases unmistakable evidence of syphilis was found by the pathologist. These cases teach forcibly that asthma of recent duration should always be looked upon with suspicion, especially when partial relief is obtained with potassium iodide. The last of the cardiovascular cases is an exceedingly rare one. An old negro was admitted to the ward in the very last stage of cardiac hypertrophy and dilatation. Death took place within a few hours. It was thought that the cardiac condition was secondary to the well marked chronic interstitial nephritis. The rapid termination of the case cut short further investigations. At autopsy the unusually large and dilated heart was explained by the presence of gummata of that organ, involving chiefly the left ventricle.

The pulmonary group of cases has fewer bad errors in diagnosis to record than the cardiovascular. Two cases were selected as being of sufficient interest. One is that of a young negro boy who slowly failed with all signs and symptoms of bulbar palsy. His Wassermann test was positive, but he showed no signs of syphilis otherwise. About two weeks before death he complained of pain in the right side. At autopsy a degenerative encephalitis of the thalamus and cervical portion of the cord was found, but the immediate cause of death was an abscess in the right pulmonary base. Undoubtedly, the palsy of the accessory muscles of respiration was the reason why a physical examination did not reveal the aspiration abscess; in other words, the very condition that was responsible for the fatal complication also effectually prevented its recognition. The other pulmonary case was one of gangrene of the lung terminating a chronic interstitial nephritis. In this case the pulmonary complication was missed entirely simply because of negligence on both the physician's and the nurse's part. The odor seems to have been so fetid that the patient was isolated, but no attempts were made to ascertain the cause of the fetor nor even to keep any clinical notes. The presence of septic temperature during the final two weeks alone should have been a danger signal that some complication had set in.

In leaving the pulmonary group and proceeding to the gastrointestinal, we find that the first case was correctly diagnosed as clinical dysentery, a term we have adopted for dysenteries in which the causative factor cannot be found. The shock of surprise imparted to the clinician by the pathologist came about by the way of a secondary diagnosis. The patient, a senile negro, presented complete destruction of the nasal bones and adjacent structures. As evidences of an old syphilitic infection were plentiful, no hesitation was felt in making a diagnosis of tertiary syphilis as the secondary cause of death. A rude awakening took place among the clinicians, who had thought themselves perfectly safe in their diagnosis, when the pathologist found the necrotic tissues and the right ulnar nerve to be thickly settled with the bacilli of leprosy. The next is a clinical diagnosis of typhoid fever in a patient who died on the fifth day. The high temperature, the low blood count, a suspicious Widal, and a large soft spleen formed the evidence elicited by the internist in the support of his diagnosis. Against this were

noted the presence of pus and blood in the stools, a negative blood culture, and death approaching with a falling temperature curve. Clinical dysentery was the cause of death given by the pathologist. This case belongs to a class of exceedingly fatal dysenteries in which the undoubtedly present bacillary cause has not been isolated as yet.

The following case of abdominal tuberculosis that had been diagnosed chronic nephritis is an illustration of the great variability in clinical picture of a well known infection. This patient suffered with an advanced degree of chronic nephritis, as diagnosed, but the pathologist was undoubtedly just when he gave preference to the active abdominal tuberculosis. The reason that not even a suspicion as to the true state of affairs was entertained by the ward physicians, lies in the fact that for a period of ten weeks the patient's temperature remained normal or subnormal. Furthermore, he at no time gave any objective or subjective symptoms of abdominal disease. In diagnosing chronic nephritis as the fatal disease, the physicians had once more mistaken the effect for the cause. Two cases of duodenal ulcer with rupture into the peritoneal cavity, represent not only a pathological condition that is a most notorious pitfall for the diagnostician, but also show how the diagnosis can become an impossibility at the present time, under certain conditions. The first was in a negro painter. A diagnosis of lead colic was made. Granting for the sake of argument, that plumbism with colic was actually present, as it readily might be, a dual diagnosis seems hopelessly remote when we consider our present practical means of duodenal ulcer diagnosis. The other ulcer was complicated with a tremendous hypertrophy and dilatation of the heart, secondary to interstitial nephritis. To arrive at a diagnosis of duodenal ulcer in such a patient whose liver was tremendously swollen and tender in an abdomen full of fluid, would tax the diagnostic acumen of the best.

The hepatic group consists entirely of four cases representing a tropical and subtropical disease manifestation that is the bane and the fear of the internist. It is as elusive as it is destructive. I have reference to entamebic abscess of the liver, the early diagnosis of which often means everything to the sufferer. Spontaneous recovery is so rare that a failure to diagnose this affliction is practically always fatal to the patient. In selecting these four failures we are impressed with the variety of conditions for which hepatic abscess is mistaken. This is not surprising when we consider that there is no definite symptom complex of this curse of the tropics that is not found more often in other causes of hepatic enlargement. Until diagnosis by roentgenology and a serum ferment test become practical possibilities, there will always be patients slowly dying under our very eyes, in whom past history as to dysentery, temperature records, physical examinations, the absolute and the differential blood count, stool examinations, aspiration of the afflicted organ, and even exploratory laparotomy have deceived us. Here is a case of a huge, solitary abscess in an old man. A subnormal temperature, extreme emaciation, a large hard, nodular, insensitive tumor, and abdominal glandular enlargement and induration, a white blood count of 8,000, with a nega-

tive dysentery history, made an exploratory laparotomy appear needless cruelty in a case where carcinoma seemed certain. Necropsy was humiliating. Another is mistaken for passive congestion of the liver in a cardiac dilatation case. A third is one in which the high temperature reaction with a low blood count in conjunction with severe toxic stupor was taken for typhoid infection. When the abscess in the hepatic dome caused the lower pulmonary lobe to collapse, bronchial breathing was heard. A white blood count that had risen to 20,000 seemed to clinch the secondary diagnosis of complicating pneumonia. A fourth case in which aspiration of the liver was negative, gave the same pulmonary signs and lobar pneumonia seemed probable, the enlarged liver being explained by the usual cloudy swelling of that organ in pneumococcus infections. When the high temperature gradually came to normal and remained there, but the solidified pulmonary base did not become aerated, an unresolved lobe was suspected in a patient seemingly dying from chronic diffuse nephritis. It is in this class of cases that the diagnosis may mean life or death to the patient. The brevity of the notes on clinical progress in some of the records, leaves the disquieting impression that at times insufficient attention, bordering on neglect, is accorded these most important cases.

Three quite unusual cases were selected to show the vagaries and snares in the diagnosis of renal affections. The first was that of an adult male negro twenty-six years of age. He walked to the hospital, a seemingly robust individual in good health. The history he gave stated that three days previously he began to be annoyed by a painful swelling of one of the submaxillary glands. Before coming to the hospital he also noted a marked swelling of the tongue. Otherwise there were no complaints. Upon inspection the tongue was found to be severely lacerated and swollen. There seemed to be no doubt that the injury was caused by the patient having bitten his tongue. With some urging he admitted that he had had a fit during which the lingual injury might have occurred, but he stoutly denied ever having had fits before. An hypertrophied left ventricle was the only other finding. Epilepsy was suspected, and as the patient seemed normal in all other respects at the time, he was given pajamas and the freedom of the ward. Four hours later, he suddenly had another convulsion. In spite of mouth gags and other improvised instruments the patient practically bit off the anterior third of his tongue. The convulsion was continuous for about a half an hour, at the end of which time he died. "Epilepsy of undetermined origin" was the best diagnosis that the physicians could arrive at with the meagre evidence at hand. Autopsy proved the case to be one of uremic convulsions caused by a suppression of urine in a chronic diffuse nephritis. Acute degenerative nephritis, superimposed, was also found and was taken to be the chief factor in producing the unusual rapid termination.

Another case of death from uremia but with quite a different etiology was the following: An American negro of forty-three years came to the hospital with a history of pain in the back and vomiting. Syphilis and chronic nephritis were easily demonstrable. The pain in both lumbar regions was set-

tled with the notoriously risky explanation of "neuritis of the lumbar nerves." In about five days it became necessary to check up the original uranalysis because the patient seemed drowsy and took to his bed, but no specimen was forthcoming. Convulsions set in and the anuria persisted for three days, at the end of which time the patient died in coma. The clinical diagnosis of suppression of urine was absolutely correct, but the revelation at autopsy of the causative factor created a mild sensation. A kidney calculus was found obstructing the right ureter near the brim of the pelvis and another was found occupying the corresponding position on the other side. Cystic degeneration of the kidneys and an extensive acute degenerative nephritis had been the consequence. The third and last case of this group is probably equally rare and interesting. A twelve year old negro boy was sent to the hospital complaining of fever, pain in the side, and vomiting of two days' duration. The boy had several degrees of fever, retraction of the head, enlarged liver and spleen, and a palpable left kidney. He seemed very toxic. The white blood count was 20,000. A urine specimen was negative on examination, chemical and microscopical. The next day another specimen was found to be loaded with pus and blood. Incidentally the acute symptoms subsided and the blood count fell to 15,000. A diagnosis of pyonephrosis of the left kidney was arrived at. The chief of the clinic advised surgical interference, but upon being urged by the ward physician to keep the case under observation a few days longer, consented, with the warning to keep a careful watch on the total urine excretion. Within forty-eight hours the ward physician regretted having made the request for delay, and the chief of the clinic felt chagrined at having consented, for complete suppression had set in suddenly and the patient's condition precluded all thoughts of operative measures. A fatal termination was inevitable and came quickly. At autopsy a large pus kidney of the left side was found. The surprise was great when the time came to examine the right kidney. This kidney was found to be congenitally absent.

The spleen, independently, is not often the site of morbid processes. The one case selected was diagnosed pernicious malaria, the patient being admitted in coma with parasites in his blood. Death occurred within eight hours. At autopsy the malarial infection was found to be of secondary importance. A large splenic abscess communicating with the colon was the undoubted cause of death.

Affections of the pancreas are equally rare and not infrequently missed, when they do occur. One case of this description was found. The existing myocarditis and nephritis seemed quite sufficient to explain the patient's moribund state.

The failures in the diagnosis of neoplasms causing death come mainly under the heading of sarcomatosis. The reason for the precedence of sarcoma over carcinoma is twofold. The tropical male negro in Panama is not often afflicted with carcinoma. Furthermore when the latter does occur, it is usually in a situation to give quite definite symptoms, for instance, at the pylorus. Four cases of misinterpreted sarcomatosis will be taken as typical examples. The first occurred in an adult negro suffering

with advanced syphilis and entamebic dysentery. A large sarcomatous nodule was found by the clinician to be protruding from the prostate into the rectum. The rectal mucous membrane over the nodule was ulcerated and it was from this ulcer that the diagnosis of entamebic dysentery was made microscopically. Unfortunately for his complete diagnosis, the clinician mistook this ulcerating nodule for a broken down gumma that had become infected with entameba. Both the entamebic dysentery and the tertiary syphilis were verified at autopsy, but the actual cause of death was sarcomatosis. In the second case the dissemination of the neoplasm had caused mainly spinal symptoms. Transverse myelitis due to Pott's disease was wrongly diagnosed. This is not an infrequent mistake as shown by other records of this hospital. It is good advice always to examine the prostate for neoplasm in cases with spinal symptoms. This advice can with benefit be extended to all cases of doubtful diagnosis. The third case was one of sarcomata of the liver. The erroneous diagnosis of syphilitic cirrhosis of that organ was made. This was one of those uncommon cases terminating suddenly with hemorrhage from the mouth, in which the blood came from the esophageal veins and not from the lungs or stomach. Gastric hemorrhage was given in this case as a secondary diagnosis. The last case of sarcomatosis is an exceedingly rare one. A nine year old negro boy was seen suffering with dyspnea, cyanosis, and dilatation of the veins of the neck. Both liver and spleen were large, hard, and tender. The heart was markedly enlarged, right and left, and very arrhythmic, but murmurs were not heard. A tentative diagnosis of congenital right heart disease was made with secondary hypertrophic cirrhosis of liver and spleen. At autopsy sarcoma dissemination was found, one of the growths almost filling the right auricle and invading the auriculoventricular wall of the right side. The last case of this series is a carcinoma of the esophagus eroding and compressing the trachea. The patient arrived at the hospital in a desperate condition of suffocation. The rather vague diagnosis of edema of the larynx was made. The autopsy showed the true state of affairs.

If the histories and the physical examinations of these cases seem to have been unduly brief and limited in their presentation, it is often because of lack of time and space; each case having sufficiently interesting points to warrant an individual report. Some of the cases have already been analyzed in a more detailed manner in a previous paper dealing with a tabulation of 500 consecutive clinical diagnosis in the light of autopsy findings.¹ In summing up this present collection of cases it was found that while the majority of failures in diagnosis were excusable on the grounds of insufficient time under observation and inadequateness of present methods, there remains a regrettable minority in which neglect to use routine or advanced methods of examination is the cause.

In conclusion, I wish to state that the criticism indulged in is intended to be of the constructive and not of the destructive type.

¹Deeks and Baetz: Five Hundred Fatal Medical Cases in the Tropics, *NEW YORK MEDICAL JOURNAL*, August 30, and September 6, 1913.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

POISONOUS PROTEINS.*

A Series of Five Lectures,

BY VICTOR C. VAUGHAN, M. D.,

Dean of the Department of Medicine and Surgery, University of Michigan.

LECTURE V.

At the fifth and last lecture of the series, Doctor Vaughan took up the subject of protein fever. It had long been known, he said, that the parenteral introduction of proteins in the animal body might be followed by fever. Gamaleia, more than a quarter of a century ago, made an important contribution to this subject; the title of his paper, *The Destruction of Bacteria in the Febrile Organism*, was significant. He found that fever followed the parenteral introduction of both pathogenic and non-pathogenic bacterial protein and concluded that fever was a result not directly of bacterial growth, but, on the contrary, was consequent upon a reaction on the part of the body against the bacteria which led to their destruction. Gamaleia's experiments furnished strong support to Doctor Vaughan's theory that fever was due to the parenteral destruction of proteins. In 1890, Buchner induced the characteristic phenomena of inflammation—*calor, rubor, tumor, et dolor*—by the subcutaneous injection of diverse bacterial proteins. In 1909, Doctor Vaughan and his students showed that by regulating the amount and frequency of the doses, any desired form of fever could be induced. Large doses of protein did not, while small doses did elevate the temperature. Moreover, a small dose was more effective in sensitized than in unsensitized animals.

Criticism has been made of the statement that foreign proteins found certain tissues of predilection in which they accumulated. Iodine accumulated in the thyroid gland; mercury induced characteristic lesions of the kidneys; strychnine selected a definite portion of the nervous tissue on which its action was made manifest. The therapeutic effects of the most approved drugs depended upon their predilection for certain tissues. Bacterial poisons did not differ from other poisons in this respect. We were accustomed to think of chemotaxis as acting only between morphologically recognizable bodies, but in reality it is a form of chemism and is dependent upon chemical composition and not on histological structure.

We need not conclude that specific proteases never resulted from the parenteral introduction of proteins. All proteins, including those of blood serum, contained a poison and it was not surprising that such a poison in the serum was set free in the production of Friedberger's anaphylatoxin and in the development of Aberhalden's pregnancy test, but

these had nothing to do with the development of proteases in smallpox or typhoid fever.

The phenomena of infection. Only a living thing could infect. Injection of diphtheria or tetanus toxin was an artificial procedure and the results were intoxications rather than infections. The infecting agent was a virus, and in infection there was a contest between the invader and the native. It was a struggle for food, growth, and reproduction.

A bacterium placed in a medium in which its ferment was ineffective could not grow and multiply. A bacterium which could not grow and multiply in the animal body could not cause an infection. Its inability to grow and multiply in the animal body might be due to the fact that its ferments could not digest or properly break up the proteins of the animal body. This was one of the reasons why the great majority of bacteria were harmless. This was not the sole cause, however, of the failure of so many species of bacteria to do harm to the higher animals; the body cell had its specific ferments and the bacterial cell being protein substance was liable to be digested by the ferments elaborated by the body cells. In these simple facts lay the fundamental explanation of all forms of bacterial immunity, either natural or acquired, all reference to the elaboration of toxins and antitoxins being omitted.

Bacterial cellular ferments were easily affected by the presence of certain nonprotein substance, especially carbohydrates. The ferments of the body cells were not easily obtained and were more difficult of study. The cellular ferments of the polymorphonuclear corpuscles, however, had been studied and their destructive action on certain bacteria demonstrated. The germicidal action of the blood and its serum had been demonstrated on various species of bacteria.

During the period of incubation of an infectious disease, the infecting organism supplied the ferment, the simple, soluble proteins of the body fluids constituted the substrate, the process was essentially constructive, no poison was set free, and there were no recognizable clinical symptoms.

During the active progress of an infectious disease, the body cells supplied the ferment, the complex, bacterial, cellular proteins constituted the substrate, the process was essentially destructive, the protein poison was set free, the symptoms of disease appeared, lesions more or less destructive developed, and life was placed in jeopardy. In yellow fever Nature made an attempt to eliminate the poison into the alimentary canal, as was evidenced by the black vomit. In typhoid, the poison in being excreted into the intestine, might lead to perforation. In pneumonia, life might be endangered by the abundance and extent of the exudate; but in one part of the body the bacteria continued to grow, while in other parts they were being destroyed, and at the crisis of this disease autolysis probably caused not

*An abstract of the Christian Hertel lectures at the Carnegie Laboratories, January, 1916; kindly revised by the author expressly for the *New York Medical Journal*. See our issues for March 4th, p. 496, March 25th, p. 601, April 11th, p. 744, and April 29th, p. 842.

only the destruction of the organism, but the removal of the exudate. In many infections lesions developed and impaired the efficiency of the body cells. Moreover, in destructive lesions the dead tissues of the body had to be disposed of and this threw an increased burden on the body cells. In some diseases phagocytosis played an important part.

Nothing more dangerous to the infected individual could happen than the sudden cleavage of all the bacteria in his body; the poison liberated in this process would overwhelm him at once. This was a probable explanation of the fact that the case mortality in typhus fever was higher among the well nourished than among the less robust. An Irish doctor had said of typhus fever after a severe epidemic, 100 years ago, that "it went over the land picking out the fairest, the strongest, and the best as a buyer of sheep would go through the fold"; one in twenty-three died among the poor peasants; one in three among the doctors and nurses, the lawyers, and the land owners.

Bacterial cells, as well as body cells, have means of protecting themselves. The tubercle bacillus developed fats and waxes which protected it against the action of secretions of the body cells. Moreover, bacterial cells might develop increased resistance, becoming to some extent immune to the action of body cell secretions. Occasionally bacteria persisted in the body for long periods after recovery from the disease and lost nothing in virulence when transferred to new hosts. Frequently secondary infections developed; the pyogenic microorganisms frequently played the last act in the great tragedies of life, tuberculosis, cancer, and syphilis. . . .

Under normal conditions there was a nice adjustment of the constituents of blood and tissue whereby life was protected, and slight changes easily disturbed this equilibrium with most disastrous results. There were protein bodies in the blood and tissue which served under normal conditions as food cells, but which might become explosively poisonous when the mechanism regulating their use was disturbed.

The keystone or archon of the protein molecule was the protein poison, common to all protein molecules, physiologically the same in all molecules.

AURICULAR FLUTTER.*

The Medicinal and Hygienic Treatment.

By LOUIS FAUGERES BISHOP, A. M., M. D.,
New York,

Clinical Professor of Heart and Circulatory Diseases, Fortham University School of Medicine; Physician, Lincoln Hospital.

Auricular flutter is perhaps the latest condition to become thoroughly established in cardiology and is defined by Ritchie, who has written a monograph on the subject, as "a pathologic action of the auricles characterized by rhythmic coordinate contractions of their musculature at a rate that is greatly accelerated, and is usually between 250 and 300 per minute."

The profession has become familiar with the problem of auricular fibrillation. I will not touch

upon this nor upon all the interesting theoretical considerations involved, but proceed at once to the topic of my paper founded upon experience in my practice which has for some years been devoted exclusively to the treatment of cardiovascular conditions.

I want to emphasize particularly the points that have not been specially emphasized by other writers. Hence, I will begin with the hygienic treatment.

To understand my viewpoint it is necessary to reiterate the cellular theory of cardiovascular renal disease, which I have adopted and which has led to fruitful results in treatment of many conditions which were apparently destined to be progressive.

This theory predicates a general condition as the underlying cause of damage of particular organs, and while it does not deny the existence of organic disease in a single organ as an entity, it takes into consideration the comparative rarity of this occurrence. It takes account of the wide margin of safety in organs ordinarily which prevents them from giving symptoms until their resources have been drawn upon for a long time and to a high degree. It takes account of the relatively conspicuous processes of gastrointestinal digestion and the absence of external evidence of the digestion by the individual cell of protein, upon which the life of the cell must depend. It emphasizes the relatively greater importance of metabolism over gastrointestinal digestion in diseases of the heart. It takes account of the relatively conspicuous processes of gastrointestinal digestion and the absence of external evidence of the digestion by the individual cell of protein, upon which the life of the cell must depend. It emphasizes the relatively greater importance of metabolism over gastrointestinal digestion in diseases of the heart. It takes account of the phenomena of cell sensitization to particular protein, which it predicates as the primary occasion for the development of the majority of cardiovascular renal breakdowns.

In addition to this, with particular relation to the disturbed physiology of the auricles, it must be remembered that the heart beat is essentially a chemical phenomenon—hence, particularly susceptible to derangement from chemical causes.

For some years the author has taught that the fibrillating auricle was primarily a poisoned auricle, and the same seems to be true of auricular flutter. After the primary control of the ventricular rate by digitalization, according to methods now well understood by cardiologists, in spite of the resulting irregularity—it is the author's custom to apply the following strict regimen which he has found so valuable in arteriosclerosis, namely:

1. Full doses of castor oil according to the plan of the following prescription:

R Tr. of iodine, ℥jssx;
Menthol, gr. xvi;
Castor oil, ℥viii.

Two tablespoonfuls June 22d, 20th, July 1st, 7th, 21st, August 11th, September 8th, and once each month thereafter.

2. This is supplemented by graduated out of door exercise. The patient walks as much as he can without distress, beginning with a short distance and gradually increasing it.

3. Eggs, fish, meat, and stock soups are excluded

*Read by title at the sixteenth annual meeting of the American Therapeutic Society, San Francisco, June 21 and 22, 1915.

from the diet, in connection with the ordering of which I use special diet sheets. (See this JOURNAL, March 4, 1916, page 455.)

In thus extending to a specific disorder of the cardiovascular system, represented by auricular flutter, my general theory of cardiovascular disease, in its treatment I am supported by excellent results in a number of cases which it does not seem to me would have done as well under any other regimen.

True auricular flutter is, of course, a comparatively rare condition, so none of us have a very extensive individual experience with it. I have over 1,500 tracings taken from cardiovascular cases with the McKenzie polygraph. Among these are a few examples of auricular flutter, which were satisfactorily recorded with this instrument, though, of course, our knowledge of this disease is primarily founded on the work of the electrocardiograph.

CASE. The most interesting of all was one observed this winter in a young woman, aged twenty-six years, who had apparently suffered from heart block since childhood. Under careful supervision she had got along pretty well, but had suffered a deterioration of conditions which were unaccounted for by any symptom until the polygraph revealed the onset of auricular flutter.

54 WEST FIFTY-FIFTH STREET.

PRACTICAL LUNCHES FOR SCHOOL CHILDREN.

The U. S. Department of Agriculture, through the Office of Home Economics, has just issued Farmers' Bulletin No. 712, entitled *School Lunches*. The bulletin, after discussing the general principles of feeding school children to provide for activity and develop them into sturdy manhood and womanhood, gives a number of simple and appetizing menus for the school lunch basket and bills of fare and recipes for preparing inexpensive and nourishing noonday meals or hot dishes for children, either at home, on a school stove, or in the domestic science kitchen.

RELATION OF LUNCH TO OTHER MEALS.

In feeding a child or any one else, the authors of the bulletin point out, it is not wise to think of any one meal apart from the other two. It is seldom convenient to provide at one meal all the materials needed by a growing body, and those which are omitted from one meal should be supplied by one of the other meals. The noon meal for children, however, where food must be prepared at home in the morning to be eaten elsewhere at noon, or where the children must hurry home, eat quickly, and then rush back to school, offers special difficulties and deserves the careful attention of parents.

DIETARY ESSENTIALS FOR THE GROWING CHILD.

In general the essentials of diet for the child are an abundance of simple foods, carefully prepared, and of sufficient variety to provide energy, repair wastes, provide elements for building bone and tissue, and stimulate growth. To do this most effectively the three meals each day must supply the child with sufficient food from each of the following classes:

1. *Cereal or starchy foods.*—Cereals, eaten principally as bread, supply nearly half of the protein (commonly thought of as tissue building material) and nearly two thirds of the fuel or energy in the American diet. The quality of the bread, therefore, is extremely important. Its crust should be crisp and deep (indicating thorough baking), but not hard or burned. It should be light and free from any suggestion of sourness or rancidity. The crumb should be elastic and yet capable of being easily broken up in the mouth without forming a sticky mass, or being too dry to taste good. These qualities can be secured in rolls and biscuit as well as in ordinary bread, provided they are cooked thoroughly. The objection to hot bread is due to the fact that undercooking may leave it soggy on the inside, rather than because such breads are eaten hot. The child's appetite for bread may be stimulated by using different kinds of bread, zwieback, and crackers, by the addition of raisins, currants, or nut meats, and sometimes by cutting the slices into fancy shapes.

Cereal mushes and ready to eat breakfast foods supply nearly the same nutrients as bread, a half cupful of cooked cereal being about equivalent to a good sized slice of bread. A tablespoonful of cream is about equivalent in fat to a liberal spreading of butter.

2. *Protein rich foods.*—While bread and cereals come near to fulfilling one of the important requirements of diet, other foods which provide protein in larger proportion as compared with fuel should not be neglected. These foods include milk, meat (except the very fattest), fish, poultry, eggs, cheese, dried beans, cowpeas, peas, peanuts, and almonds, walnuts, and other nuts. Nuts, of course, also contain considerable fat. Milk is an absolute essential, not only because it contains a large number of nourishing substances in forms easily assimilated, but also because, in some way not now fully understood, milk seems to promote growth and help the body of a child make good use of other foods. Milk is rich in most kinds of mineral matter, particularly calcium, useful in the development of bone and tissue.

Milk should never be omitted wholly from the diet of a child. If not used at luncheon it should appear at other meals. For luncheon, however, it has been found that such dishes as milk toast, milk soups made with vegetables, fish or vegetable chowders, and cocoa are valuable foods, easily prepared at home or in the school. White sauces made of vegetable juices, milk, or broth, differ from milk soup largely in that they contain more flour. When considering milk, the food value of skim milk, which contains a larger percentage of protein though less fat than full milk, should not be overlooked.

Eggs, the next of the protein foods commonly given to children, contain much iron and their yolks are rich in fat.

3. *The fatty foods,* such as butter, cream, salad oils, bacon, and similar foods, are important sources of energy and nourishment for the growing body, and are best given in these simple forms rather than in rich pastries or sweets.

4. *Fresh vegetables and fruits.*—Because ordinary vegetables such as potatoes, greens, lettuce, green peas and beans, asparagus, and others, and the ordi-

nary fruits do not contain much fat or protein, their value in the child's diet is frequently underestimated. These things, however, should be considered as a necessary part of the diet of the child for the important reason that they furnish mineral and other materials required to form bone and tissue as well as to repair waste and supply some energy. Green vegetables are valuable particularly because they contain iron in forms which the body can use. Fruits contain a considerable percentage of sugar, especially when they are dried, and sugar is a quickly absorbed fuel food. As things eaten raw are apt to transmit disease germs, care should be taken to wash vegetables and fruits thoroughly in several waters. Many fruits, especially those with skins, can be dipped safely into boiling water, while those with thick skins, such as oranges, bananas, and apples, may safely be washed even with soap. Dried fruits when washed and put into an oven to dry absorb some of the water, and thus are softened and improved in taste.

5. *Sweets and desserts.*—Sugar, as has been said, is a quickly absorbed fuel food, and simple sweets have their place in the diet of all children. If not served between meals or at times when they destroy the appetite for other needed foods, there is no objection to them. They may be served in the form of cake not rich enough to be classed as pastry, cookies, sweet chocolate, simple candy, honey, dried or preserved fruits, maple sugar, and loaf sugar. In general, fruits, fresh, baked, or stewed, or raw, and simple sweets are much better desserts for children than rich pastry which contains a large amount of fat.

LUNCHES SUGGESTED FOR SCHOOL CHILDREN.

1. Sandwiches with sliced tender meat for filling; baked apples, cookies, or a few lumps of sugar.
2. Slices of meat loaf or bean loaf; bread and butter sandwiches; stewed fruit; small frosted cake.
3. Crisp rolls, hollowed out and filled with chopped meat or fish, moistened and seasoned, or mixed with salad dressing; orange, apple, a mixture of sliced fruits, or berries; cake.
4. Lettuce or celery sandwiches; cup custard; jelly sandwiches.
5. Cottage cheese and chopped green pepper sandwiches, or a pot of cream cheese with bread and butter sandwiches; peanut sandwiches; fruit; cake.
6. Hard boil eggs; crisp baking powder biscuits; celery or radishes; brown sugar or maple sugar sandwiches.
7. Bottle of milk; thin corn bread and butter; dates; apple.
8. Raisin or nut bread with butter; cheese; orange; maple sugar.
9. Baked bean and lettuce sandwiches; apple sauce; sweet chocolate.

The school lunch container, the specialists point out, should permit ventilation, exclude flies, and should be of a material which permits thorough washing in boiling water. If glasses, paper cups, or spoons are provided, the child should be warned against letting other children use them. The child should be encouraged to wash his hands before each meal, and for this reason paper towels, paper napkins or clean cloths should be furnished. Food that does not require ventilation should be carefully wrapped in paraffin paper, and the soft or liquid foods should be packed either in jelly glasses, screw-top jars, or paper cups.

DIETETIC TREATMENT OF SPRUE.

Bailey K. Ashford, in the *American Journal of Tropical Diseases and Preventive Medicine* for January, 1916, refers to diet as the only available weapon one can turn against psoriasis, no specific treatment being known and drugs being of little value. Where a good supply of milk is procurable, the milk diet is the easiest, best tolerated, and most applicable treatment for most sprue patients. The milk used should be of low bacterial count, fresh, and preferably rich in fats and unboiled, though in the tropics the last two qualities are rarely to be expected. The milk should be generally taken cold and sipped through a straw, at least ten minutes being expended in consuming each ration. The patient begins taking eight ounces of milk, carefully measured, exactly every two hours, i. e., nine times a day, for four successive days. Thereafter the single ration is increased by one ounce for each succeeding course of four days until thirteen ounces is finally reached. With each ration is mixed before use one half a tube—three c. c.—of a commercial liquid culture of the Bulgarian strain of the lactic acid bacillus of known excellence. The first ration is taken on awakening in the morning, before leaving bed. A laxative dose of castor oil, given with pure lemon juice, should precede the beginning of the milk treatment and be repeated thereafter every four days. Where whole milk is not tolerated, skimmed milk may be used. At least two thirds of the patients may be induced to continue a milk diet, including, however, some with voracious appetites that are unappeased thereby and to whom is given in addition one banana with each increase of the dose of milk when the ten ounce dose is begun. Where milk causes severe diarrhea, the addition of ten grains of sodium bicarbonate, a Vichy pastille, or a tablespoonful of lime water to each dose may be sufficient to correct the intolerance. If not, plantain gruel, made by peeling and cutting into thin slices a green plantain, drying these thoroughly in the sun, powdering them in a mortar, and using the powder in the preparation of the gruel, may be added to the milk with excellent results.

When milk cannot be used, chopped meat may be given, though inferior in its results, in amounts of one half pound to two pounds a day. The daily amount, after being finely chopped with a knife, is seasoned with salt, divided into six equal portions, and placed in the icebox. Every three hours a portion is removed, seared just sufficiently to bring out the aroma, and served hot. Repugnance to the meat soon becoming great, it is well to substitute for one or two of the meat feedings, after a week, chicken, fish, or fruit, and in another week, to add fresh vegetables and salads. Where both milk and meat disagree, a fruit and vegetable diet sometimes gives good results. Of eighty-three cases treated by milk or some of its modifications, fifty were cured and twenty-one improved; five were unimproved and seven ended fatally. Of five cases treated by meat or vegetables alone, three were cured and two improved. Of ten patients who never consented to deprive themselves of carbohydrates, five were unimproved and five died.

Contemporary Notes.

Passing of a Distinguished French Alienist.—Professor Gilbert Ballet, who died on March 17th, was, according to the *British Medical Journal* for April 15th, one of the foremost specialists in mental disease in France. He was born at Ambazac (Haute Vienne) on March 29, 1853. He began the study of medicine at Limoges, but soon migrated to Paris, where he became *chef de clinique* under Charcot in 1883. He was appointed physician to the hospitals in 1884, becoming *agrégé* in 1886 and professor in 1907. For two years he lectured on the history of medicine, and in 1909 found his right place in the chair of mental diseases. He was president of the Congress of Alienists and Neurologists of France and French-speaking countries in 1901, and of the French Congress of Medicine. In 1912 he was elected a member of the Academy of Medicine, in the work of which he took a very active part. In 1914 he drew up a scheme of reform of the French lunacy law of 1838, and in 1915 he was reporter of a commission appointed to study the regulation of the sale of alcoholic liquors. Ballet was an ardent advocate of measures for the promotion of temperance. He contributed largely to medical literature. His most important works are lectures on psychoses and nervous affections, and a treatise on mental pathology.

The General Practitioner and Tuberculosis.—This rather ambitious title might merit a pretentious discussion, remarks the *Medical Summary* for February, 1916. It is only our desire, however, to call attention to the fact that the general practitioner should feel the important position he holds with reference to a disease that causes one out of seven of all deaths. All are agreed that the bulk of success that attends the treatment of tuberculosis lies in the early recognition of the disease and the instituting of the proper treatment before its ravages have become pronounced. The brunt therefore falls heaviest upon the family physician. Early diagnosis is plainly an all important desideratum. Symptoms revealed by auscultation and percussion are not so important as other measures and methods, for as soon as physical impairments are in evidence even the laity may be able in a fair degree to name the disease. We cannot afford to wait for its grosser manifestations. The early diagnosis depends upon a great many symptoms and details which should be carefully ferreted out and weighed according to their value. Among the symptoms which should enlist our serious concern are weakness and fatigue, lowered nutrition, decreased weight, pallor of the skin and mucous membranes, coldness of the extremities, and subnormal temperature with quickened pulse. Enlarged tracheobronchial glands in children are often precursors of tuberculous infection; the same is true of unhealthy tonsils and adenoids. Conversely, all glandular affections are not by any means always indications of tuberculosis. Koch's tuberculin is now quite generally recognized by the profession as being a valuable diagnostic agent when the presence of the disease cannot be substantiated by ordinary physical signs. Neither should its protective and immunizing power be over-

looked. It is the consensus that much good may be obtained from it provided that it is employed in the right manner.

It is the duty of the general practitioner to spare no means at his command to diagnose tuberculosis and to diagnose it early. His next duty is to put the patient in such a position as will be best calculated to restore him to normal. If we wait until our diagnosis is confirmed by the microscope or stethoscope, in the majority of cases we have waited too long for a hope of the disease becoming arrested.

The Medicolegal Value of the Early Manifestations of Paresis.—Dr. Alfred Gordon, of Philadelphia, contributes a signed editorial article to the *Virginia Medical Semi-Monthly* for March, in which he observes: When paretic dementia is in its period of full development the symptoms are so characteristic that there is no special difficulty in recognizing them. The same cannot be said of the earliest stage of the disease when the symptoms may be easily overlooked. When this happens, proper preventive measures are neglected, the patient is permitted and even encouraged to be at large, to travel, to teach, to transact business, and even to govern. It is only when grave and irreparable errors are committed that attention is drawn to the patient's condition and alarm sounded. The consequences may be deplorable.

By reason of gradually developing moral and affective perversions which announce the onset of the disease, the initial period of the disease is a real medicolegal period. It is then that misdemeanors are frequently misinterpreted and that the individuals are sent to prison. It is then that we have great difficulty in convincing the patient's family of the existence of the malady. The reason lies probably in the unconscious and progressive adaptation of the relatives to the equally unconscious and insidiously progressive deterioration of the mental faculties of the patient. As long as the latter automatically carries on his former habits and other acts concerning his usual occupation, he continues to live among his people. The lapses of memory, the digression in his conduct apart from his regular work, the changes of his character or sentiments are all attributed to fatigue or absentmindedness. Notwithstanding the fact that the previously economical man commences to dissipate, that the sober man abandons himself to excesses, frequents undesirable places, and associates with undesirable persons, and that the refined man commits grave infractions of rules of politeness and surprises his friends with marks of indecent manners, early paretics are not infrequently permitted to have liberty of action and to continue in their responsible positions such as banking, teaching, engineering, conducting a train or a ship, etc., until misconduct occurs which results sometimes in loss of life. The psychological automatism by virtue of which ordinary acts of life may be executed correctly for a long time is dangerously misleading in the early period of paresis. It is at this period that illegal acts and crimes are most frequently committed. Its recognition and proper interpretation is a matter of grave importance from a medicolegal point of view.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 13, 1916.

AMERICAN SPAS.

Now that the mineral springs of Europe are practically closed to American invalids, there has been a great quickening of interest in American spas. In this issue of the NEW YORK MEDICAL JOURNAL we present five papers on various aspects of balneology. Dr. Simon Baruch discusses the Nauheim carbonic acid baths; Dr. W. T. Lungenhausen, Mineral Bath Therapeutics at Mt. Clemens; Dr. A. Sherman Downs, The Value of the Springs at Saratoga; Dr. W. H. Deaderick, The Oertel System of Graduated Exercises at Hot Springs, Arkansas, and Dr. Mark C. Myers, The Paso Robles Hot Springs in California. We have grouped these contributions in this issue so as to impress our readers with the importance of a careful study of American health resorts. Never before has the American physician been thrown upon the resources of his own country as at the present. The average physician is much more familiar with Carlsbad, Nauheim, and Aix la Chapelle than he is with American mineral springs.

We can duplicate in America the therapeutic qualities of any of the mineral springs of Europe, but in only a few of our health resorts has there been that general development of attractive features, that provision for the comfort and pleasure

of the visitors, which has been so important a factor in attracting patients to the European spas, and contributing to recuperation or cure. When the natural advantages of our American mineral springs have been properly developed, provided with suitable entertainments, and have received adequate medical supervision, they can be made just as popular and as helpful as the best of the European spas.

This particular group of communications is but a beginning in this direction, for with the aid of those of our contributors who are interested in balneology we propose to awaken the interest of our readers and to demonstrate the necessity of providing suitable surroundings and adequate medical supervision for the patients.

This undertaking is in line with our recent improvements in the JOURNAL concerning Modern Treatment and Preventive Medicine and Dietetics and Alimentation, and is an earnest that our efforts on behalf of our readers are unceasing.

THE PRACTICE OF DENTISTRY IN THE
STATE OF NEW YORK.

During the last session of the Assembly the Public Health Law in relation to the practice of dentistry was amended in several important particulars. Readers of the NEW YORK MEDICAL JOURNAL will note with interest the letter of the Commissioner of Education published in this issue, which expresses our own judgment also on the advance made through the amendments adopted February 2nd.

The most important change is the extension of the dental requirements from three years to four years, and a course of at least three years in a medical school or graduation in course from a registered medical school required from candidates before they enter the dental school. In the case of the graduate in medicine a course of special study of dentistry for two years in a registered dental school is demanded.

This is a further step toward the time when the practice of dentistry shall properly be regarded as a special branch of medicine comparable with ophthalmology, otology, laryngology, and other clearly defined medical and surgical specialties. It is not to be gainsaid that, in view of the close causative relation of oral disease to systemic infection, that the dental surgeon should be equipped with a general medical education equal to that required of other surgical specialists. With the advance of science, the responsibility of the dental surgeon becomes heavier and his training should be correspondingly thorough.

In addition to defining the practice of dentistry

the Assembly has provided for the appointment of a secretary of the State Board of Dental Examiners. It provides also that candidates for examination who already possess full rights to practise dentistry in other States may be admitted to examination in New York State just as graduates approved by licensing bodies of foreign countries are admitted to this privilege at present. It also permits the establishment for women students of a course of study in oral hygiene. These students must have been in attendance one year in a high school. After one year of study they may be admitted for examination to be registered and licensed as dental hygienists by the regents of the State University under such rules as the regents prescribe. These licensed and registered dental hygienists may be employed by licensed dentists, public institutions, or school authorities to act as assistants in removing deposits, accretions, and stains from the exposed surfaces of the teeth, but they shall not perform any other operations on the teeth or tissues of the mouth. This is a desirable step, as it implies proper equipment of assistants in dental hygiene, and provides an opportunity for the employment of women as well as men assistants in the interim between graduation and one year thereafter when licenses may be granted. This act also raises serious obstacles to the practice of dentistry by persons practising without dental license in requiring re-registration between June and September each year of every dentist in the State, and imposing fine or imprisonment or both upon persons practising dentistry who are not licensed and registered.

1616—CERVANTES—1916.

When a prospective medical student, Richard (afterward Sir Richard) Blackmore, consulted Sydenham as to what books he should read, he was answered by that great man, "Read *Don Quixote*. It is a very good book; I read it still." Sydenham may have recommended this great book partly because of its fine portrayal of human nature in all its littleness and greatness, but also because of the sensible and not inconsiderable knowledge of the body contained in its pages, and because of the gentle but pointed hints dropped for the enlightenment of the physician himself.

There are few physicians who would today recommend this book to medical students; and the more pity, for, while books of chemistry and physics, of anatomy and physiology, should stand on the first shelf of the student's library, he might, with the utmost advantage, place *Don Quixote* beside them, and sandwich between the lessons of their pages the lines of Cervantes's immortal work. Certainly no

physician ever suffers from too much general culture, and nowadays even the beginning student of medicine is sufficiently mature to appreciate the heights and depths, the humor and pathos of human experience sounded in *Don Quixote*.

It is not likely that Sydenham recommended the book as a work on psychiatry, though it is, in its way, one of the best of any time. As a sermon on both bodily and mental health it is unique. Some of our greatest health teachers have been nonprofessional, deep thinking men of letters, and among these Cervantes does not rank least.

The father of Cervantes was a physician, and doubtless from him and his books the novelist absorbed the best in the medical lore of the time. We may guess that the father, having such a son, was no inferior thinker, and he may have dropped many valuable hints on the subject. It was, however, Cervantes's own good sense cropping out, when he says, through one of his characters, "simple medicines are more approved than compound, for in simples one cannot err, while in mixtures, yes, by tampering with the ratio of the ingredients." How often the substances which make up the twentieth century shotgun prescription offset each other in their effects.

The remarks of *Don Quixote* over the loss of his teeth at the hands of the shepherds sound strangely modern: "I had rather they had torn off an arm, provided it were not my sword arm; for thou must know, Sancho, that a mouth without teeth is like a mill without a stone, and that a diamond is not so precious as a tooth." Though possessing a goodly set of these diamonds, the gluttonous Sancho is reminded that he should "eat little at dinner and less at supper, for the health of the whole body is tempered in the laboratory of the stomach."

The patent medicine man prospered in Cervantes's time, for Sancho, on hearing his master dilate on the magical qualities of a certain "balsam" of which he has the formula, exclaimed: "I renounce from henceforward the government of the promised island, and only desire, in payment of my many and good services, that your worship will give me the receipt for this extraordinary liquor; for I dare say it will anywhere fetch more than two reals an ounce; and I want no more to pass this life with credit and comfort. But I should be glad to know whether the making of it will cost much." "For less than three reals thou mayest make nine pints," answered *Don Quixote*.

The doctor, Pedro Recio de Agüero, is introduced by Cervantes with the gentlest of humor. He was the typical physician of the time—meaning well, but applying without discrimination the rules of his "master, Hippocrates, the north star and shining light of medicine." After being seriously restricted

in his diet by this court physician, Sancho swears he will cudgel Pedro and all other ignorant physicians out of his kingdom, but "the learned physicians, the prudent and wise, I'll put on my head and honor like persons divine."

Cervantes died three hundred years ago, but *Don Quixote* is today, as in the time of Sydenham, for beginning—and even more for long practising physicians—a "very good book."

MORE TROUBLE FOR THE HOUSE FLY.

As if the present indictments against the house fly were not sufficient to warrant and demand his extinction, another sanitary crime has been laid at his door. T. O. Shircore, in Mombasa, British East Africa, has found that the fly is a carrier of the eggs of various intestinal parasites and that the danger from this source of infection is seriously to be reckoned with.

Examination of 100 house flies from a native ward showed that ten carried in the intestinal tract the eggs of *Trichocephalus dispar*, *Tenia saginata*, or of *Ancylostomum*. One hundred flies taken from the police latrines showed eleven ova carriers, in this case the three already mentioned and *Schistosomum mansoni* as well. Fifty flies from the native hospital showed six infected with ova of *Trichocephalus dispar*, *Ancylostomum*, and *Ascaris lumbricoides*. Twenty-five flies from the local meat market showed two infected with *Trichocephalus dispar* and *Ancylostomum*.

The most frequent ova were the last two. That ascaris infection was not more frequent was laid to the large size of the eggs, which are not so readily swallowed by the fly. It was found that the trichocephalus ova in flies withstood putrefactive changes for two months. Shircore very logically suggests the examination of the intestinal tracts of house flies as a practical method of determining the ratio of helminth infection in a district where direct examination of the feces is not possible.

ACUTE POLIOMYELITIS.

Acute poliomyelitis, otherwise and perhaps more generally known as infantile paralysis, misleading as that appellation is, has during the past ten years or so spread itself in epidemic form over the face of the entire globe. Naturally, with a disease which has become so frequent and which is so distressing in its manifestation and so serious in its after results, earnest efforts have been made to advance our knowledge concerning it. These efforts have met with a considerable amount of success and

the experimental investigations of Flexner and his coworkers at the Rockefeller Institute have thrown much light upon some hitherto obscure features of the malady.

With regard to the transmission of poliomyelitis nothing is definitely known, although flies and the dust of rooms have been under suspicion as conveyers of the disease. The evidence as to such means of dissemination, however, is inconclusive, and experimental evidence appears to be strongly against the communication of the disease to man by flies.

Dr. Frederick Batten, of London, delivered a Lumleian lecture on acute poliomyelitis before the Royal College of Physicians of London on March 30, April 4 and 6, 1916, which was published in the *Lancet* for April 15th. Among other points in connection with the clinical features of the disease to which he drew attention was that these may be most varied according to the part or parts of the nervous system affected. Wickman's grouping on an anatomical basis is most helpful to the clinical description of the disease. The groups are as follows: 1. The spinal form. 2. The bulbar, pontine, and midbrain form. 3. The cerebral form. 4. The cerebellar form. 5. The neuritic form. 6. The meningitic form. 7. The abortive form.

Of these forms the spinal is the most frequent manifestation of the disease and the meningitic perhaps the most interesting and the most difficult to diagnose correctly, on account of its similarity in certain respects to cerebrospinal meningitis.

Another interesting point in the occurrence of poliomyelitis is that herpes zoster occasionally is associated with it. Of course herpes not infrequently occurs not only in association with a localized paralysis in the same individual, but also in epidemic form at the same time of the year. According to Batten, in childhood the simultaneous occurrence of herpes and poliomyelitis is rare. Nearly all the recorded cases of paralysis associated with herpes are in adults and in many cases in elderly people, and it seems certain that many of these cannot be attributed to the virus of poliomyelitis.

The treatment of this disease has not been attended with startlingly successful results. The serum treatment is valuable in suitable cases, but there are many difficulties in the way of carrying out this form of treatment as it must be conducted in order to offer hopes of success. Rest is an important factor of treatment, and the best methods of obtaining physiological rest were considered by Batten, who also laid stress upon the importance of placing the paralyzed muscles into the "zero position," and, while keeping the paralyzed muscles in a normal zero position, the need was dwelt upon for

reeducating other muscles, which may have been more or less affected, to resume their normal function. On the whole, postural and reeducational lines of treatment have been carried out in all acute cases with a very large measure of success, so great, indeed, that very few deformities have resulted.

Rest at an early stage of the disease is the indicated treatment of poliomyelitis; a large proportion of deformities will thereby be prevented. Splints of a suitable nature combined with reeducation of the paralyzed muscles will often go far toward overcoming the condition and thus restore to the muscles their normal functions.

DUX FEMINA FACTI.

The publisher and managing editor of the *Texas Medical Journal*—the well known Red Back—is a clever woman, Mrs. F. E. Daniel. A sisterly instinct impelled her to fill the April issue of her admirable publication with original articles by women physicians, and the showing is creditable and interesting. Dr. Ray Karchmer Daily writes on Vincent's Angina, Dr. Mary Cleveland Harper on Difficulties in Breast Feeding, Ethel Lyon Heard on Clean Milk, Dr. Violet H. Keiller on Renal Tuberculosis, Dr. Minnie L. Maffett on Abnormal Delinquency, and Dr. Martha A. Wood on the Blood Smear in Diagnosis.

THE TREATMENT OF HEMORRHOIDS BY INJECTION.

Arthur S. Morley, of London, communicates to the *Lancet* for April 22d his nonsurgical method of treating hemorrhoids. He always uses the speculum for diagnosis. As he says, there are numerous cases of hemorrhoids in which bleeding, pruritus, or other troublesome symptoms exist, but in which the piles rarely or never prolapse and cannot be made to do so. Hemorrhoids cannot be felt even by the most highly trained finger. There is only one way to diagnose them, and that is by seeing them. If they are large and prolapse readily this is easy; but in the majority of cases the only way of seeing them is to pass a speculum. Nearly every patient with a rectal lesion diagnoses it himself as "piles," but in a large proportion of cases that diagnosis is incorrect or incomplete. Since some operators inject only piles that can be protruded either naturally or after an enema, and condemn all other cases to a continual use of local applications, enemata, attention to diet, and regulation of the bowels, etc., they deprive by far the larger class of patients of the benefits of the injection method, and reserve it for the worst cases, in which its success is least certain. The use of an enema is a very awkward complication in private practice, and practically prevents the use of the method at the surgeon's consulting room, while it would be a very troublesome addition to the treatment at an outpatient department, where numerous cases have to be dealt with in a limited time. Mr. Morley never needs an assistant, though he

always uses a speculum; were he to use an enema, however, the assistance of a nurse, both at hospital and in private, would seem to be essential. He has had no trouble from hemorrhage, which never exceeds a few drops that can be readily soaked up with a single swab. He finds it easy to inject the fluid into the centre of each pile, or into its base, and can easily reach high lying piles by means of the speculum—piles which, though large, are unlikely to come down outside the anus.

Obituary.

SAMUEL M. BRICKNER, A. M., M. D.,
of New York.

A shock was caused to a large number of his friends and professional acquaintances by the announcement of the death at Saranac Lake, on May 6th, of Doctor Brickner. He was born in Rochester, N. Y., on January 11, 1867, and was consequently in his forty-ninth year. He graduated in arts at the University of Rochester, in 1888, and from the College of Physicians and Surgeons of Columbia University, in 1891, where he won the Harsen prize. He served subsequently on the house staffs of the Sloane Maternity Hospital and of Mount Sinai Hospital, remaining at the latter institution until 1913, when his health compelled his resignation of the position of associate gynecologist. Doctor Brickner had previously done postgraduate work in Berlin, Leipsic, and Vienna.

For many years Doctor Brickner was an assistant editor of the *NEW YORK MEDICAL JOURNAL*, his decided literary gifts making him a most acceptable colleague and helper, and his personal qualities endearing him to the staff. He resigned his position when he went to Saranac Lake, where he established and edited until his untimely death *Medical Pickwick*, which embodied an original idea, that of preparing a literary and humorous journal especially for physicians; he made a great success of this venture and his fellow physicians poured in the contributions. He is survived by a widow, *née* Josephine Hays, two sons, and three brothers.

News Items.

Missouri State Medical Association.—The fifty-ninth annual meeting of this association was held in Excelsior Springs, May 8th, 9th and 10th, under the presidency of Dr. C. R. Woodson, of St. Joseph.

The American Medical Association meets in Detroit, about twenty miles from Mount Clemens, Mich., during the week of June 12th. With a view to making these popular springs better known to American physicians, Doctor Shotwell, of the Colonial, invites the members of the association to visit these springs and extends to them the courtesy of the baths during their stay.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, May 15th, Philadelphia Clinical Association, Medical Society of Woman's Hospital, Blockley Medical Society, Society of Normal and Pathological Physiology; Tuesday, May 16th, West Branch, County Medical Society; Thursday, May 18th, Northeast and Southeast Branches, County Medical Society; Friday, May 19th, Jefferson Hospital Medical Society.

American Association of Clinical Laboratories.—A meeting will be held in Detroit on Monday, June 12th, at 10 a. m., for the purpose of completing the organization of this association, which has for its object the standardization of commercial clinical laboratories throughout the country.

American Association for the Study of the Feeble-minded.—The fortieth annual meeting of this association will be held in Indianapolis, Ind., May 11th, 12th, 15th, 16th, and 17th, in association with the sessions of the Section in Feeble-mindedness and Insanity of the National Conference of Charities and Correction. The meeting place will be the Claypool Hotel. Dr. Charles Bernstein, of Rome, N. Y., is president and Dr. A. C. Rogers, of Faribault, Minn., is secretary.

American Association of Anesthetists.—The fourth annual meeting of this association will be held in Detroit, Mich., June 12th, in the roof garden of the Hotel Tuller. The scientific session will be opened by the address of the president, Dr. Willis D. Gatch, of Indianapolis, his subject being Instruction of Medical Students and Hospital Interns in Anesthesia. Fourteen papers on topics relating to anesthesia will be read and discussed at the morning and afternoon sessions, and in the evening a banquet will be held at the hotel. Dr. James T. Gwathmey, 40 East Forty-first Street, New York, secretary and treasurer of the association, will be glad to furnish programs and full information regarding the meeting.

Medical Association of the Greater City of New York.—A state meeting of this association will be held in Du Bois Hall, New York Academy of Medicine, Monday evening, May 15th, at 8:30 o'clock. The program will consist of a symposium on dental infections and their systemic manifestations, as follows: Röntgenographic Diagnosis, with lantern slide demonstration, by Dr. Sinclair Tousey; Pyorrhea alveolaris, by R. G. Hutchinson, D.D.S.; Vicious Circle in Oral Sepsis, with lantern slide demonstration, by Dr. Nathaniel Bowditch Potter; Bones and Joints, by Dr. Percy W. Roberts. The subject will be discussed by Dr. William H. Haskin, Henry Stuart Patterson, Esq., E. P. R. Ryan, D.D.S., and others.

May Brings Good Health to New York.—According to a bulletin issued by Health Commissioner Emerson, the mortality during the week ending May 6th was not only lower than that prevailing during the corresponding week of last year, but also lower than that of the previous week this year. The total number of deaths in the city last week was 1,580, a rate of 14.71 per 1,000 population. During the corresponding week of 1915 there were 1,609 deaths and a rate of 15.35.

The mortality of the following diseases was lower than during the week ending May 8, 1915: measles, scarlet fever, typhoid fever, cancer, influenza, lobar pneumonia, diseases of the nervous system, and violence. The mortality of the following diseases was higher: diphtheria and croup, whooping cough, diarrheal diseases, heart disease, bronchopneumonia, pulmonary tuberculosis, and Bright's disease.

The death rate for the first nineteen weeks of 1916 was 15.40 as compared with 15.64 for the corresponding period of last year.

Connecticut State Medical Society.—The 124th annual meeting of this society will be held in Bridgeport, May 17th and 18th, under the presidency of Dr. Max Mailhouse, of New Haven. The annual presidential address will be given on Thursday afternoon, the subject being Some Defects and Inconsistencies in Connecticut Statutes and Medicolegal Procedures. Interesting features of the program will be a paper on a Clinical Study of the Respiration, by Dr. David L. Edsall, professor of clinical medicine at Harvard University, and a motion picture demonstration of bone grafting, by Dr. Fred L. Albee, of New York. Dr. George W. Hawley, of Bridgeport, will also give a motion picture demonstration of methods of precision in the treatment of fractures. Altogether, thirteen papers are listed on the program, and the meeting gives promise of being unusually interesting. The local committee of arrangements is composed of Dr. Frank M. Tukey, Dr. R. A. Lockhart, and Dr. H. B. Lambert, and Dr. Marvin McR. Scarborough is secretary. The annual banquet will be held on Thursday evening at the Hotel Stratfield; delegates from other States are invited.

National Committee for Mental Hygiene Incorporated.—A certificate of incorporation was granted to this committee on May 5th. The application was made by Dr. August Hoch, director of the Psychiatric Institute on Ward's Island, who is chairman of the executive committee. Among the directors are Mrs. William K. Vanderbilt, Otto T. Bannard, Dr. Edwin A. Alderman, president of the University of Virginia; Dr. David Starr Jordan, chancellor emeritus of the Leland Stanford, Jr., University, California; Dr. Rupert Blue, Surgeon General of the United States Public Health Service.

New Appointments at Harvard Medical School.—At a recent meeting of the president and fellows of Harvard University announcement was made of the following appointments to the staff of the medical school: Ernest E. Tyzzer, to the George Fabyan professorship of comparative pathology; Charles J. White, to the Edward Wigglesworth professorship of dermatology, and Arthur D. Hill, to a professorship of law. Percy G. Stiles was made assistant professor of physiology, and Dr. James H. Wright, assistant professor of pathology. Channing Frothingham, Jr., and William H. Smith are new instructors in medicine, James S. Stone in surgery, and Alexander S. Begg in anatomy. The Sheldon fellowship in medicine for next year has been awarded to William J. Kerr.

Mineral Waters in the United States.—According to the report of the United States Geological Survey on the mineral resources of the United States, during the year 1914 mineral waters to the value of \$4,892,000 were produced by 829 commercial springs, our importation of mineral waters for that year amounting to only \$857,700. These figures do not represent the total consumption, but merely the waters which were shipped from the springs, the waters consumed at the springs themselves not being included. There was also a decline of over \$600,000 in the value of the table waters sold in 1914, compared with 1913. The statistics for the year 1915 will no doubt show a considerable increase in the sale of domestic mineral waters, as the supply of imported waters has been cut off by the war. It is impossible to obtain accurate statistics regarding the attendance of patients at the mineral springs in the United States, but private reports indicate that the season of 1915 was the most successful in the history of most of them. It is expected that the season of 1916 will be even more successful, as physicians have been paying more attention to American balneology and are therefore in a better position to indicate the springs which should be visited by their patients.

Congress of American Physicians and Surgeons.—The past week was notable because of the meeting of the Congress of American Physicians and Surgeons in Washington, D. C., May 9th and 10th. Dr. William S. Thayer, of Baltimore, was the presiding officer. Eight hundred and twenty physicians from all parts of the country were registered at noon on Wednesday. The main session of the congress was devoted to a consideration of Syphilis, its diagnosis, treatment and social aspects, and Immunization, its underlying problems, and practical application, including vaccine and serum therapy. The congress is composed of fourteen special organizations. In addition to the many papers of value presented by each society on special topics, the general practitioner would take especial interest in the symposium on acidosis and the dietetic problems discussed by the Association of American Physicians, the renewed discussion of the clean milk problem in the Pediatric Society, the symposium of the Orthopedic Association on viscerotopias as a causative factor of orthopedic and other lesions, the extensive and inclusive program of the Association of Pathologists and Bacteriologists. Coincident with the congress were meetings of the American Association of Immunologists, American Gastroenterological Association, National Association for the Study and Prevention of Tuberculosis, and, in Baltimore, of the American Association for Promoting Hygiene and Public Baths. The programs of these four organizations contained many papers relating to preventive medicine and the social aspects of medicine. The list of men in attendance at the Congress comprised most prominent and progressive members of the profession. The secretary of the congress is Dr. Walter R. Steiner, 4 Trinity Street, Hartford, Conn., from whom information regarding any paper may be obtained.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE MECHANICAL TREATMENT OF HERNIA.

By GWILYM G. DAVIS, M. D., M. R. C. S.,
Philadelphia.

Hernia is considered by some to have in most cases a congenital deficiency or peculiarity as its foundation. Whether this is true or not of the cases that make their appearance in youth and adult age, is somewhat of an academic question. It is a fact, however, that hernias of both umbilical and inguinal types are quite common at birth and soon after. It is rare that early operative procedures are required. There is one type of umbilical hernia in the newborn in which the intestines protrude into the cord and so stretch the structures as to threaten rupture with subsequent infection and death. In these, early operative closure is imperative. In others conservative measures may at times be advised. In the treatment of deformities of the newborn, whether of hernia, club foot, or other, we should not forget the motto, "safety first." We should be careful not to handicap the infant in its first struggle for existence by therapeutic measures calculated to remedy deformities. If the infant is destined to succumb in a short time, I fail to see the necessity of special treatment to remove deformities. If, however, the child is fairly robust, mild methods of treatment may be of service. In infants there is little doubt that sometimes the hernial opening has been associated with a slowness of growth which remedies itself as the child grows older. Certain it is that many of these cases tend to spontaneous cure, and simple treatment leads to success. In the umbilical variety some device should be used which will prevent the hernia from protruding. Personally, I have usually pressed the intestine back with one finger, then folded the skin over, and so retained it by a strip of adhesive plaster. This goes about one half around the body and is held in place by the binder. Another method is to fasten a large wooden or rubber or metal button over the hernial opening by an adhesive strap. In cases in which the adhesive plaster causes too much irritation, it may be replaced by a strap of webbing which encircles the body and is fastened by a buckle. The instrument makers also make a band of webbing with a pad for the hernial opening, which is fairly satisfactory. It is not desirable, however, to have the pad sharp and pointed, but more flat and broad, so that it does not enter the hernial opening, but rather rests on it.

Hernias involving the inguinal region are mostly of the oblique type. Not infrequently, the vaginal process of the peritoneum not being closed, the peritoneal fluid fills the hernial sac instead of intestine or omentum. Care should be taken not to mistake an encysted hydrocele of the cord or an undescended testicle for a hernia. In treating these cases, the English used to be fond of improvising a sort of

truss by means of a skein of yarn. It was passed double around the waist, then one end was passed through the loop of the other end, carried down between the legs and fastened at the back. In this country, however, we have usually preferred the use of a truss. Trusses can be obtained from the instrument makers of a size quite suitable for very young children and, especially in the hard rubber form, have been found to be fairly satisfactory. The use of retentive apparatus may be persisted in as long as is thought advisable, and then if a cure does not result in a reasonable time, an operation may be performed. There is no especial advantage in persisting for years in the wearing of trusses in young children. A reasonable chance should be offered for the affection to improve, and if it persists no hesitancy should be shown in resorting to operative procedures. Operation is almost always successful and is not dangerous. Even if primary healing is sometimes interfered with by soiling with the urine in the inguinal cases, it may delay the healing, but will not cause failure.

There is practically no difference in the trusses adapted to older children and adults. The object aimed at is to secure a truss which is both comfortable and effective. The trouble which so often is encountered in applying trusses is usually due to the lack of fit. In other words the truss is not suited to the case. In the first place, the spring should be of the proper length, the proper strength, and the proper shape. These can be ascertained by trial. If it is too long the pad will be carried too near the median line; if too short the pad will be too far out. If the spring is too weak the hernia will not be retained; if too strong it will cause discomfort and undue atrophy of the parts. The spring may not be shaped correctly. It ought to follow closely the contour of the surface. If it does not it should be bent to the proper shape. If the truss is leather covered, it can usually be bent or altered with the hands. In doing so, however, the pressure should be gradual and distributed over a considerable length of the spring. If made too suddenly or concentrated too much on a single point, the spring is apt to be broken. Hard rubber covered trusses are first to be oiled or greased on their surface and then passed through or held over a flame until warm, not hot; they are then to be bent and held in the desired shape until cool. They then retain the form given to them.

The pad is an important part of the truss. It is oval or egg shape, and should be fastened to the truss by some adjustable means. Trusses are now made in which the pads can be shifted in toward the median line or outward. They can also be shifted upward or downward. They should cover the inguinal canal from the middle of Poupart's ligament to the spine of the pubis. They should lie parallel to Poupart's ligament and just above it and

make even pressure throughout their length. They should not dig inward so as to make pressure only at the tip. Large pads are preferable to small ones. Hard rubber pads are the best, as they are usually the most efficient and the most comfortable. Sometimes soft pads are desired; a substance called *facticis*, resembling a rubber sponge, being the best. Other pads are made of leather, rubber, etc., and stuffed or filled with hair, water, etc., but it is rare that they are to be preferred to those mentioned. Some pads are prolonged downward at their inner end like the letter L. As a rule these are to be avoided unless exceptionally well fitted, because the pointed tip is liable to rest on the pubic bone and prevent the upper portion of the pad from making proper pressure on the inguinal canal. It is wrong to attempt to control the exit of a hernia by making pressure solely over the external ring; the pressure should be on the whole canal. Perineal straps may rarely be required to keep the truss from riding up. As a rule this tendency to rise is best eliminated by making the spring and pad fit better and not by using a perineal strap. The latter is both uncomfortable and unsanitary. Trusses are made in both the single and double form. The single form is usually thought to be more efficient when the spring crosses the line median to the pad.

Hernias are quite often double, and even where there appears to be only one an examination will frequently reveal a weakness of the other side also. A single truss, however, frequently in mild cases, if well fitted, proves satisfactory. A double truss is usually preferable, as it seems to accomplish the object desired better than does a single one. The type most favored is that known as the Hood truss. In this the springs are joined together in front by a strip of metal, but at the back a strap is used. There are two pads, one for each side. The one for the hernial side is of such a pattern as is suitable for the case. The pad on the unaffected side is flat. In order that a truss may fit it is frequently necessary to change the length of the metal strip joining the two ends of the springs in front. Some of the trusses are also made with adjustable pads; these can be set up or down, inward or outward, and then fixed in place by a thumbscrew.

There are various patterns of trusses on the market, but the essentials are, first, a suitably shaped and sized pad; second, a spring of correct pressure in the proper direction; third, the presence of an adjusting mechanism which will permit the pad being placed and retained in the most efficient position. In many cases the fitting of a truss is comparatively easy. In such cases the simpler the truss the better; hard rubber, however, is the best material. In other cases it is difficult properly to retain the hernia. When such is the case resort to the double form and have it adjustable to as great an extent as possible. There is practically no monopoly in trusses, and the hard rubber form originated by Seeley is in stock in practically all the surgical supply stores. All sorts of pads are used, but the orthodox forms in various sizes can usually be readily obtained and are perfectly efficient. The real trouble in truss fitting is that the fitter is apt to be unwilling or unable to get the proper combination

necessary for the individual case. The pads will be unsuitable or misplaced, or the spring ill fitting or inefficient. The parts subjected to pressure should be bathed with alcohol, to which some alum has been added. This will toughen the skin. Soft pads, preferably made of *facticis* or hair, or filled with water, are sometimes of service in sensitive cases, at least temporarily. When applying a truss, the patient should be on his back with his shoulders raised and the knees flexed. The contents of the sac should be replaced. Do not be guilty of applying the truss before this is done.

When it is impossible to replace the hernia, the next best thing is to have a pouch made suspended by a waist band. This will support the hernia and prevent its enlarging. The contents of the sac, the gut, and omentum, frequently contract adhesions to the sac walls and thus make reposition impossible. Although operations for radical cure are much more satisfactory now than formerly, still trusses of some form are extensively used, and the practising physician should have some idea of their mode of application.

1814 SPRUCE STREET.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Nineteenth Communication.

SALICYLIC ACID.

This is a drug whose known physiological action affords little help in determining its therapeutic utility. Many times has it been shown clinically that salicylic acid and its salts have been of great service in the treatment of that mysterious symptom complex designated by the vague term rheumatic fever. But at what point or in what manner the drug exhibits its potency in this illness, remains unknown. This incertitude is not due so much, perhaps, to lack of experimental observation as to profound perplexity concerning the true nature of the affliction. What is rheumatic fever, what is its essential nature, what are the provocative factors, where is the seat of pathological activity, of what quality is the somatic reaction? None of these questions have been answered satisfactorily, so how can the pharmacologist explain in what manner the drug induces its beneficial effect? To this maze of obscurity must be added the not to be forgotten fact that our laboratory findings are but tentative at best, since they must always be checked by the bedside findings of the internist.

The salicylates have a considerable effect on nerve tissues, though the true nature of this action remains obscure. There is a depression of both medulla and cord. The action on the medulla is shown in part by the secondary showing of respiration and by irritation of the vasoconstrictors and of the heat centre. There is seemingly also a partial blocking somewhere of the sensory fibres mediating pain; but of the nature, character, site, etc., of this hypothetical blocking practically nothing is known.

At first the heart is accelerated, but later becomes

weakened and slowed, especially when the dose is large. According to present findings this effect on the heart seems to be due chiefly to local action. Accompanying this heart response, there is a fairly coordinate rise and fall of blood pressure, varying according to the dose. Respiration responds similarly, increasing at first, then later diminishing. Sight is disordered from changes in the retinal cells; hearing is disturbed from alterations in the tympanum.

These reactions help little toward an understanding of the alleviating effect of this drug in rheumatism. Possibly this action takes place somewhere along the alimentary or excretory channels. The gastrointestinal tract is more or less irritated, probably by the same disorganizing process on superficial cells, at times approximating real necrosis, shown in the action of salicylic acid when applied to the skin. There is also an increased activity of the hepatic cells and circulation. On the eliminative side there is augmented decomposition of protein and of endogenous uric acid; increased activity of the renal epithelium, and hyperactivity of the sweat glands. Formerly these several effects gave greater plausibility to the now discarded uric acid theory of rheumatism than was actually warranted. What real relation these recognizable reactions of the salicylates may have to the alleviation in rheumatism is very uncertain. If rheumatism has its real origin in dietetic errors, then increased elimination ought to be beneficial, though simpler means than the salicylates might be employed more economically.

All of this discussion might easily arouse cynical moralizing concerning our present therapeutic knowledge; but such comment would have scant utility. We may acknowledge candidly that much indeed remains to be discovered in the domain of medicine—fortunately so; but light will most surely come as a result of daily constructive effort and patient investigation. The pathology of rheumatism and the pharmacology thereof, are pressing problems; and as such are standing challenges to scientific imagination.

The Toxaemias of Pregnancy.—Charles E. Ferguson (*Journal of the Indiana State Medical Association*, April) says that the urine of pregnant women should be examined for sugar and albumin every four weeks during the first six months, every three weeks during the last three months. In the event of the diminution of urine and the presence of albumin the total quantity passed in twenty-four hours should be measured and the total urea and albumin measured. The blood pressure should be taken from time to time, particularly in patients who show any evidence of toxemia. A sudden rise to 200 is a danger signal of approaching eclampsia. Every patient should be impressed with the significance of dimness of vision, spots before the eyes, and particularly with the importance of reporting severe pain in the epigastrium. A persistent headache will bring the patient to the doctor sooner than an epigastric one, though the latter is the more significant. In a case of toxemia the amount of urea and albumin found from day to day in a twenty-four hour specimen gives a fair index to the progress of the condition. The patient should be kept

quiet, all meats forbidden, and if possible the diet restricted to milk. Large quantities of water should be drunk, which can be made more grateful by the addition of a dram of cream of tartar to the pint. The bowels should be kept open by salines, the skin active by hot baths, and the body warm by sufficient clothing. Prompt improvement follows in a majority of cases. In severe cases nothing but water for a day or two should be given by mouth, and elimination aided by hot packs. If in spite of this the urea decreases or remains constant while the albumin increases and the headache or pain in the epigastrium persists, the prognosis is grave. In selecting proper cases for abortion or induced labor we are confronted by our ignorance of the etiology of the toxemia in question. It is wise to take the middle ground between the advocates of extreme conservatism and those of immediate delivery in every case; it is safe to defer interference until we have given conservatism a trial. Dogmatism has no place in the treatment; every case must be studied on its own merits.

Chronic Backache.—Herman W. Marshall (*Boston Medical and Surgical Journal*, April 27th) says that men, women, and children in all classes of society suffer from chronic backache, which results in crippling disability at times. He reviews several different types: 1. Static back strain. This was illustrated by a woman thirty-six years old who had a slight scoliosis, with a very pronounced anteroposterior lumbar curve of the spine; she complained of weakness and dull ache in the lower part of the back, a similar ache and heaviness between the shoulders, and painful symptoms in both calves. Lumbar symptoms had been intermittent for years, with no traumata or associated infections, and pains at times in gluteal regions and thighs; constipation marked; menstruation regular; no occupational element. An orthopedist might place the case in the group of static or postural back strains. An internist might have emphasized the pendulous abdomen. Another internist might stimulate the digestive organs, kidneys, and nervous system so that by obtaining greater activity a healthy balance might be secured through orthopedic appliances. A serologist might direct attention mainly to the condition of the blood. Social workers would delve into personal habits, home, and work, to classify the trouble as occupational. Acceptance of any one view alone to the exclusion of the others is wrong and productive of delay and failure. 2. Low back strain associated with injury—a spinal-abdominal support gives relief. 3. Back deformity—a rapidly growing, slightly anemic, adolescent child, with relaxed muscles and delicate health, getting round shouldered. Tonic drugs, regulations of digestive functions and personal hygiene, combinations of rest, local support and gymnastic exercises for the back muscles are indicated until growth is attained. 4. Neurotic temperament—dull aching pains all over the back, but not extending to the legs. The case reported was that of a woman of neurotic temperament, troubled with constipation. A plaster jacket relieved the symptoms low in the back, but not in the shoulders and neck. The scapulae were operated on and

found moderately incurved, and at the end of eight years she still considered that the operation had been beneficial, as it had relieved her aching neck and shoulders. Back braces need to be worn constantly as she has a weak back that will probably continue to strain easily as long as she has an unstable neurotic temperament with frequent slight digestive and pelvic irregularities. 5. Postural shoulder strain, brought on by vascular defects due to poor personal hygiene and to general lack of healthy vitality for a long time—tonics and eliminants with shoulder strappings may be sufficient to relieve. The spinal deformity is an additional factor which helps to strain the muscles more than usual, yet entire responsibility for the symptoms should not be attributed to it. 6. Sacroiliac strain with permanent lateral and forward list of the body—tight strappings over the sacroiliac region, and a belt to give support. Tonics and eliminants as needed. 7. Fractures of the vertebrae. Compression fractures of the bodies of vertebrae often depend wholly upon x rays for their positive diagnosis. They should be suspected whenever there have been severe injuries followed by long, persistent, severe symptoms. 8. Hypertrophic arthritis of the spine occurs typically in middle age or later, and represents usually results of the wear and tear of life, including previous infections and continual minor mechanical strains and stresses. It is started very frequently by trauma, and gouty deposits often are associated. Sometimes no pain is complained of, in other cases the pain is considerable. 9. Infectious arthritis of the spine. The treatments for chronic backache consist of mechanical supports for weakened conditions; immobilization for irritated states; corrective orthopedic appliances for deformities; surgical measures; physical therapeutic treatments, hydrotherapy, massage, baking, electrotherapy for systemic hygienic effects and local stimulations, gymnastics and manipulations for correction of deformities; drugs to alter and regulate physiological functions of the organism as a whole; changes of diet; rest, fresh air, and sunshine; and special measures of various sorts for treatment of internal organs when the latter contribute to the back symptoms.

Treatment of Puerperal Eclampsia.—W. M. Brown, in the *American Journal of Obstetrics* for February, 1916, states that while there are certain favorable cases of eclampsia in which prompt evacuation of the uterus is the most rational form of treatment, there are many in which operative delivery must be postponed until the patient has been placed in the best possible condition to withstand the operation. Where the mother is in such a condition that delivery is imperative, she will, in fact, often not survive it, no matter how it is effected. The first aim should be to procure a thorough washing of the blood by catharsis with magnesium sulphate, colon irrigations, hot packs, and bleeding to the amount of 400 to 500 c. c. At the same time, a proper circulatory volume should be maintained with water given by mouth or rectum, or by intravenous administration of a saline and alkaline infusion, preferably Fischer's solution of sodium chloride and sodium carbonate, to the amount of about 1,000 c. c. The remainder of the treatment

must be adapted to the individual case. In unusually severe cases or where emptying of the uterus seems advisable, Brown prepares for the operation while the bloodstream is "going through the laundry." Whether delivery shall be effected rapidly or labor induced by the introduction of a bag is determined by the nature of the case. Warning is given against the use of chloroform. Morphine is also considered prejudicial. Where the patient is restless or maniacal, chloral hydrate and bromides, with moderate mechanical restraint, are used, and the eliminative treatment depended upon to remove the cause of the restlessness. Treatment based on these principles in a series of twenty-one cases restricted the maternal mortality to 9.5 per cent. and the fetal mortality to 28.5 per cent. or, omitting children weighing less than two kgm., born before the eighth month, or known to be dead at the time of operation, to 9.5 per cent. Spontaneous delivery occurred in ten cases.

Alcohol in Relation to Mental Disease.—A. J. Rosanoff (*Boston Medical and Surgical Journal*, April 27th) says that even moderate drinking, especially when it becomes a daily habit, though not likely to make any one insane, is sure to reduce physical and mental efficiency, thus killing the best that is in one as long as it is indulged in. Many persons who have an inborn predisposition to mental disease, but who might have avoided an actual breakdown if they had abstained from alcohol, have been brought to hospitals for the insane by habits of intemperance. Much larger numbers have been brought by the same cause who, we know for certain, would never have developed insanity were it not for intemperance.

Toxicology of Salvarsan.—William Henry Willcox and John Webster (*British Med. Jour.*, April 1, 1916) present a fairly thorough brief discussion of the chemistry of the product and the best methods of preparing solutions for administration. They also include neosalvarsan and call attention to the greater instability of the latter and the need of avoiding heat above 200° C. during its preparation. In the great majority of cases only slight symptoms follow, and comprise nausea, vomiting, slight rise in temperature, slight headache, and mild diarrhoea. Shock is rare, and uncomplicated high fever is sometimes observed. The more severe symptoms are of two types. Those of arsenical poisoning include rigor, headache, pains in the extremities, nausea, vomiting, furred tongue, diarrhoea, injected conjunctivæ, erythema, and slight jaundice. There may be some delirium followed by stupor, and albumin and casts are found in the urine. The second type of severe symptoms are those of profound toxemia. They appear within three days of the injection and comprise collapse, mental disturbances, stupor, muscular twitching, pains in the abdomen and back, epileptiform convulsions, coma, and death. The prognosis is usually bad. Albumin and casts appear in a scanty urine. The liver, heart, and kidneys show degenerative changes, and the symptoms are due to a profound autointoxication similar to uremia. Arsenic may be found in the blood for several hours after an intravenous injection of salvarsan and its

excretion is slow by way of the urine and intestinal tract. Traces can be found in the urine as much as three weeks after a single intravenous dose. Arsenic is not found post mortem in the brain and central nervous system, but is present in most of the other structures of the body. The milk of nursing mothers does not contain arsenic after the administration of salvarsan. In the treatment of early intoxication the following mixture should be given in addition to the use of stimulants, the employment of venesection, and the repeated rectal administration of three drams of sodium bicarbonate in normal saline:

R	Sodii citratis,	5i;
	Sodii bicarbonatis,	5i;
	Potassii citratis, }	āā 3ss;
	Caffeinae citratis,	gr. iij;
	Syrupi aurantii,	5i;
	Aque, ad	5i.

M.

Salvarsan is contraindicated in impaired renal function, advanced heart disease with failing compensation, serious bronchitis, and in most instances of advanced degenerative conditions in the central nervous system. Successive doses should not be given at intervals of less than four weeks, thus avoiding the dangers of cumulation owing to slow excretion.

Irritable Heart and Hyperthyroidism.—Florence A. Stoney (*Lancet*, April 8, 1916) contends that this condition of irritable heart, now so prevalent among the troops, is almost invariably associated with hyperthyroidism. She regards x rays as the most satisfactory method of treatment. It can be accurately controlled in the extent of thyroid inhibition to suit the needs of the individual case; it is safe, easy of application, and invariably effective. The thyroid gland should be exposed to a full Sabouraud dose filtered through one or two mm. of aluminum each week until the desired degree of destruction and reduction in activity has been attained. Along with this treatment there should be the usual enforced rest and building up process. The usual period required for restoration to health is about two months.

The Truth about Smallpox and Vaccination.—George W. Gay (*Boston Med. and Surg. Jour.*, April 6th) reviews briefly the known history of smallpox, which caused a tenth of the deaths in ordinary times, one half in epidemics, and destroyed, maimed, or disfigured one fourth of mankind, previous to the discovery of vaccination. The evidence that vaccination practically prevents smallpox is overwhelming. Countries that are most efficiently vaccinated suffer least from the scourge. For years Germany has led the world in this respect; she has been free from the disease for more than forty years, while the adjacent nations are never free. Systematic vaccination by the surgeons of the United States army in six provinces of the Philippines, having an approximate population of one million, reduced the annual smallpox mortality from 6,000 to nothing. During the succeeding five years there was not a death from this disease in this region of a vaccinated person. In 1885, smallpox broke out in Montreal; the upper classes protected themselves by vaccination and escaped; the ignorant classes refused, and 3,000 perished. Since vaccination was

made a condition for entrance to the public schools of Boston, in 1874, the average death rate has been less than two, in many years none, though previously it had been about 100. Other examples are given. It has been asserted that hygiene, isolation, and quarantine would control smallpox without vaccination, but experience proves that the disease is not controllable in this way. Without vaccination it is as prevalent among the hygienic as among those who are not; in the Niagara Falls epidemic it was even more prevalent among the upper classes. Isolation and quarantine are practicable only during the actual presence of the disease. The experience of more than a century justifies confidence in the operation, despite the hue and cry of a few woefully mistaken agitators who oppose it. If any event in human affairs has been demonstrated beyond a reasonable doubt, it is the great benefit to be derived from timely, efficient, skillful vaccination against smallpox.

Diarsenol versus Salvarsan.—James A. Gardner (*Journal A. M. A.*, April 22, 1916) has given more than 300 doses of a Canadian substitute for salvarsan—diarsenol—and finds it to compare favorably in all respects with the original product. It seems to have a slightly greater tendency to rapid oxidation when dissolved, but this does not affect its toxicity. The technic of its administration and the doses are the same as with salvarsan.

Emetine in Dysenteric Arthritis.—The occurrence of arthritis in connection with amebic dysentery is not uncommon, but there is no complete proof that the condition is of amebic origin. T. Gillman Moorhead (*British Med. Jour.*, April 1, 1916) has had experience of several cases of this condition and in each case the arthritis has yielded promptly to the systemic administration of emetine.

Treatment of Lupus of the Larynx.—James Joseph King (*International Journal of Surgery*, April, 1916) gives the treatment as either medical or surgical. Medical treatment consists of thirty grains of sodium iodide given internally daily. Later, inhalations of ozone are given. Thus free iodine, which has a strong bactericidal effect, is liberated. Parallel rays of the Finsen lamp, the high frequency current, and tuberculin have also been used. Surgical treatment consists in the removal of the nodules under cocaine anesthesia, and the application of the galvanocautery.

Treatment of Infections of the Ear, Nose, and Throat.—R. E. Moss (*Texas State Journal of Medicine*, April, 1916) advises the use of autogenous vaccines. He considers a rise of temperature of one or two degrees a reaction and this rise should be followed in from twelve to twenty-four hours by a fall in temperature and an increase in appetite. The vaccine should be repeated at intervals of from two to eight days, depending upon the reaction. In chronic cases the doses are larger than in the acute. Average initial doses of the most common bacteria are: *Bacillus septicus*, fifty million; *Micrococcus catarrhalis*, two million; *M. paratetragenus*, twenty-five million; *pneumococcus*, twenty-five million; *influenza bacillus*, fifty million; *bacillus of Friedlander*, fifty million.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT.

November 8, 1915.

Difficulties of Diagnosis in Cancer of the Bile Passages, by Hans Kehr.—Very early cancer of the bile passages may develop without the production of any symptoms other than those suggesting slight gastric catarrh, or it may produce pronounced symptoms suggesting purulent inflammation of the gallbladder. In neither case, nor in the cases with symptoms of intermediate intensity, can the presence of cancer be diagnosed, since the symptoms are not different from other, commoner affections of this region. The same is true of the late stages of advanced cancer of the bile passages, although in some instances the nodular induration which is palpable may suggest cancer. In the late stages, however, cachexia, icterus, and even the nodular character of the tumor are common in other and benign conditions. There is no certain method of diagnosis of biliary cancer, except by examination of the tissues after their removal. In the early stages operation on the strength of the possibility of cancer should not be undertaken, since primary cancer occurs in not over two per cent. of the cases and a larger number than this of deaths from pneumonia, embolism, etc., follow operations on the bile passages for benign conditions. In the late stages the results are the same, but the conditions are reversed, since when cancer seems probable it cannot be cured by operation and the condition which may actually be present and simulate it, is in itself not dangerous. The only safe rule seems to be to operate according to indications without regard to the presence or absence of cancer.

MEDIZINISCHE KLINIK.

March 26, 1916.

The Relation Between Hepatic and Nervous Diseases, by Gustav Hillel.—The author reaches the conclusion that both organic and functional nervous affections may depend primarily upon one or another disturbance of the liver, either organic or functional. In such liver disturbances the nervous system is affected through the agency of ammonium compounds, especially the carbamides. Still other harmful metabolic products arise, depending upon the character and severity of the hepatic affection and the related disturbance of other endocrine glands. The nature of these other substances is still unknown. The practical deduction from these facts is that attention should first be directed to the functional capacity of the liver in cases of nervous or mental disorder, and when this is found to be disturbed treatment should be directed toward its restoration to normal.

PARIS MÉDICAL.

February 26, 1916.

Hysterical Anesthesia and Analgesia by P. Chavigny.—A large crop of cases of traumatic hysteria has resulted from the present European war. Chavigny is convinced that cases of hemianesthesia and anesthesia of the extremities of hysterical na-

ture actually occur clinically as originally described by Charcot. He reports five cases observed in soldiers, all known to be free of previous suggestion by examining physicians. The anesthetics were of the typical hysterical variety, and were associated with motor incapacity. In one case, the subject being mentally confused the hemianesthesia could be elicited only with the faradic current. Under treatment with this current, the anesthesia completely disappeared in twenty-four hours. In the other cases anesthesia and motor incapacity were similarly relieved. Numerous cases of chronic invalidism in soldiers can be obviated if due attention is paid to the possibility of hysterical disturbances.

March 18, 1916.

Multiple Postdiphtheritic Paralysis, by Ginetous and Turlais.—A man of twenty-two years, a few weeks after recovery from a brief attack of diphtheria, treated with antitoxin, developed not only paralysis of the velum palati and accommodative mechanism, but later, internal strabismus on the left side, paresis of the limbs, especially on the right side, with loss of the patellar and Achilles reflexes, and some facial involvement. Sensation was unimpaired. Seven injections of antitoxin, at first in progressively increasing doses, were given in the course of a month, by the expiration of which the paralysis of accommodation had disappeared and the diplopia considerably diminished. Two months later only a very slight diplopia and slight weakness of the limbs remained. Attention is called to the unusual distribution of the paralysis in this case. The antitoxin treatment is considered to have been of service, and persistent application in postdiphtheritic paralysis is recommended.

PRESSE MÉDICALE.

March 25, 1916.

Sinusitis in Military Practice, by Guisez and Oudot.—A report of experiences with inflammations of the nasal air sinuses in forty-eight cases is given. All were the result of wounds. Thirty-four involved the maxillary sinus, eight the frontal and ethmoidal sinuses, one both frontal sinuses, and five the ethmoidal sinuses alone. Thirty were bullet and eighteen shell wounds. In many instances of maxillary sinusitis the missile had entered at a point at some distance from the antrum, e. g., through the cheek and mouth or the submaxillary region. The presence of a missile in the sinus had no direct influence on the development of sinusitis, the process persisting in seven cases in spite of extraction of a missile. Occasionally a violent local contusion or superficial wound sufficed to initiate sinusitis, without penetration of a foreign body into the antrum. Bone involvement was always extensive, sinuses discharging freely through the cheek, and in one case a diffuse osteomyelitis involving the adjacent facial bones followed. At times the maxillary sinusitis ran its course without at any period involving the nasal fossæ. On the whole, these cases, including those affecting the frontal and ethmoid sinuses, showed no tendency to spontaneous recovery. Often large vessels were involved, at times necessitating ligation of the carotid or packing of venous sinuses; the eyes were also sometimes infected, and very fre-

quently trismus was associated. Surgical treatment was alone efficient. Foreign bodies were removed, and in maxillary sinusitis, the Luc operation was performed, the canine opening into the antrum being then left partly open, to permit of subsequent observation and treatment of the cavity with dilute tincture of iodine. Recurrence was with certainty avoided only by thus maintaining free access until the cavity was well lined or actually obliterated with cicatricial tissue.

Indirect Traumatism of the Lung, by Léon Binet.—Explosion of a large projectile at a distance of two or more yards may produce lung injury in the absence of any external wound. The injury may be more or less serious, giving rise to either slight or fatal hemoptysis. It may be due either to a sudden reduction of atmospheric pressure, such as often takes place near the ground when a shell explodes in an upward direction after partly burying itself, or to a sudden increase of pressure, as from the explosion of missiles thrown by hand. Toxic gases set free at the moment of bursting may also be a pathogenic factor.

LANCET.

April 8, 1906

Agglutination Tests in Inoculated Persons by Georges Dreyer, Alex. G. Gibson, and E. W. Ainley Walker.—Citing the statement made by H. L. Tidy, on the basis of a small number of observations, that the presence of any form of febrile reaction in an inoculated subject diminished or entirely removed the agglutinins from the blood, the present authors bring forth a mass of evidence to show that such a conception is wholly erroneous and likely to lead to disastrous results in diagnosis. They present several series of observations which show that, when using an accurate, standardized agglutination technique, there is no reduction in the agglutinins in the circulation of inoculated subjects in the presence of febrile conditions. The febrile conditions studied included infection with the two common forms of paratyphoid bacilli and a number of miscellaneous febrile infections. On the contrary, the presence of an infection with the paratyphoid B organisms commonly causes a material rise in the agglutinins for *Bacillus typhosus*.

BRITISH JOURNAL OF CHILDREN'S DISEASES.

April, 1906.

The Common Speech Disorders of Childhood.

—John Priestley divides disorders of speech into the essential and the accidental. The essential speech disorders are: 1. Defective or imperfect articulation; 2, stammering. In a series of children examined, it was found that 1.8 per cent. have defects of speech. Lispering is brought about by an inability to shape the various organs—lips, teeth, tongue, expiratory muscles, etc. Lispering may occur over almost any letter, but those most liable to it are s, g, l, and r, and the sounds dependent on the soft palate. Stammering may be defined as a sudden arrest in the flow of speech. During the course of school life there is apparently a doubling of the number of stammerers: among the youngest children stammering was found in 0.3 per cent. of the cases, and in those who were leaving school in 0.66

per cent. Stammering is differentiated from stuttering. There are three or four times as many boy stammerers as girls. In the treatment of lispering one plan is to find out the least faulty sound the child can make and then try to work from it to the correct sound by gradual, almost imperceptible changes.

Infiltration of the Heart by Large Round Celled Sarcoma, by Cecil Williams.—The patient, a boy aged eight years, gave a history of pain in the shoulder for six weeks with cough and expectoration. Two weeks before admission there was vomiting, swelling of the eyelids, and orthopnea. On admission to the hospital he was cyanosed, respirations forty-four, pulse 112. The area of cardiac dullness was increased. Two weeks later he was considerably improved, one and a half ounce of blood having been withdrawn by venesection in the meantime. He remained better for a few weeks when a pericardial friction rub developed. He then grew worse rapidly, dying seven weeks after admission to the hospital. The diagnosis of pericarditis with effusion with possibly adherent pericardium had been made. At the autopsy the anterior mediastinum was filled with a white hard growth adherent to the sternum and invading both layers of the pericardium, making them indistinguishable. The diaphragm was also involved. There was no enlargement of either the cervical or axillary glands. Examination of a section of the growth showed it to be a large round celled sarcoma, probably originating in the sternal periosteum.

Vascular Disease in the Young, by Charles W. Chapman.—In vascular diseases occurring in the young there is either an infective disease present or the history of the child shows that it has gone through one. Congenital syphilis is a very common cause. A history of snuffles and a rash on the buttocks in early infancy, the presence of linear scars about the angles of the mouth and the bossing of the parietal and frontal bones should arouse suspicion. A negative Wassermann would not necessarily exclude syphilis. In determining arterial thickening it is not sufficient to palpate the radial or dorsalis pedis arteries. The brachial and femoral vessels should be palpated, as these will show marked thickening with hardening and tortuosity. The urine should be examined for albumin and casts in all cases of vascular disease. The prognosis depends on the virulence and the intensity of the infection. When it is due to absorption from the intestine, and improvement takes place following a purge, the prognosis is good. The treatment is that of the infection causing the arteritis. In acute cases the limb should be fixed and moist heat applied. In chronic cases the affected organ should be treated. Locally, a colloidal form of iodine may be used.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

April 8, 1906

Hemoglobin Estimation

by Theodore Kuttner.
—A convenient and accurate method for the clinical estimation of hemoglobin consists of a modification of the Sahli-Gower apparatus by the introduction of two accurately graduated and calibrated tubes and by a prism arrangement whereby the tubes can be brought together for comparison in the same visual field. In addition, the standard acid

hematin solution, which does not keep permanently, is replaced by solutions of inorganic salts. The standard tube is made to correspond in color to a blood having fifteen grams of hemoglobin in 100 c. c., which is about normal. The reading for this hemoglobin content is 100 per cent. on the calibrated tube, thus avoiding recalculation. In addition the tube gives results which can be used directly in connection with the several constants for the blood. Thus, if the percentage of hemoglobin shown be multiplied by 1.5 the result will give the hemoglobin in grams in 100 c. c. of blood; this last multiplied by 1.33 will give the theoretical oxygen binding capacity of the blood; and the amount of hemoglobin divided by 300 will give the theoretical quantity of iron. The device provides a ready means for making calculations as to the amount of a given blood which it will be necessary to transfuse into a patient to raise his hemoglobin to a desired level. During the observations made with this new instrument, and by other means, decided changes in the hemoglobin readings occurred from hour to hour in the same person. This was found to be due to changes in the blood and plasma volumes. The best time to take a hemoglobin reading is before breakfast.

Spinal Fluid in Mongolian Idiocy, by H. C. Stevens.—The spinal fluid from each of eighteen cases was examined for the Wassermann reaction, for its cellular content, the globulin content, phase I reaction of the Nonne test, by the Noguchi butyric acid test, and the Lange gold chloride test. The blood serum was also examined for the Wassermann reaction. The latter reaction was positive in thirty-three per cent. and the spinal fluid Wassermann was positive in eleven per cent. There was no pleocytosis in any case, but both the positive gold chloride test and increased globulin content were present in 100 per cent. The gold chloride color changes were typical of cerebrospinal syphilis. The condition of Mongolian idiocy seems unquestionably to be due to syphilitic infection, but it is not a form of cerebrospinal syphilis. It is probable that the syphilitic infection has acted in these cases upon some of the endocrine glands.

Bruit Over the Eyeball in Exophthalmic Goitre, by David Riesman.—Although this condition was recorded many years ago, its presence in many cases of Grave's disease seems to have been overlooked even by the most modern writers on the subject. The sign consists of a rhythmic murmur synchronous with the patient's pulse, which is to be heard over the eyeball. The patient is directed to close his eyes and the bell of the stethoscope is placed gently over the globe. A continuous hum due to the contraction of the muscles of the eyelid is likely to confuse one at first, but this can soon be distinguished from the bruit of goitre. A bruit indistinguishable from the goitre one is also occasionally heard in aortic insufficiency.

Detection of Pulsus alternans, by Paul D. White and Lawrence K. Lunt.—The authors found that the detection of pulsus alternans by the auscultatory blood pressure method was often impracticable, especially in the type of alternation which follows premature systole. This type is the most fre-

quent, constituting some seventy per cent. of the cases seen. On the other hand, the auscultatory method of detection is serviceable in the more serious type of pulsus alternans which is constant when once developed. The method does not suffice for the detection of a bigeminal pseudoalternation which occurs about once in six times. The method, however, is of advantage, since it provides the earliest means of discovering the presence of a constant alternation when present to very slight degree.

MEDICAL RECORD.

April 22, 1910.

Esophageal Obstruction, by Edward W. Peterson.—Every case of organic obstruction of the esophagus presents three constant symptoms, namely, increasing dysphagia, persistent regurgitation, and progressive inanition. Esophageal obstruction is classified as congenital, cicatricial, obturative, compressive, malignant, and spasmodic. The most frequent congenital obstruction is some form of communication with the trachea or bronchus, and this is fatal. Cicatricial stenosis may result from ingestion of caustic alkalies and acids or boiling fluids and from peptic, typhoid, syphilitic, or tuberculous ulceration. Compression stenosis may be due to diverticula, thyroid tumors, bronchial or mediastinal growths, while epithelioma is the most common variety of malignant growth. Foreign bodies should be removed at the earliest possible moment and sharp objects should never be removed blindly with probangs, but always with the aid of the esophagoscope.

April 28, 1910.

Periostitis and Osteitis as a Cause of Pain, by Charles L. Dana.—Acute infections from the teeth, tonsils, and other foci may cause local forms of osteitis and periostitis and this fact must be considered in diagnosing neuralgia and other persistent local pains. Syphilis and tuberculosis do not play so large a part in these minor types of osteoperiostitis as supposed. Neuralgia is a rare disorder, and in every case careful examination must be made of muscles, bones, nerve centres, and sources of reflex irritations so as to exclude organic disease.

LANCET-CLINIC.

April 1, 1910.

Cultivation of Entamoeba buccalis, by W. B. Wherry and W. W. Oliver.—A medium in which the entameba of pyorrhoea alveolaris will flourish when inoculated in it is based on the same medium as recommended by W. B. M. Martin for the gonococcus and allied organisms, and is a basic sodium phosphate agar, rich in ovomucoid, and about 0.5 per cent. acid to phenolphthalein. After addition of the phosphate the medium is replaced in the autoclave, then filtered and tubed. Pleuritic fluid, collected aseptically in cases of tuberculous pleurisy and heated to 56° C. for five successive days, is finally added in the ratio of about two of the fluid to three of the agar, the tubes are allowed to solidify, and are then kept in the icebox for a day longer. Under incubation at 35° to 37° C. in this medium, the entameba increases greatly in number in forty-eight hours.

Proceedings of Societies.

SOUTHERN MEDICAL ASSOCIATION.

*Ninth Annual Meeting, Held at Dallas, Texas,
November 8, 9, 10 and 11, 1915.*

The President, Dr. OSCAR DOWLING, of Shreveport, Louisiana, in the Chair.

Prevention and Treatment of Pellagra.—Dr. H. LESLIE MOORE, chairman of the Pellagra Committee, of Dallas, Texas, stated that taking everything into consideration they had come to the conclusion that the ideas advanced in the experiments made by Dr. Joseph Goldberger, of the Public Health Service, were the most plausible, and probably embraced the only theory that had come anywhere near being proof. When he spoke of proof, the members doubtless noticed a few days ago that a report came from the Mississippi Board of Health, in which it was told how a number of convicts had had the disease produced by Doctor Goldberger according to his theory. They had all noticed that nearly every case of pellagra occurred in people who were poor and unable to get the best nourishing food. Very few cases occurred in the well to do. Doctor Goldberger had observed in certain orphanages that this took place in Mississippi where there were a large number of children who had pellagra, and that all the cases practically were confined to those between the ages of six and twelve years of age. He set to work to determine how many children were fed differently from the older children, and found that this group at this age were fed very little lean meat or other animal protein foods, and were given mostly biscuits, light meal, syrup, and very little of the legumes, such as beans and peas. In one of the largest orphanages he found the highest percentage of pellagra. Following this the Public Health Service took charge and prescribed a diet for children between the ages of six and twelve years, and they were given a greater proportion of fresh animal food and all the leguminous protein foods, in addition. In those children who survived through the spring and summer the trouble would apparently clear up, to reappear the following spring. In the two institutions there were probably 200 patients with pellagra who were fed as prescribed by the Public Health Service. After this additional diet was prescribed, only one out of these 200 cases recurred the following spring; that is, they went one entire year without recurrence with only one exception. Doctor Goldberger concluded that pellagra could be prevented by appropriate diet without change in environment, hygienic or sanitary. No attention was paid to the sanitary condition.

Dr. W. L. ALLISON, of Fort Worth, Texas, stated that pellagra had spread rapidly through the entire South since 1907, until now each of the Southern States could number its cases by the tens of thousands. The medical profession was better acquainted with the disease now, and therefore its presence was suspected and diagnosed earlier than formerly. While it was true that in Europe the disease was largely among the poorer classes, this did

not hold true in this country, and especially was it not true in Texas. They had no such poor in Texas as were found in Italy, and the disease was frequently found among well to do people there. They had every reason to believe the disease was not directly contagious. It was a significant fact that with few exceptions, nurses and doctors handling these cases had not contracted the disease. Notwithstanding the many theories as to the cause of the disease, none had been proved; a low diet and a run down constitution seemed to be predisposing factors. That the disease was purely a dietary one was advocated by many, but this theory would not account for all the cases, nor would it explain its sudden incidence and rapid increase in this country. Many had developed the disease with whose diet no fault could be found. Corn as a dietary factor seemed to be losing favor. The occasional failure of mild cases to respond promptly to a well balanced diet would seem to discredit any dietary theory. The theory of Alessandrini and Scala that "pellagra was nothing more than a mineral acidosis," due to an excess of silica or aluminum in the water, had met with little favor and did not seem to be supported by facts. That the disease might be an infection seemed to be gaining favor and had much to support it.

The Thompson-McFadden Pellagra Commission pointed to the significant fact that no new cases developed in mill villages having a water carriage sewage system. This commission also reported that close connection with a previous case existed in eighty per cent. of their cases. There was nothing to show that the disease was hereditary. Morphine habits seemed fairly susceptible. The incubation period of the disease seemed to be from two to six weeks. All animal inoculation experiments had been negative, with one or two exceptions. The greater prevalence of the disease among women between the ages of twenty and forty-five years made it appear that the causative agent was to be found about the home in the daytime. The symptoms were all in the nature of an intoxication more or less chronic in its course. In the majority of cases the diagnosis should be made before the skin lesions developed. When the disease first appeared in this country, sixty per cent of the patients died, while today probably of these eighty per cent. got permanently well. The prognosis for complete recovery was more favorable in children and diminished with age, being very unfavorable in old age.

In view of the rapid increase of pellagra, more attention should be paid to prophylaxis. Everything should be done to improve the sanitary and hygienic conditions about the home. A well balanced and nourishing diet would do much to increase the individual resistance and prevent the disease, even if it was of infectious origin. A sanitary water carriage sewage system was certainly a step in the right direction. Active treatment should be begun by placing the patient in bed for at least a few weeks, depending on the severity and progress of the case. This of itself lessened the force of most diseases and conserved body energy. Hydrochloric acid should always be supplied where it was diminished or absent. Of the many remedies, thymol, quinine

hydrobromide, picric acid, and the arsenical preparations, especially sodium cacodylate, were apparently the most popular.

Pellagra in Texas.—Dr. K. H. BEALL, of Fort Worth, Texas, stated that the State government had done very little to check the ravages of this new enemy. Eight years ago this disease was purely of academic interest, although last year it killed 500 of their citizens and made invalids of many thousands more. Texas had within her confines a great many varieties of soil, climate, and altitude. Navarro county had a great many more deaths from pellagra than had El Paso county, although the latter had six or seven times as many cases of the disease. There were several factors which might be considered as causative. One was altitude, another the climate, but certainly it was not the water, because El Paso had a large river and many irrigation ditches. The whole Pan Handle of Texas was free from pellagra because perhaps the altitude was greater than in this part of the country, and therefore along with the great altitude there was a cooler climate. In a chart which he had to show the members there were 1,769 deaths, with exactly the same number of females as males between sixty and seventy years of age. Statistics would seem to show that women were much more frequently attacked by the disease when of certain age than men of certain age, or when they became much less resistant to its ravages. An intensive study of pellagra would be extremely fruitful at this time and would lead to much greater results than it would ten years from now, with a study of its epidemiological features, such as heredity, poverty, alcoholism, and syphilis, and the State of Texas had no right complacently to watch this enemy slay the people. No one knew but that in Texas and in the South pellagra might find a riper field than in Italy.

Drugs in Pellagra.—Dr. W. T. WILSON, of Navasota, Texas, reported 500 cases of pellagra treated up to November 1, 1915, ranging from the mild to the severest type. One hundred and ninety cases were treated by himself and 310 by other physicians. Of this number thirty-five patients had died. Of the thirty-five dead patients, fourteen had been treated with picric acid; ten were terminal cases and of the typhoid type, and were fatal within fourteen days after treatment was begun; four had tuberculosis associated with pellagra. Two had nephritis. The others were in very young children. In several of them symptoms of pellagra were relieved. Thirty-seven reported with severe mental symptoms, recovered. His report was not complete on the number of cases improved or not improved. He failed to ask for these data, but from conversation with many physicians he thought the proportion in either case would not exceed seven per cent., if it ran even that high.

From May 4, 1914, the total number of cases discharged to June 9, 1915, were 200 with three deaths. He was unable to account for this low death rate, except that he had asked for a report on completed cases to June 9th and the seriously sick were probably under treatment at this time. The disease did not become very serious before the middle of May. The total number of cases from June 9th to Novem-

ber 1st were 300. Out of these 500 cases, there were thirty-five deaths.

Of last year's cases treated by other physicians as well as himself, twenty-two out of a total of ninety-two had symptoms of a recurrence. This report was almost complete. In each case they had been treated but a short time, averaging about twenty-one days, and again on being put on treatment this year, they responded immediately. There had been reported a total of thirty-five deaths this year to November 1st, most of them having occurred during July, August, and September.

In acute pellagra or in pellagra of recent origin picric acid was of no value, that is, when used internally and as a gargle. In severe types or those with malarial symptoms quinine hypodermically should be used first, then the picric acid. In the chronic forms they alternated or gave at the same time picric acid as already stated and sodium cacodylate hypodermically, and they also gave the patient some sodium bicarbonate at intervals. Several physicians reported good results from thymol.

The Blood in Pellagra.—Dr. BEVERLY YOUNG, of San Antonio, Texas, said that the red cells and hemoglobin index varied greatly, and while the total red count was made in nearly all cases, he considered it of only relative importance, as the severity of the diarrhea had such a marked effect on the concentration and possibly on the distribution of the cellular elements of the blood. Taking the peripheral blood, however, as an index, the small mononuclear leucocytes were markedly increased, while the other cells, except the polynuclears, were slightly, if at all, affected. Some cases showed slightly high eosinophilia, but this was variable, and in every case where the eosinophilia was marked he was able to find the ova of intestinal parasites. His observation was that a high lymphocyte count was usually of good prognostic import. This high count usually persisted, not to the same extent, but above normal, for weeks and sometimes months after the acute symptoms subsided and the patient was in excellent physical condition.

The cases developing after admission to the hospital, with two exceptions, were among those who were fairly well nourished and taking a well balanced diet, and several cases observed during the same period of time which persistently refused nourishment of any kind did not develop pellagra, and while the lymphocytes were increased in these cases, they were neither so markedly nor so persistently increased as in the pellagrins. Two of these patients were particularly important for comparison, since so persistent were they in their fast that they died of exhaustion in spite of forced feeding.

Etiology of Pellagra, with Reference to Amebic Invasion.—Dr. W. A. DEARMAN, of Long Beach, Mississippi, said that while Goldberger was of the opinion that pellagra was caused by the lack of a well balanced ration, and that as a prophylactic as well as a curative measure individuals should be encouraged to eat liberally of peas, beans, and other legumes, and that the whole solution of the pellagra problem depended on this vital and important principle, was not supported *in toto* by the end results of the Thompson-McFadden commission, which

went to show conclusively and should eliminate every vestige of skepticism with reference to foods standing solely in a casual relationship to the disease. In six mill villages, comprising 861 families, of which 140 contained one or more cases of pellagra, the daily use of fresh meat was rather uncommon in the population, only thirteen families falling in this group; almost half of the families (428) used it rarely, or never. The families containing cases of pellagra occurred in all the groups and were relatively most numerous in the group using fresh meat daily, and less numerous in the summarized group using the food rarely or never. In families avoiding fresh meat altogether, only four out of a total of forty-six had cases of pellagra, or 8.7 per cent., a lower percentage than any other group. In 193 persons who did not use fresh meat at all, only one new case of pellagra was observed, an incidence of 0.5 per cent.

He had been able to demonstrate the presence of ameba in the centrifugated urine of about fifty per cent. of pellagrous cases that came under his observation, and about forty per cent. showed a mild to a severe and marked pyuria. The amebas were large and small, and one marked feature was that they were sluggish. Sometimes a cell resembling an encysted ameba would have to be recognized and kept under close observation in order to observe motility, while some were actively motile. While he had no evidence at hand to prove conclusively that amebic invasion *per se*, or with a proper symbiosis was responsible for pellagra, the symptomatology, the clinical course, and the post mortem findings as reported ran parallel with the depredations often observed in a profound amebic invasion.

Dr. ALLEN W. FREEMAN, of Washington, D. C., said whether they believed pellagra was due exclusively to diet or not, he thought they agreed that the evidence was strong that there was a definite relationship in many cases between the incidence of pellagra and certain deficiencies in the diet. That there was a definite relationship between the incidence of pellagra between classes fed on different diet in institutions, had been proved by changing the diet, and pellagra had been produced experimentally by limiting the diet to certain elements in common use in the south. Doctor Goldberger did not assert and did not pretend to prove that diet was the only factor in pellagra, but he had produced something which, it seemed to him, they must either try out or reject; they must either totally disprove his findings or attempt to put into effect the regime he recommended.

Dr. STEWART J. ROBERTS, of Atlanta, said there were two chapters in connection with pellagra that had not yet been written; first, the absolute proof of the cause of the disease. Of theories there had been many since Casal first described it. What was the one thing that they most needed in this country at the present time in regard to the etiology of pellagra? Absolute honesty in realizing that they did not know the cause of the disease because they could not prove it, and they had been too long in pellagra seeking after a sign. They had many signs. What they needed was one proof. The second chapter in pellagra that had not yet been written was the one on treatment.

Coming to the cure of pellagra, they must understand one another clearly and be absolutely honest. He understood that a patient who had had the disease was absolutely free of it for ever unless reinfect. He met good professional friends everywhere who told him they had cured 600 patients of pellagra. Another man said he had cured 200 patients. It was one thing for a pellagrin to recover from an attack of pellagra, but it was quite a different thing for a pellagrin to recover from the disease which they called pellagra. He was sorry if he appeared to be blunt, but if as Americans they were ever to solve the problem, it would be after they had come down from their mistaken confidence, after they had come down to absolute intellectual honesty, and finally, somewhere, sometime, worked out proof.

Dr. O. M. MARCHMAN, of Dallas, Texas, stated that since last August the city society decided to hold a pellagra clinic, and they had at that clinic some twenty-five or thirty patients in different stages of the disease. He found from reports from the different physicians of the county and surrounding counties that they had used every available remedy, and not only patients at the clinic but others treated in the various institutions were relieved in a like manner by all these treatments with a generous diet. They found that they had had probably 100 cases of pellagra in Dallas since last August, an increase of 100 per cent. from previous years. These pellagrins were from the poorest class and were fed a one sided or limited diet. A great many were put upon a generous diet, without medical treatment, and recovered as rapidly as those put upon various gunshot prescriptions.

Dr. ALLAN EUSTIS, of New Orleans, had heard no evidence to counteract Goldberger's ideas. He did not believe any of them were able to pass on Goldberger's results until they saw the published details of his investigation. Personally, he had never heard Doctor Goldberger assert that he had found the cause and a cure for pellagra, but he believed the condition could be remedied in great part. Erythema was only one of the symptoms of pellagra, and he was anxious to see what were the other symptoms that these patients in Jackson, Mississippi, developed.

Dr. JOHN E. STINSON, of Chickasha, Oklahoma, believed pellagra was infectious and that it was one of the most dreadful maladies he had ever been called upon to treat. Take the symptoms of the disease as they manifested themselves, and they were hard to combat by any method of treatment. He did not believe any true case of pellagra had ever been cured.

Dr. JAMES A. HAYNE, of Columbia, South Carolina, said that a person might make a mistake in the diagnosis of pellagra in children in mild attacks, but he did not make mistakes regarding the terminal symptoms of the disease, and when a physician wrote a certificate that a patient had died of pellagra, that was probably the cause of death. In South Carolina, up to the present time, they had had 1,200 deaths from pellagra. To give some idea of the difference between pellagra and typhoid fever, the death rate from typhoid fever in South Carolina was only twenty-six per 100,000. It was about equal

to the death rate from the circulatory diseases, such as heart disease, kidney disease, etc.

Dr. JOHN L. JELKS, of Memphis, averred that certain diets were very good, while others were very bad, in cases of infection of the gut, such as pellagra. A patient from Dallas was supposed to have been injured on the Cotton Belt Railroad at Texarkana, was brought to Memphis, and \$500 offered by the claim agent was refused; a diagnosis of pellagra was made. He depended more upon the contents of the gut than upon the skin manifestations, which were one of the latest symptoms to develop, after which death was almost certain. Patients with amebiasis would manifest the same train of symptoms as those encountered in cases of pellagra. Let them note the number of cases of amebiasis in which there was pain in the back of the neck; also the number of cases in pellagra in which they found pain in the back of the neck, the number of cases of pellagra in which they found marked melancholia—nearly all of the cases had a blood picture to which one of the essayists had called their attention. He believed that pellagra was an infection which took place primarily in the gut.

Dr. J. R. LEHMANN, of Dallas, stated that it had been shown that they carried in their mouths the organisms of pneumonia, and yet all did not get pneumonia. But when conditions were ripe, with lowering of the vital resistance, they developed pneumonia. Was it not possible that the cause of pellagra, like that of pneumonia, was lurking around seeking whom it might devour, and only when conditions existed which favored a lowering of the resistance did pellagra develop.

Dr. A. A. HEROLD, of Shreveport, was converted to diet as the principal causative factor in pellagra, and would tell briefly why: He was health officer of Catto Parish, Louisiana, and in that parish agricultural and mineral oil regions were side by side. There was practically no difference between the people who lived there. In the mineral oil districts sanitation was more imperfect; flies and mosquitoes were more numerous in the oil region, and insect-borne diseases, such as typhoid and malaria, were much more common in the oil districts than in the agricultural, yet not one case of pellagra had been reported in the oil fields, but 200 cases had been reported from the agricultural regions. There was one explanation: The usual ration of the farmer was fat meat, cornmeal, and some syrup. On the other hand, the "roughnecks" in the oil regions would not stand poor rations. They lived on a thoroughly mixed and varied diet and did not develop pellagra.

Dr. E. H. MARTIN, of Hot Springs, Arkansas, believed that pellagra was infectious, and agreed with Doctor Goldberger that a person who was well nourished would not contract the disease. It had been an axiom with him for several years that an absolute preventive of pellagra was a bank account. If a man had \$200 in the bank, he was not likely to have pellagra. He had never seen a person during all these years, who had money in the bank, contract pellagra. A man who had money and who was well nourished would not take pellagra, and the man who had pellagra, who got well nourished, would get well.

(To be continued.)

Letters to the Editors.

A KIND WORD.

TAYLORVILLE, ILL., April 14, 1916.

To the Editors:

After being a close reader of your JOURNAL (starting with the *Medical News*) for more than twenty-five years, I still enjoy its weekly call and am in a mood to congratulate you on its steadfast reliability. In my judgment your selection of articles for publication is good, your reviews of books are careful and concise, and your editorial articles are always to the point. D. D. BARR, M. D.

ANOTHER PLEASED SUBSCRIBER.

BROOKLYN, N. Y., May 5, 1916.

To the Editors:

Enclosed find check for \$5 to pay for my past subscription, as per bill.

I would not be doing justice to either myself, my profession, or the NEW YORK MEDICAL JOURNAL if I did not voice my admiration and respect for the editorial policy of the JOURNAL. The JOURNAL is not afraid to voice its own or the opinions of its subscribers in a manner that would shock so many of its staid and stiff contemporaries; the JOURNAL is aware that there is something else beside scientific matter that interests the general profession. Every calling but ours has its defenders—if not by members of that calling, then by the magazines that represent it; even journals devoted to the men that manipulate our street cars—the B. R. T. employees—have such a journal.

So I feel that the NEW YORK MEDICAL JOURNAL is making a most determined fight for the betterment of the profession it represents.

I hope to remain a subscriber until my activity ceases.

KARL HAROLD GOLDSTONE, M. D.

THE NEW DENTISTRY LAW.

ALBANY, May 3, 1916.

To the Editors:

I am glad to know of your interest in the new dentistry law. It is now being put into print for circulation throughout the State. I am, however, sending you a copy of the bill in the form in which it was enacted.

I was greatly interested to read what Doctor Kirk (dean of the Dental School of the University of Pennsylvania), one of the very highest authorities in this country, had said about the bill. The summarizing statement is as follows:

"The old dental law of New York was defective in a number of important features. The new law has removed these defects, and the Empire State has, in our judgment, enacted a statute which is the most comprehensive and satisfactory in its provisions of any dental law upon the statute books of any of the States of the Union—satisfactory in the thoroughness with which it safeguards the legitimate practice of dentistry, provides for its educational development, and protects the public from the menace to health which ignorance and charlatanism always necessarily imposes."

JOHN H. FINLEY.

PLINY, SENECA, AND CURVES.

NEW YORK, May 3, 1916.

To the Editors:

In an editorial article in the JOURNAL for April 29th you define efficiency as a reduction of curves.

In one of Pliny's letters—Ep. 5. 9(21), 6—occurs the following: *Invenimus qui curva corrigeret*, and in Seneca's *Apocolocyntosis*: *Hic nobis curva corriget?*

Both expressions were used sarcastically, the former addressed to Pliny by one who thought he was going too far in his attempt at a reform; the latter Seneca represents one of the gods as saying of the Emperor Claudius.

You are undoubtedly classical scholars, and it would be interesting to know if you had those quotations in mind, consciously or subconsciously.

W. J. SWIFT, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Diagnostic Methods. Chemical, Bacteriological and Microscopical. A Textbook for Students and Practitioners. By RALPH W. WEBSTER, M.D., Ph.D., Assistant Professor of Pharmacological Therapeutics and Instructor in Medicine in Rush Medical College, University of Chicago; Director of Chicago Laboratory, Clinical and Analytical. Fifth Edition, Revised and Enlarged. With 37 Colored Plates and 171 Other Illustrations. Philadelphia: P. Blakiston's Son & Co. Pp. xxxvii-758. (Price, \$4.50.)

The rapidity with which new editions of this book make their appearance is a true indication of the popularity which it has attained. This present edition includes numerous recent tests that have proved of value and brings the subject matter up to date. There is hardly another book along these lines that is so useful, both to the general practitioner and to the man who is devoting his time to laboratory work. The simple tests, as well as the more complicated, are carefully detailed, so that any one following directions can obtain good results. This volume should be in every physician's work room.

A Handbook of Infant Feeding. By LAWRENCE T. ROYSTER, M.D., Attending Physician, Bonney Home for Girls and Foundling Ward of the Norfolk Society for the Prevention of Cruelty to Children, Physician-in-Charge of King's Daughters' Visiting Nurse Clinic for Sick Babies. Illustrated. St. Louis: C. V. Mosby Company, 1916. Pp. 144. (Price, \$1.25.)

The difficulties which confront the general practitioner are very great when he is called upon to direct the feeding of an infant, and these are multiplied in abnormal cases. Much has been written on the subject and confusion has been introduced into infant feeding, even in the textbooks, by discussions of the many modifications recently suggested. The present small volume is therefore a welcome addition to our literature, for its author has reduced the question of proper infant feeding to its simplest possible terms and has placed it on an intelligible basis for the general practitioner. In so reducing and clarifying it, he has sacrificed no important material and has omitted no essential facts. As he says himself, there is nothing new in the book. The mode of presentation, however, is new. He advocates the use of the percentage method for the preparation of formulæ as the simplest and most satisfactory, but he lays special emphasis on the dangers of trying to fit a formula to a child on the arbitrary basis of age. Each infant must be considered individually. An excellent chapter on the stools in infancy has been contributed by John Lovett Morse and serves admirably to round out this complete little volume.

A Textbook of Nervous Diseases. For Students and Practising Physicians in Thirty Lectures. By ROBERT BING, Dozent for Neurology at the University of Basel. Only Authorized Translation by CHARLES L. ALLEN, M.D., Los Angeles, Cal. With 111 Illustrations in the Text. New York: Rebmam Company, 1915. Pp. xiv-481. (Price, \$5.)

Although this book is called a textbook, it is, in reality, a series of lectures. The lectures are on the diseases of the peripheral nerves; dyscinesias; progressive muscular atrophies; spastic spinal paralysis; hereditary ataxias; multiple sclerosis; other spinal cord diseases; syphilitic diseases; arteriosclerosis of the nerve centres; acute infectious diseases of the central nervous system; aphasia, apraxia, and agnosia; diseases of the cerebrum and cerebellum; malformations; dysglanular symptom complexes; diseases of the sympathetic system, angioneuroses, and trophoneuroses; epilepsy; psychoneuroses; and migraine. It will be seen that the field of nervous diseases is covered thoroughly; and, as a rule, the author's discussion of the subject is adequate. The two weak points of the work are the sections dealing with treatment, and the index. The prescriptions are a mixture of Latin and English, and fre-

quently call for preparations which are unknown to English readers. For instance, what is "the pil. cannabinæ comp. which I have recommended?" And what are "liq. ammon. caust.," "gummi mimosæ," "spts. melissæ co.," "bolus alba?" The "cubital vein" is not generally known under this title. Such foreign expressions are not fair to the reader and his medical dictionary will seldom help him. The index is poor; in addition to numerous misprints we find such entries as, "four reactions," "free warnings," "dip on the parallel bars," "provocative agents," "the man with little papers," "wasp waste" (*sic*), "derivatives," "severe epileptiform attacks." "Musci volitantes" may be seen both in the text and in the index. Sayre's name is misspelled by the translator. Some of the entries in the index simply refer to a mere mention of the word or phrase in the text; and the impression is given that the index was made by a person who was not familiar with the subject matter of the book. This is a second example we have seen within a month of careless methods by a publishing concern which has achieved an excellent reputation for the production of handsome and carefully edited medical books. It has been our experience that no author is so impeccable in his style and choice of words as not to require careful preparation for the press. Surely this enlightened house has found this to be true.

A Surgeon in Belgium. By H. S. SOUTTAR, F.R.C.S., Assistant Surgeon, West London Hospital, Late Surgeon-in-Chief, Belgian Field. Illustrated. Popular Edition Second Impression. London: Edward Arnold; New York: Longmans, Green & Co. Pp. 216. (Price, \$1.)

This is one of the most interesting books which we have read in a long while. In it the author pictures, quite plainly and simply, and without any attempt at fine writing, a few of the events which happened during his three months' stay in a Belgian Field Hospital. His experiences are described from the viewpoint of a surgeon, of a Briton, and of a civilized being; and the reader, if only he can manage to bring his sympathies under one of these heads, will enjoy the volume. The chief merit of the book is that it is a human document; and while the author's account of his professional work under extreme difficulties is of unusual interest, his attitude toward that military despotism which is devoid of the elementary principles of civilization is of far greater moment. With the Red Cross and the devoted work of its members we are all more or less acquainted; in this book we read of the Red Cross as being a mark for the enemy's fire, and also of its being used to conceal guns, batteries, ammunition, and spies. The constant, cheerful, and unobtrusive help of the Belgians, whether priests, nuns, nurses, or peasants is gratefully alluded to over and over again. There is not a dull page in the volume.

Urgent Surgery. By FÉLIX LEJARS, Professeur Agrégé à la Faculté de Médecine de Paris; Chirurgien de l'Hôpital Saint-Antoine; Membre de la Société de Chirurgie. Translated from the Seventh Edition by WILLIAM S. DICKIE, F.R.C.S., Surgeon, North Riding Infirmary, Middlesbrough; Consulting Surgeon, Eston Hospital; and ERNEST WARD, M.A., M.D., F.R.C.S. (Third English Impression.) With 20 Full Page Plates and 1,086 Illustrations, of which 729 are Drawn by Dr. E. DALEINE and A. LEUBA, and 198 are from Original Photographs. Vol. II. The Genitourinary Organs—The Rectum and Anus—The Strangulated Hernias—The Extremities. New York: William Wood & Co., 1915. Pp. ix-588. (Price, \$2.)

The second volume of the second English edition of Lejars's well known work will be welcomed by those familiar with this distinguished author's original treatise. The translator has wisely refrained from altering or adding notes to the subject matter, in view of the fact that the English speaking surgeons prefer to have unchanged the practice of French surgeons. The chapters dealing with hernia are of special interest in a work on urgent surgery, and the author has given with commendable detail descriptions of this most important subject. The same may be said of the chapters devoted to fractures and dislocations. Considerable divergence is found between the splints employed by the French and American surgeons. The former are in many ways more complicated and cumbersome and the operative methods of retention are less practical. In its present form the work will continue to rank among the best works on surgical technic in any language.

Interclinical Notes.

We learn with pain from the handsome extra monthly number of the *Survey* for May 6th that gonorrhea in a bride is known as "honeymoon appendicitis." In the case cited it is not stated whether the gonorrhea was part of the lady's dot or a present from her husband. In the former case it would "give furiously to think" on the part of the groom; in the latter, shooting would be almost too good for him.

Among the essays in the *Scientific Monthly* for May that might be supposed to appeal especially to the physician, are the Menace of Academic Distinctions, by C. G. and C. B. McArthur; the Frequency of Dreams, by Professor Carl E. Seashore; and the Significance of Venoms, by W. M. Winton. We believe, however, that the intelligent doctor will like the entire number.

Mary Roberts Rinehart, in the *Sun* for May 7th, quotes with emotion, "Lives there a man with soul so dead, etc.?" Mary's emotion made her forget that the first word is "breathes." Having read further, we feel ashamed of our trifling correction. If ever a nation needed an indignant, scorpion-tipped, scathing threshing of its lazy and impudent attitude toward preparedness, it is these United States, and Mrs. Rinehart has done nobly in this preliminary dusting of the Nation's jacket with her, *Is Patriotism Dead in America, or Only Sleeping?* We hope it will do more than make a few ears burn.

As Doctor Cabot, of Boston, holds no brief from the medical profession to represent it *coram publico*, we think his comments on a certain surgical clinic in the May number of a lay magazine are in pretty poor taste, to say nothing of his hints and innuendoes against the profession at large. These are not atoned for by the unconscious humor of the implication that the writer himself might succumb to the temptations offered to the modern surgeon (to operate without cause). We wonder if the editorial heading, "Doctor Cabot, of Boston, is one of the most distinguished physicians in the United States," passed under the proofreading pencil of the author. He must have wavered between consideration of it as quite superfluous, and yet as entitled to stand for the benefit of the less informed among the population.

There is a great deal of interesting matter about our army and navy in *Commerce and Finance* for April 12th. As might be expected from the nature of this journal, much of the matter is concerned with the money spent. Why does our army of 100,000 men cost as much as the former German army of 870,000? The editors are not alone in their perplexity over the conduct of our army and navy officers in hurrying to Newport to have a social look at the men who sank the *Wm. P. Frye*.

Señor Manuel Quintana, in *Leslie's* for April 12th, after complimenting us highly on our beautiful city, and telling us a few things about his own Buenos Aires, voices his astonishment that there has never been a permanent exhibition of American goods in any South American city, managed by men who speak Spanish "thoroughly." He thinks it strange that our "aggressive and progressive" business men have never seriously considered the merchandizing that could be done through such an agency. It is told elsewhere in this issue that Mr. John D. Rockefeller, during the past year, has given \$570,000 to the institute for medical research that bears his name.

Dr. William Anderson writes about the Canadian soldiers at the front in *Leslie's* for April 27th. Their fighting abilities seem to be admired, but they are apparently most unconventional in their attitude toward the ordinary rules of warfare. The writer goes so far as to say that they possibly saved the British Empire at the battle of Langemarck. Less than a score of men are left of the first Canadian regiment, the *Princess Pat's*, who numbered 1,000 in October, 1914. An interesting series of photographs in this issue shows the treatment of ankylized joints by mechanical means in the huge Hall of Mechanics in Paris. There are also pictures of double number.

"Apropos of the alleged difficulties of translating our weights and measures into the metric system," observed Dr. Ben Trovato, "there was one instance, at least, where I and a number of my friends experienced no trouble whatever. This was during our postgraduate trip to Europe, where we found ourselves suddenly obliged to use the metric system exclusively in ordering beer. I was quite astonished at the facility with which I ordered half litres instead of the six ounce glassfuls to which I had become accustomed."

Meetings of Local Medical Societies.

MONDAY, May 15th.—New York Academy of Medicine (Section in Ophthalmology); Yorkville Medical Society; Medical Association of the Greater City of New York; Elmira Clinical Society.

TUESDAY, May 16th.—New York Academy of Medicine (Section in Medicine); Tompkins County Medical Society; Buffalo Academy of Medicine (Section in Obstetrics and Gynecology); Tri-Professional Medical Society of New York; Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine; Medical Society of the County of Westchester.

WEDNESDAY, May 17th.—New York Academy of Medicine (Section in Genitourinary Diseases); Alumni Association of City Hospital, New York; Schenectady Academy of Medicine; Women's Medical Association of New York City; Medico-Legal Society, New York; Buffalo Medical Club (annual); Northwestern Medical and Surgical Society of New York; Bronx County Medical Society.

THURSDAY, May 18th.—New York Academy of Medicine (stated meeting); Auburn City Medical Society; Geneva Medical Society; German Medical Society, Brooklyn; Æsculapian Club of Buffalo; New York Celtic Medical Society.

FRIDAY, May 19th.—New York Academy of Medicine (Section in Orthopedic Surgery); Mount Vernon Medical Society (annual); Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 3, 1916:

Atwood, G. E., Acting Assistant Surgeon. Granted five days' leave of absence from May 1, 1916. Billings, W. C., Surgeon. Granted four days' leave of absence from April 25, 1916. Carter, H. R., Assistant Surgeon General. Detailed to deliver an address on malaria at the meeting of the Virginia Public Health Association, at Newport News, Va., May 8 and 9, 1916; also to attend a meeting of the American Society of Tropical Medicine, Washington, D. C., May 10 and 11, 1916; thence to proceed to such places as may be necessary in the States of South Carolina, Georgia, and Alabama in investigations of impounded waters. Clark, Taliaferro, Surgeon. Detailed to attend the meetings of the National Conference of Charities and Correction at Indianapolis, Ind., May 10 to 17, 1916. Fox, Carroll, Surgeon. Granted seven days' leave of absence from May 2, 1916. Francis, Edward, Surgeon. Detailed to deliver an address before the Florida Medical Association, at Arcadia, Fla., May 10 to 12, 1916. Guiteras, G. M., Surgeon. Granted four days' leave of absence from April 27, 1916. Irwin, Fairfax, Senior Surgeon. Directed to visit the Life Saving Station on the New Jersey Coast, to arrange for the medical treatment of officers and enlisted men. McCoy, G. W., Surgeon. Detailed to represent the Service at meeting of the American Society of Tropical Medicine at Washington, D. C., May 9 to 11, 1916. Nydegger, J. A., Surgeon. Detailed to attend a meeting of the American Association for

Promoting Hygiene and Public Baths at Baltimore, Md., May 9 and 10, 1916. **Robinson, D. E.**, Surgeon. Granted four days' leave of absence on account of sickness, from April 21st, and five days from April 26, 1916. **Rucker, W. C.**, Assistant Surgeon General. Re-detached for duty in the Bureau in charge of the Division of Domestic Quarantine, effective April 1, 1916. **Smith, F. C.**, Surgeon. Directed to proceed to Duquesne, Pa., for duty in studies of steel workers. **Sydenstricker, Edgar**, Public Health Statistician, and Scientific Assistants John H. Bradford, Zelda S. Charters, Ethel E. Hanks, Frances Valentine, and Caroline E. Wilson. Directed to proceed to Spartanburg, S. C., for duty in investigations of pellagra. **Warner, H. J.**, Passed Assistant Surgeon. Granted two days' leave of absence from April 25, 1916. **Wayson, N. E.**, Assistant Surgeon. Detailed to represent the Service at a meeting of the American Society of Tropical Medicine, at Washington, D. C., May 9 to 11, 1916. **White, M. J.**, Surgeon. Directed to stop at several points in the State of Missouri to select a suitable county for rural sanitation survey.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending May 6, 1916:

Coffin, Jacob M., Captain, Medical Corps. Relieved from duty at Fort Yellowstone, Wyoming, and ordered to proceed to Columbus, N. Mexico, and report by telegraph to the commanding general of the Southern Department for assignment to duty with Ambulance Company No. 3. **Cook, Otto J.**, First Lieutenant, Medical Reserve Corps. Resignation of commission as an officer in the Medical Reserve Corps is accepted by the President, to take effect May 5, 1916. **Ford, Joseph H.**, Major, Medical Corps. Ordered to proceed to Columbus, N. Mexico, and report by telegraph to the commanding general of the Southern Department, for assignment to temporary duty with the Sixteenth Infantry. **Gentry, Ernest R.**, Captain, Medical Corps. Leave of absence for two months has been granted on surgeon's certificate of disability. **Heflebower, Roy C.**, Captain, Medical Corps. Ordered to proceed to Columbus, N. Mexico, and report by telegraph to the commanding general of the Southern Department for assignment to temporary duty with the Sixteenth Infantry. **King, Edgar**, Captain, Medical Corps. Ordered to proceed to Fort Bliss, Texas, and report in person to the commanding officer of that post for temporary duty at the base hospital and by letter to the commanding general, Southern Department. **Kramer, Floyd**, Captain, Medical Corps. Ordered to proceed to Fort Bliss, Texas, and report in person to the commanding officer of that post for temporary duty at the base hospital and by letter to the commanding general, Southern Department. **McAfee, Larry B.**, Captain, Medical Corps. Relieved from temporary duty in the Southern Department, and will return to his station, Fort Riley, Kansas; relieved from duty at Fort Riley, effective June 1, 1916, and will proceed to the Canal Zone, and report to the commanding general of the United States troops for assignment to station. **Maguire, Daniel F.**, Captain, Medical Corps. Relieved from duty at Fort Ontario, New York, and ordered to proceed to Columbus, N. Mexico, and report by telegraph to the commanding general, Southern Department, for assignment to duty with Ambulance Company No. 3. **Miller, Reuben B.**, Major, Medical Corps. Directed to sail for the Philippines on or about September 5, 1916, instead of July 5, 1916, as heretofore ordered. **Powers, Charles A.**, First Lieutenant, Medical Reserve Corps. Resignation of commission as an officer in the reserve corps is accepted by the President, effective April 28, 1916. **Richard, Charles**, Lieutenant Colonel, Medical Corps. Directed to proceed to Governors Island, N. Y., on or about May 15, 1916, and report to the commanding general, Eastern Department, for duty as surgeon of that department. **Vose, William E.**, Major, Medical Corps. Directed to proceed to Douglas, Arizona, and report by telegraph to the commanding general, Southern Department, for assignment to temporary duty with the First Cavalry.

Winter, Francis A., Lieutenant Colonel, Medical Corps. Directed to proceed to the Walter Reed General Hospital, Washington, D. C., and report to the commanding officer thereof for observation and treatment.

Births, Marriages, and Deaths.

Born.

Brenner.—In New York, on Monday, May 1st, to Dr. and Mrs. I. M. Brenner, a daughter. **Dearborn.**—In Manchester, N. H., on Thursday, April 27th, to Dr. and Mrs. Luther G. Dearborn, Jr., a daughter.

Married.

Brault—Chartrand.—In New Bedford, Mass., on Wednesday, May 3d, Dr. Norbert R. Brault and Miss Florence Chartrand. **Flaherty—McGuinness.**—In Brighton, Mass., on Wednesday, April 26th, Dr. Edward Flaherty, of Maynard, Mass., and Miss Annie McGuinness. **Hissam—Sim.**—In Wichita, Kansas, on Tuesday, April 25th, Dr. R. W. Hissam and Miss Nellie Sim. **LeGwin—McCullen.**—In Durham, N. C., on Tuesday, April 25th, Dr. John B. LeGwin, of Wilmington, N. C., and Miss Mary McCullen. **Parker—James.**—In Norristown, Pa., on Wednesday, April 26th, Dr. Ray Parker and Miss Helen M. James. **Uniac—McGlynn.**—In Lawrence, Mass., on Wednesday, April 26th, Dr. Thomas V. Uniac and Miss Anna I. McGlynn. **Williams—Corum.**—In Kansas City, Mo., on Tuesday, April 25th, Dr. J. Clay Williams, of Stroud, Okla., and Miss Katherine S. Corum.

Died.

Atwater.—In Springfield, Mass., on Tuesday, May 2d, Dr. David F. Atwater, aged ninety-eight years. **Barr.**—In Fountain Green, Ill., on Thursday, April 20th, Dr. John A. Barr, aged sixty-eight years. **Bishop.**—In Washington, D. C., on Sunday, April 30th, Dr. Francis B. Bishop, aged sixty-three years. **Bowden.**—In Appleton City, Mo., on Wednesday, April 19th, Dr. Charles P. Bowden, aged forty-nine years. **Brickner.**—In Saranac Lake, N. Y., on Friday, May 5th, Dr. Samuel M. Brickner, aged forty-nine years. **Chadwick.**—In Asbury Park, N. J., on Monday, April 24th, Dr. Francis T. Chadwick. **Coues.**—In Cambridge, Mass., on Monday, May 1st, Dr. Samuel F. Coues, aged ninety years. **Dunn.**—In Moline, Ill., on Tuesday, April 25th, Dr. Lewis D. Dunn, aged eighty-two years. **Durkee.**—In Franklin, N. H., on Saturday, April 29th, Dr. Freeman H. Durkee, aged eighty-three years. **Ellinger.**—In Philadelphia, on Saturday, April 29th, Dr. Joseph Ellinger, aged fifty-nine years. **Enos.**—In Denver, Colo., on Thursday, April 20th, Dr. Charles W. Enos, aged sixty-seven years. **Gibson.**—In Alexandria, Va., on Wednesday, April 26th, Dr. Thomas S. Gibson, aged fifty-six years. **Hunter.**—In Philadelphia, on Thursday, April 27th, Dr. John A. Hunter, aged seventy-eight years. **Kennedy.**—In Paragon, Ind., on Sunday, April 23d, Dr. John Kennedy, aged eighty-three years. **Koeberle.**—In Eagle Rock, Cal., on Sunday, April 23d, Dr. Theodore Koeberle, aged seventy-eight years. **McMichael.**—In Detroit, Mich., on Saturday, April 29th, Dr. Albert McMichael, aged fifty-six years. **Morris.**—In Hephzibah, Ga., on Friday, April 28th, Dr. Ernest Clifton Morris, aged thirty-six years. **Mulholland.**—In Pittston, Pa., on Tuesday, April 25th, Dr. John M. Mulholland, aged sixty-six years. **Mygatt.**—In Berlin, N. H., on Wednesday, April 26th, Dr. Henry E. Mygatt, aged forty-four years. **Quinby.**—In New York, on Wednesday, May 3d, Dr. George A. Quinby, aged eighty-four years. **Quinn.**—In Bangor, Maine, on Friday, April 28th, Dr. Hugh F. Quinn, aged thirty-seven years. **Shafto.**—In Asbury Park, N. J., on Wednesday, April 26th, Dr. Cyrus W. Shafto, aged forty-five years. **Simmons.**—In Louisville, Ky., on Friday, April 21st, Dr. Nathan R. Simmons, aged seventy-four years. **Stevens.**—In Boston, Mass., on Saturday, April 29th, Dr. William Sanford Stevens, aged fifty-seven years. **Teague.**—In Columbia, S. C., on Tuesday, April 25th, Dr. C. A. Teague, of Graniteville, S. C., aged fifty-two years. **Wheeler.**—In Kansas City, Mo., on Thursday, April 27th, Dr. Berton H. Wheeler, aged forty-three years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 21.

NEW YORK, SATURDAY, MAY 20, 1916.

WHOLE No. 1955.

Original Communications.

THE TONSILLOSCOPE.*

And the Exploration of the Interior of the Tonsils in Situ,

By THOMAS R. FRENCH, M. D.,
Brooklyn, N. Y.

The faucial tonsils lying undisturbed in their beds in the throat have, to the clinical eye, always been as an unknown, an undiscovered country. There has been no map, chart, or compass to guide us in a survey of that little world, a world which now has opened wide its portals for inspection. It is, therefore, for the purpose of offering a map, a chart, and a compass for the exploration of the interior of the tonsils *in situ* that this communication is presented.

Naturally the first map of a new country, or of an old country seen in a new way, as well as the tools to assist in its exploration, must be of an elementary character and, doubtless, those which are here offered will be considerably refined by future study and more extensive experience.

The tonsilloscope consists of a tonsil microscope, made on the simplest principles, and a diminutive electric lamp with which to transilluminate the tonsil.

Tonsilloscopy is the method of examining the interior of the tonsil by transillumination alone, or with the aid of the tonsil microscope while the gland is being transilluminated. A small lamp hidden in the folds above, behind, or below the tonsil transilluminates that body with a flood of light, and so illuminated, it is examined with the tonsil microscope. To some extent the color and its shade, or value, as well as its character, shown in transillumination, indicate the probable class to which the tonsil belongs; but in the field of the microscope the conditions present in the tonsil are in most cases wholly revealed.

The knowledge thus far obtained of the normal and pathological conditions existing within the tonsil, as seen with the tonsil microscope and transillumination, has been reached after two and a half years of practically continuous observation. A year and a half ago we reported the results of our study of exploratory sections of the tonsils removed at the beginning of operations, when in a brilliantly lighted field, at the end of a tube containing a powerful magnifying lens, they were subjected to a minute surface examination. From that method it was but a step to place the lamp behind the exploratory sec-

tion and the section itself over the end of the tube containing the lens and then examine the tissues while the light was shining through them. Studies made in that way enabled us, in the course of a few months, to become familiar with, and to classify the conditions found in the substance of a large number and a great variety of tonsils, and from those studies there was developed what properly may be called a code. When it became apparent that the language of the code was highly significant and constant, again it was but a step to adapt the principles used in examining exploratory sections in the external tonsilloscope to the examination of the tonsils *in situ*; and so the present method was created.

This method is presented as a means to assist the clinical eye; as a means to detect gross changes in the tonsil from histological and pathological points of view; and as a means to determine whether the tonsil is that of health or is definitely diseased. By the word, *disease*, as used in this connection, is meant a chronic inflammation or congestion, with its concomitant dilatation of the blood channels in the substance of the tonsil, resulting from past acute inflammatory processes which probably have left in their train collections of detritus or pus in the crypts or in pockets or sacs in the tonsil. While this definition does not cover every phase of tonsillar disorder, it comprises the conditions with which we are most, indeed almost solely, concerned and which, therefore, we most desire to recognize and comprehend.

This method is intended only for the study of clinical pathology, but it permits even more accurate and dependable studies than most of those of clinical pathology elsewhere, for with it we can determine not only whether the tissues under examination are the seats of disease, but, if they are, to what probable extent. The degrees and the varieties of hyperemic displays resulting from inflammatory reactions constitute an almost invariable index of the character and extent of disease present, and the portrayals of collections of necrotic material or pus, when they can be seen, are, in most cases, as definite and as distinct from all other conditions as are the portrayals of foreign bodies in x ray pictures.

Although we began our investigation of the tonsil with the modest ambition of helping to conserve the capsule, the continuous revelations made in the study expanded the scope of the work to such an extent that it may now be said that the highest aim and purpose of this method is to assist in resolving the problem of systemic infections produced by pathological conditions in the tonsils. Still, while much of interest might be contributed on that phase of the subject at this time, we must, of necessity, in

*Read before the American Laryngological Association, Washington, May 10, 1916.

this short paper, confine ourselves almost entirely to a description of the means and appearances by which definite information is supplied in regard to the actual conditions existing in any given tonsil.

The outcome of our investigations thus far has been the development of two methods which it has been thought proper to name the external and internal methods of tonsilloscopy, but it is quite likely that the word, tonsilloscopy, will, in the future, be applied only to the internal method, as that, of course, will have by far the greater field of usefulness. The external method will then, perhaps, be



FIG. 1.—Shows the external tonsilloscope and the manner of examining tonsil tissues with it.

employed solely for the acquisition of the knowledge needed to interpret the revelations made within the internal tonsil microscope while the tissues are being transilluminated.

The external tonsilloscope. This instrument was originally intended and used for the examination of exploratory sections removed from the tonsil at the beginning of operations, but now it is used for the study of the tonsil, as a whole or in part, after operations. It consists of a simple microscope, on a light screen, and a powerful electric lamp suspended together from a crane (Fig. 1). The object in their suspension is to make it possible to conduct the examination without a break in surgical cleanliness. The lens in the microscope has a magnifying power of six diameters. It is fitted into the proximal end

of the tube of the microscope and has an adjustable focus. The microscope tube tapers to a size at the distal end which can be readily covered by a section, or the whole of the tonsil. The specimen is caught upon a hook at the distal end and left in position for leisurely study.

The lamp is the Nernst, of 250 candle power. The transillumination produced by it is brilliant and highly effective.

The knowledge which has been acquired of the various conditions in, and disorders of the tonsils was obtained by a long study of the tissues exposed in the suspended external tonsilloscope, and it is quite certain that such knowledge could not have been acquired in any other way. Whether we shall be able to make the code clear to others without the study of sections within this instrument remains to be seen, but our present belief is that the essential ground work of knowledge will have to be laid with the aid of the external method. The apparatus for the purpose need not, however, be as elaborate as that just described, for a pocket lamp in a small box with one end open and the tonsil microscope employed in the internal method, if the lamp is pressed firmly against the tonsils, will give almost, if not quite as satisfactory results as can be obtained with the suspended external tonsilloscope and its powerful lamp. Such studies may also be made in the inexpensive contrivance which we have fallen into the habit of speaking of as the *tonsil camera lucida*, with the aid of which the group of tonsil classes will presently be demonstrated. The explanation of how a weak light can be made to do the work of a strong one under changed conditions, is the explanation of the finding of the secret of the internal method of tonsilloscopy which is about to be described.

The internal tonsilloscope and tonsilloscopy. The internal tonsilloscope is for direct tonsilloscopy or the examination of the tonsil *in situ*. For many months, while working upon a solution of the tonsil problem with the external method, we supposed that we had reached the limit of usefulness of the instrument employed in it. The large lamp became intensely hot, and yet with it we obtained only the illuminating power which we believed we needed to make the substance of the gland blaze with light. We dreamed of putting the whole of the external tonsilloscope into the throat; for a time, however, it was but a dream, for thought is often curiously slow. But then, later, we did put it into the throat, and its introduction was accomplished in this way: Using the shortest of the Jackson bronchoscopes with a beveled end and a lamp on a light carrier of the next largest tube, packed securely with gauze so that the lamp was held just within the distal opening, the end of the tube was slipped behind the tonsil, and to our surprise and gratification the tonsil lighted up as brilliantly, we thought, as we were accustomed to see it in the powerful external apparatus. The explanation of the light from the two lamps of vastly different candle powers giving the same illuminating results, lies in the fact that the high power lamp, which because of its heat is not brought into contact with the tissues, is used in the brightly lighted operating room, under which condi-

tions its rays are rapidly dispersed, while the low power lamp is in firm contact with the tissues and is employed in the semidarkness of the back of the mouth where every ray of artificial light becomes effective. In other words, contact with pressure with the low power lamps compensates to a large extent the lack of candle power. The main obstacle to the internal method having, in this way, been overcome,

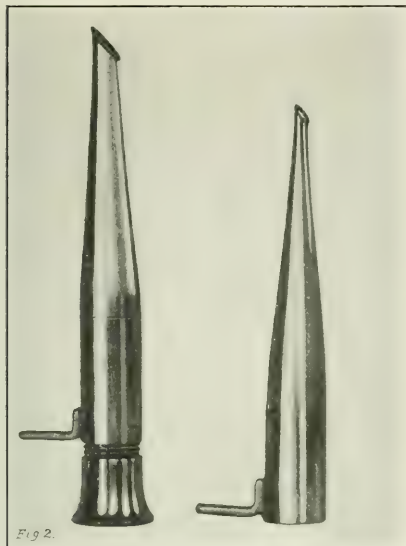


FIG. 2. Tonsil microscopes with large and small apertures.

it was then only a matter of adapting the tools to the conditions, and this, happily, proved to be an easy task.

The instruments needed for internal tonsilscopy are a lens tube speculum, or tonsil microscope, and a slender lamp which can be placed behind, below, or above the tonsil and buried within the various spaces between the tissues so that its light is not directly exposed to the eye. The tonsil microscope (Fig. 2), which is made in two sizes, is a slender tube or speculum about six inches long, inside of which, at the end of a sliding tube, is a lens of from five to eight diopters, according to the visual needs of the examiner. The distal end of the microscope is beveled and beaded and has an aperture the diameter of which is in one instrument one quarter of an inch and in the other one eighth by one quarter of an inch. The instrument with the largest aperture is intended for the examination of the free face of the tonsil and the capsule as well. That with the smaller aperture is intended for the examination of the capsule only.

The lamp (Fig. 3) is of one candle power and is enclosed in a small metal case with a glass window at or near its distal extremity. It is attached at an obtuse angle to an electric light shank which connects by a cable with a Tungsten battery balanced in size and power to the candle power of the lamp. The tonsillar substance can, however, be more

effectively transilluminated with a double lamp (Fig. 3), which should be preferred in all examinations in which the tonsil is large enough to hide the glass windows from view.

With the tonsil microscope and lamp, the tonsil can be examined with almost the same freedom and thoroughness as can a small section of a tonsil or an excised tonsil in the external tonsilloscope, with the difference, however, that with the internal method the entire surface of the capsule cannot as yet be explored, and also, that with the same method transillumination and the microscopic examination of the tonsil must be made of the gland as a whole, instead of a relatively thin section sometimes exposed in the external tonsilloscope. Allowance must be made, therefore, for a greater depth of color in the whole tonsil than is shown in a small, thin, and somewhat exsanguinated section.

The internal method (Fig. 4), which can be used with as little discomfort to the patient as is occasioned by the use of the instruments employed in posterior rhinoscopy, necessitates an even and penetrating illumination of the interior of the tonsil; and that can be instantly accomplished by placing a cool

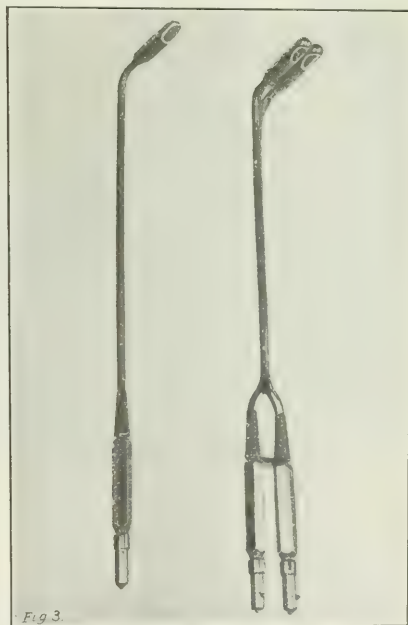


FIG. 3. Single and double tonsil lamps.

but bright lamp behind, above, or below the gland, making *firm* pressure upon the tissues, when the tonsil lights up in much the same way as does a stained glass window brilliantly transilluminated from the opposite side. The outlet of the tonsil microscope is then applied to any and every surface of the luminous tonsil not occupied by the lamp, including even, if there are no adhesions to the anterior pillar, a large part of the surface of the cap-

sule. Many of the conditions within the tonsil can in this way be seen directly. The meaning of the varieties and shades of coloring is a matter of interpretation which has been developed from experimental color studies made in association with the anatomical, histological, and pathological findings.

When the tonsil is that of health, or nearly so, it is relatively translucent and permits a considerable insight into its contents. When, however, it is the seat of disease, it is less translucent in proportion, presumably, to the number and virulence of the bac-

whether they should be classed with the doubtful or borderline conditions. That we were not misled in this study by the hyperemias which occur in acute processes is proved by the fact that care was taken to exclude every subject for operation whose chart showed a temperature above 99.2°F .

The pathologists who have assisted in this study, and to whom we are greatly indebted, are Dr. Francis A. Hulst, visiting pathologist to the Brooklyn Hospital, and Dr. Robert F. Barber, assistant pathologist in the Hoagland Laboratory of the Long Island College Hospital. Doctor Hulst did not enter the investigation until four months ago, but since then he has done much excellent work. Doctor Barber made some early tests of our findings, which served admirably as leading strings for the work which followed. While from macroscopic examination of the specimens after they had been removed from the throat and exposed in the external tonsilloscope, conclusive pathological evidence could always be easily secured, if definite disease existed, still it is, of course, largely because of the indorsement of our gross findings by the pathologists that we are able to speak with confidence in the statements made in describing the code.

The code. The code is a language of signs which are, within certain limits, unvarying and unmistakable, and to one who has learned the language the tonsil becomes, practically, an open book. After the tonsilloscope was perfected it was many months before the, at first, unmeaning revelations began to be understood, and then in the light of the unvarying facts presented in the abundant supply of fresh tissues, the significances of which were ascertained in subsequent pathological findings, the code settled slowly into the form in which we find it today. In the process, however, many world-old beliefs were relentlessly swept aside, for one brutal fact will overwhelm a thousand finely spun theories.

All microscopic work is by transillumination. Irrespective of the lens power, the difference between the method being described and that of the high power microscope is that in one the tissues are seen in bulk and are subjected to examination while still in the living anatomical state, while in the other the tissues, which are seen in thin sections, are necessarily greatly changed by their removal from the body and by the processes needed to prepare them for examination; and those differences produce wonderfully different results.

If to an amber colored fluid is added crimson lake pigment in weak mixture, gradually adding to its strength until a considerable depth of color is obtained, the solution will pass through all the shades of color which are found by transillumination in disordered tonsils, ranging from that caused by functional stimulation, or an infinitesimal quantity of detritus, to that caused by a complete honeycombing of the tonsil with detritus and pus. In its effect upon transillumination irritating pathological material in a tonsil acts, in a sense, like a pigment in a solution; the more intense its quality or the greater its quantity, the deeper will the characteristic coloring be.

While the conditions seen in a section of a tonsil in the external tonsilloscope are more graphically shown because the section is thinner than the tonsil as a whole, still if care is taken to make at least a



FIG. 1. Illustrates the manner of using the tonsil microscope, while an assistant holds the lamp in position behind the tonsil. When transillumination alone is practised, the examiner manipulates the lamp as well as the tongue depressor.

teria in the pathogenic material present and the consequent inflammatory reaction produced by them, so that in extensive disease it is impossible to detect anything beyond collections of detritus and pus lying close to the surface. As will be explained further on, this fact is of no material consequence, for beyond a certain point, as has been demonstrated in the several hundred cases tested, the degree and character of the hyperemia alone proclaim the extent or the irritating nature of the disease within the tonsil. With this method, therefore, we are able to detect, either at the beginning of operations in children, or in patients of any age when examined at the office or at the bedside, the positively normal or the positively diseased tonsils, or to decide

part of the examination of the tonsil *in situ* close to one of its edges, the result will be practically the same in both cases. There is, happily, one advantage which the method of examining the tonsil *in situ* has over the method of examining tonsillar tissues in the external tonsilloscope, and to that we wish especially to draw attention before describing the tonsil classification, and that is, that except when the tonsil is the seat of extensive general disease, its color, or shade of color, is never the same as that of the anterior pillar of the fauces transilluminated by the same lamp at the same time. The color of the anterior pillar is the result of the passage of the light through the tonsil and the palatoglossus muscle beneath the mucous membrane, and, unless the mucous membrane is the seat of deep congestion, the shade of color of the pillar is always practically the same as that of the tonsil in extensive general disease. As the shade of the anterior pillar is fixed, that anatomical structure, therefore, serves in a most admirable and a satisfactory way as a guide, or control, to indicate by contrast the degree of hyperemic coloring in the tonsil. In the diseased classes of tonsils, generally speaking, the greater the contrast between the tonsil and the anterior pillar, the less the disease in the tonsil. The figures on the color card illustrating the code, which we now take pleasure in presenting (and which will be reproduced for publication in the *Transactions*) were designed to depict such contrasts as well as to illustrate the appearances of the tonsils in the tonsil microscope. The actual appearances of the various classes of tonsils, as seen in the transilluminated microscopic field, are shown in these boxes—the tonsil camera lucida—each of which contains a lens and a pocket lamp arranged as in the external tonsilloscope and each also contains a tonsil of one of the classes without, of course, the contrasting anterior pillars.

The classification of the conditions found in the tonsils, in health and disease, was, in this study, practically automatic, for the different varieties fell naturally into six groups, viz.: 1. The tonsil of health; 2, the tonsil which was disturbed by functional stimulation or was mildly diseased; 3, the tonsil containing superficial abscesses; 4, the tonsil with apparently active or large foci of detritus and pus occupying restricted areas; 5, the tonsil which was the seat of considerable general disease; and, 6, the tonsil which was the seat of extensive general disease. These groups may, properly, be regarded as classes, and as such will be described in detail.

Class 1. The tonsil of health. The color resulting from the transillumination of the tonsil of health is a warm amber, but the passage of light through a thin edge of a tonsil or through a very small tonsil of health, even in an adult, produces a color more like that of rock candy. In the tonsil microscope small arteries are seen coursing upon the surface and to some extent in the stroma, while here and there in the substance of the gland appear small round red spots like flies in amber. In commenting upon the red spots, Dr. Hulst says: "While I have not seen a sample of Class 1, it seems plausible that the 'flies in amber' might be normal follicles which represent a denser tissue than the rest of the tonsil." The reason why samples of the tonsil of health were

not sent to the pathologist is because of the curious, interesting, and as yet unexplained fact that during our investigation the tonsil of health has been found in almost every instance in subjects operated upon in the spring, summer, and early autumn, and none have been seen in the clinic since last November. It would, therefore, seem likely that many of the tonsils which were assigned to Class 2 were in reality the tonsils of health masked during the winter months by conditions of ill health incidental to the cold and wet seasons.

For diagnostic purposes the use of the tonsil microscope in this class is not really essential, for by transillumination the bright amber coloring of the tonsil in sharp contrast to the rosy colored anterior pillar, is conclusive and proclaims the tonsil to be, peradventure, that of health. And yet there is a pitfall in the examination of tonsils which at the first glance appear to be of this class, and which illustrates in an impressive way the inadvisability of reaching a conclusion in haste through transillumination alone. In two other classes, both of disease, bright red areas, more or less sharply defined, appear in the amber field. If the lamp is placed behind the amber colored portion of the field, the transillumination is apt to be in that color only and so give the impression that the tonsil is that of health, while the placing of the lamp in various other positions or its reintroduction will disclose a distinctly diseased condition. Therefore, so far as the color in transillumination is concerned, it is perfectly safe to trust the first glance if disease is shown, but it is not safe to do so if by that glance the tonsil of health appears to be present.

Of course, a somewhat exsanguinated section of a tonsil when examined in the external tonsilloscope, will appear to be of a lighter shade than that of the transilluminated tonsil *in situ*, but they are both uniform amber in color and that fact is all that is required to disclose the presence of the tonsil of health.

Class 2. Functional stimulation or mild disease; the doubtful class. In this class there is a departure from the normal indicated either by a uniform pink-amber coloring involving the entire tonsil, or by hyperemic blushes covering small areas of the amber field. This class must, for the present, be regarded as the doubtful one; that in which the borderline conditions are found. It is, perhaps, the only class which will afford a platform for debate on the propriety of partial or complete removal of the tonsils, for the revelations made in the other classes are well understood and are definite. The questions which must be answered in dealing with this class are: Do the signs indicate physiological stimulation; or an extension of hyperemia from surrounding catarrhal congestion; or the process of involution after an attack of acute tonsillitis; or the presence of minute permanent collections of detritus locked in after former attacks of acute inflammation; or inflammatory areas without foreign material? Our studies of this class thus far have led us to the belief that if the coloring is uniform pink-amber, that is, not mottled, and is the same in both tonsils, the cause is either a physiological stimulation or an extension of catarrhal pharyngitis. An interval of a week or two between examinations, and in the meantime a search

for a possible cause, would tend to clear up the doubt if it was due to stimulation. If, however, the tonsil coloring is mottled and uneven or in discrete areas only, the explanation will be found in the presence of minute collections of foreign material which have not yet been cast off after an attack of acute cryptic tonsillitis, or in minute permanent collections of cheesy material distributed throughout the gland like seeds in a strawberry, or in inflammatory areas without foreign material within the areas of heightened color. We have, occasionally, been able to outline, in such tonsils *in situ*, small collections of detritus, but in most instances, because of the clouding effect of the hyperemia, it has been impossible to see the collections directly. It is said that cuttle fish seek to hide themselves from their enemies by emitting a substance which forms an opaque cloud about them, thus, perhaps, proclaiming their presence to alert piscatorial hunters. In much the same way more or less discrete hyperemic areas in the tonsils proclaim the presence of collections of detritus, or at least inflammatory processes within them.

In this connection Doctor Hulst says: "In three cases of Class 2, I have found on section through areas giving the small localized deepening of color, a moderate increase of connective tissue just within the epithelial layer lining the crypt. This represents a chronic inflammatory process." Doctor Barber reports similar findings.

When one tonsil is seen to be in this class, then the other should be subjected to examination, for not infrequently one of them is over the border and in the class which is being described, while the other is in the class of health. If such is the case, it would be evident that the disordered tonsil contained either foreign material or was, possibly, the subject of physiological stimulation from some one sided source, for the presumption is against its being due to an extension of catarrhal pharyngitis or being in a state of involution after an acute cryptic tonsillitis. An examination after the lapse of a week or two would, perhaps, show whether it was due to detritus or stimulation. If both tonsils show moderate disorder, with areas of hyperemic blushes, but one more than the other, the deduction would have to be made that the cause was detritus, for it is highly improbable that any other cause could give rise to an uneven disturbance. This class of tonsils may be found at any age, but we have not met with it in enlarged tonsils in subjects above the age of eight years.

In a masterly disquisition in a letter from Dr. Jonathan Wright, in answer to a question by the writer of this paper whether it was within the bounds of possibility for him to say at what time and to what degree one might expect the immediate histological and pathological changes caused by an acute cryptic tonsillitis to have disappeared, he says in part, that he does not know where the normal leaves off or where the abnormal begins, clinically or anatomically, nor when pericryptic vascularity is physiological; "that after the first attack of cryptic inflammation, clinically it is usually impossible to detect structural change a week or two after the entire disappearance of symptoms. With each succeeding attack clinical observation, with increasing frequency, is able to recognize the traces left behind,

consisting in a deepening of the pits and a concomitant increase in pericryptic tissue—hypertrophy—in a vascularity due to permanent dilatation of blood channels in the lymphoid tissue itself, and in the neighboring mucosa."

Still we do not doubt that through the means of making histological observations described in this paper, a better understanding of the borderline conditions will result. If in the future this method is employed in routine examinations of the throat, it will not be long before we shall know whether or not tonsils which give positive signs of being definitely diseased will later, without treatment, be shown to have expelled the offending material and returned to a practically normal condition. From some of our experiences with the tonsilloscope since it was perfected, we are inclined to the belief that, at least in adult life, the crypts are capable of clearing themselves completely after acute cryptic inflammatory processes, even when the attacks have been somewhat frequent. This class constitutes a field which, doubtless, will be studied diligently, for as the other classes are easily recognized, the need of the future, as it applies to systemic infections, as well as to the surgical treatment of the tonsil, will be the determination of the status of the tonsil presenting conditions which are just over the borderline.

Class 3. Superficial abscesses. In this class blind abscesses are seen just under or near the epithelium on the free face of the tonsil which transilluminate as dark or black discs according to their proximity to the surface; the nearer the surface, the darker the shade. In the tonsil microscope abscess formations, when present, may also be found directly under the capsule. They are at times seen to be set in zones of a rosy hue, the depth of which probably represents the degree of inflammatory reaction. In this class both tonsils should be examined, as one only may be found guilty, the other being entirely innocent. But whether one or both of the tonsils are involved, unless the abscesses can be shown to be confined to the free surface and are unaccompanied by collections of detritus in the crypts, the variety of disordered tonsils found in Class 3 must be regarded as definitely diseased and, therefore, proper subjects for radical treatment.

Class 4. Apparently active or large foci of detritus and pus occupying restricted areas. The characteristic feature found upon examination of this group, with the tonsil microscope and transillumination, is that the hyperemia is in more or less sharply defined areas set in a field which may not be far removed from the coloring of the tonsil of health. The appearance of the plumelike areas of crimson lake is much the same as the appearance of dye stuff the first instant or two after it has been thrown into water, some of the edges of the plumes being shadowy, while others are lined off sharply. The shade of red is usually as deep as that seen in the tonsil which is the seat of extensive disease, but by contrast with the amber or pink-amber field it appears to be even deeper. It will, however, be found to be of practically the same shade as that of the anterior pillar. The pronounced peculiarities in the areas of rosy coloring are due to the presence, within the dense cloud of hyperemia, of a considerable quantity of pathological material occupying

only certain portions of the tonsil; the crypts in the unaffected parts appearing to be empty and in a seemingly normal condition. In this class, as in the three preceding classes, one tonsil alone may be affected. It is, therefore, essential upon finding in one tonsil the conditions characterizing this class that the other tonsil also should be examined to determine whether it too is involved—as we believe it nearly always is. Tonsils containing the amount and probable pathogenicity of the extraneous material found in this class must be regarded as serious menaces to the health of the host.

Class 5. Considerable general disease. This is classified as *considerable* general disease in contradistinction to *extensive* general disease. In the operating clinic, in the office, and at the bedside, in tonsils of every size, this class has been met with far more frequently than any of the others. In this class there is uniform though comparatively light hyperemia, indicating that there is quite a number of collections of detritus scattered throughout the tonsil, but probably no pus. While the coloring is of a uniform shade in all parts of the tonsil, it is not always deep enough to prevent a view, either with or without the tonsil microscope, of collections of foreign material, even when they are situated in remote parts of the gland. When, therefore, as the lamp sinks out of sight the tonsil lights up in a uniform color, but of a distinctly lighter shade than that of the anterior pillar, it may with certainty be assumed that there is, scattered throughout the substance of the tonsil, a considerable number of collections of foreign material, even though few of them can be brought definitely into view. In this class both tonsils should be examined, for while in a large percentage of cases, in the extent of disease, both tonsils have been found to be practically alike, occasionally one has been more diseased than the other, that is, one may have been in Class 5 and the other in either Class 2 or 4.

If both tonsils are of the same shade of color, the use of the tonsil microscope, though clarifying, is not essential in making a diagnosis in this class, for the fact that their tissues transilluminate in a uniform rosy color, but several shades lighter than that of the anterior pillars, is sufficient proof that the tonsils are the seat of the milder form of general disease. In this and the more extensively diseased class, collections of detritus entrapped between the anterior pillars and the tonsils are, in this way, often graphically exposed.

Class 6. Extensive general disease. This is classified as *extensive* and implies the honeycombing of the crypts and the substance of the tonsils with detritus and pus. The coloring in transillumination is uniform and of the deepest shade seen in the tonsils; it always corresponds to that of the anterior pillar. The depth of the color is, doubtless, dependent not so much upon the quantity of foreign material within the tonsil as to the irritating character of its bacterial contents, and while in a few tonsils, examined in this study, we have found the shade of color to be even deeper than that of the anterior pillar, such cases must be regarded as exceptions, for the rule is that the shade of color of tonsils in this class is the same as that of the anterior pillars. The invariable association of ex-

cessive hyperemia, as shown in transillumination, and the subsequent finding of extensive pathological collections within the tonsils of this class, establishes the propriety of making diagnoses by transillumination alone; and as the conditions found in one tonsil are quite certain to be found in the other, an examination of one tonsil is sufficient to make a diagnosis of the conditions existing in both. Because of the opacity of the tissues produced by excessive hyperemia, foci can be seen only when lying near the free surface or close to the capsule, but as the high degree of inflammatory reaction proclaims the presence of many foci in various parts of the gland, the use of the tonsil microscope is not essential in determining the status of this class of tonsils.

Transillumination of a tonsil which is the seat of acute cryptic inflammation reveals, practically, the same depth of coloring as that characterizing Class 6 (the shade of color of the tonsil and the anterior pillar being the same), and in addition there are seen upon or near the surface many sharply defined dark areas which indicate the location of the exudate in and near the openings of the crypts.

The subject of this paper is such a vast one and the variations in the findings are so great that we, of course, do not assume that the foregoing code representations will apply accurately to all cases. They are the cumulative results of the first gleanings in a new field which, while they permit a classification of the varieties of tonsils into somewhat definite and comprehensive groups, cannot be regarded as final studies.

Of the histological and pathological findings in general, Doctor Hulst says, among other things:

I have studied the material you sent me, giving special attention to the least diseased tonsils. I have supplemented my work with material from other sources, but have used the tonsils so obtained mostly in familiarizing myself with the classification you use in transillumination. I have also used other tissue with the transilluminating lamp and tonsil microscope, to see what general appearances pathological tissue had over the normal. An interesting example of this was in the study of breast tissue in chronic mastitis, where there were numerous cysts of all sizes and all degrees of thickening. Some of the cysts contained clear fluid and some purulent and cheesy. It was impossible for me to say from transillumination what was the character of the material within the cyst, for all gave about the same appearance. The intensity of color depended upon the amount of inflammatory reaction about the cyst.

The same thing holds true for the tonsils as for the tissue described, in that the inflammatory reaction in the tissue is what gives the change in color rather than the character of the material accumulated in any pockets, whether abscess cavities in the tissue, or detritus in the crypts. The density of the tissue as well as active hyperemia modifies the color when transilluminated.

Some of the material has been investigated from the bacteriological standpoint. This has not been done thoroughly, for I knew that this was not your point at this time, and I have deferred it for later material. In making a puncture through a seared surface into an area which shows by transillumination a deeper color, it is difficult to say whether one had opened an abscess in the tissue of the tonsil, or had merely penetrated a crypt, or perhaps passed through a crypt to reach an abscess. In other words, cultures taken from a puncture through a seared surface may represent the bacteria from the tissue proper, but more likely that of a crypt or contaminated by material from a crypt. One of Class 2, so treated revealed a small sac about one mm. in diameter containing cheesy material, cultures from which showed no growth. Another Class 2 showed a similar sac with turbid fluid, cultures negative. Still another Class 2 showed no fluid, but seemed to represent inflammatory infiltration. None of

the other classes were studied in this way, for it seemed apparent what their relation was to pockets of pus and debris, and much has been done recently on the bacteriology of this material.

I think the tissue study is important in relation to the work you are doing, and while the material studied is insufficient to come to any conclusion, I think that it will be found, judging from my work so far, that the deepening of color will depend upon the chronic inflammatory thickening of the stroma and the lining of crypts.

Conclusions from the study with the tonsilloscope to the present time. While our tonsil investigation in all its phases has now occupied nearly three years, there has been too little time since the present method of examining the gland was perfected, to permit many final conclusions to be drawn in any of the departments of the study. Numerous revelations, which have settled into established facts, have, however, been made, while the deductions from others will, perhaps, endure the test of time and extended observations. We can now tell whether a tonsil is that of health or is definitely diseased, but there still remains a class upon which more light must be thrown before it can with certainty be placed in the group of health or be condemned to that of disease. We refer to the borderline conditions described in Class 2 of the code.

The percentages of normal and of diseased tonsils need not now be a matter of opinion or conjecture and doubtless before long they will be determined with exactitude. By the word, enlarged, when used to indicate the size of the tonsil in the statement which follows, is meant a tonsil which fills the tonsillar fossa to such an extent that its free face extends beyond the edges of the pillars, or its anterior face curves the anterior pillars forward. Doubtless a tonsil of smaller size than that indicated by this definition may be regarded as enlarged, but for our present purposes references to enlarged tonsils must be made with such a definition in mind.

Our study of 666 tonsils in and from 333 operations upon children in our hospital clinic and the study of tonsils *in situ* in a large but indefinite number of youths and adults, would seem to indicate that all enlarged tonsils in subjects above the age of eight years, whether in late childhood, youth, or adult life, are diseased. Enlarged tonsils in subjects below the age of eight years may or may not be diseased, and whether they are or not can be determined only by examination with the tonsilloscope. Of enlarged tonsils below the age of eight years, twenty per cent. were found to be the tonsils of health, twenty-five per cent. were of the doubtful class, or Class 2, and fifty-five per cent. were definitely diseased. Most of the enlarged tonsils of health were found in the second, third, and fourth years. Enlarged tonsils in subjects below the age of eight years, therefore, exist to the extent of at least twenty per cent. as the result of their functional activity and not because they are diseased. Above the age of eight years all enlarged tonsils probably condemn themselves as diseased by being enlarged. While, therefore, enlarged tonsils in subjects above the age of eight years are probably diseased, diseased tonsils are not necessarily enlarged, for normal sized tonsils at any age may be diseased. In this investigation normal sized, or very small tonsils were found diseased in four per cent. of the subjects below the age of eight years. Whether or

not normal sized tonsils are diseased can be determined by examination with the tonsilloscope.

The study of a much larger number of cases may show that the foregoing statement in regard to gross percentages should be subjected to revision, for many cases in our series which were placed in the doubtful class may have been, and probably were, the tonsils of health temporarily congested from stimulation or from various other causes. Therefore, because of the many reasons for the presence of a cloud upon the healthy tonsil a long collective tonsilloscopic study from this point of view, especially in subjects below the age of eight years, will be required before we can reach a knowledge of the real percentage of the enlarged tonsils of health.

Although the study of 333 cases will not permit many definite and final deductions to be made, nevertheless some of the results of this study would seem to indicate that the erstwhile enlarged tonsils of health in childhood may be regarded as permanently diseased if they continue enlarged after the seventh or eighth year, and that the enlarged tonsils of health which undergo a retrograde metamorphosis in late childhood may remain the tonsils of health throughout life. While we have seen many small diseased tonsils in the throats of youths and adults, we have not seen one enlarged tonsil after the age of eight years which was not diseased. If after the study of a much larger number of cases this observation continues to hold true, then the fact that a tonsil is found enlarged in a subject above the age of eight years will be a proof that it is diseased.

The assumption that the tonsil has no special function because it has not yet been discovered, is an unconscious confession of impotence to which few of us can agree, but one conclusion reached in this study, and which bears upon the function of the tonsil, seems deserving of at least a passing comment, and that is, that the revelations of this method, to at least a large extent, reduces the function of the tonsil to a negligible feature, for it must be conceded that a tonsil which is extensively diseased cannot perform its function, if it has one, and that a tonsil which is partially but permanently diseased would, probably, be the potential or actual source of too much mischief to be offset by the value of any function which a part of it might possess. When, however, a tonsil is found to be that of health, it should be left, at least in part, to perform whatever function it may have and also, incidentally, to spare the fauces the now common postoperative deformities and the consequent impairment of the speaking and singing voices.

The fact that an enlarged tonsil of health was not found above the age of eight years in any of the 333 subjects of this study, may suggest the thought that every enlarged tonsil of health in children below that age would later be likely to become diseased and should, therefore, be completely disposed of whenever found in early childhood. This, to us, would not seem to be logical reasoning in view of the fact that nearly all, if not all tonsils are enlarged in some stage of early childhood, and the tonsil of health in all its pristine purity is found in a con-

siderable percentage of adult throats. In the present state of our knowledge regarding this matter we cannot, therefore, believe that an enucleation of a tonsil of health would ever be justifiable, and it is now always possible to determine when a tonsil is that of health. Again, while the tonsil of health should never be destroyed, the hopelessly degenerate tonsil when left, even in part, in the tonsillar fossa, must, of necessity, be a potent cause of future acute infections or of chronic ill health and invalidism—and the hopelessly degenerate tonsil can, in an instantaneous luminous view, be absolutely and finally exploited.

In this connection it may be of interest to observe that while one tonsil may be moderately diseased and the other perfectly healthy, as noted in Class 2, of the code, we have not seen, either in children or in adults, one tonsil extensively diseased and the other normal.

While, as has been said, this research work was originally undertaken principally for the conservation of the capsules of the tonsils in children, we believe that tonsilloscopy will, at least in the near future, most often be employed for the examination of the tonsils of youths and adults; for it has been clearly demonstrated, in a large number of cases, that the tonsils in subjects above the age of childhood are often, and without much doubt oftener than we now know, the seats of foci capable, under certain conditions, of producing local and systemic infections. Indeed the revelations within the tonsils and the degree of active irritation disclosed by this method of diagnosis lead to the conviction that a very large percentage of mankind is suffering in one way or another from this, heretofore, almost completely masked menace. As far as we have gone in the study of the tonsils in subjects above the age of childhood, the tonsilloscope has shown those glands, in the majority of cases, to be hyperemic; but as practically all the throats of adults in this country, and especially those living in large communities, are the seats of a greater or less degree of catarrhal inflammation, it would seem to be a reasonable assumption that a mild degree of hyperemia in the tonsils could be accounted for by an extension of the catarrhal process from the neighboring structures. Curiously enough, however, perfectly healthy tonsils have been found in the fauces of middle aged adults, the mucous membrane of which was in an advanced stage of catarrhal inflammation; thus proving that an extension of catarrhal inflammation from the pharynx to the tonsils does not necessarily follow, and that the tonsils may remain in a condition of health while the surrounding mucosa is diseased.

For the present, in adults, unless there should be an excess of hyperemia in the tonsils, which would in itself indicate the presence of foreign material, we must regard either the actual portrayal of such material or the presence of unevenly distributed thin clouds of hyperemia as the only conclusive proof of its existence, and while with the tonsilloscope it should never be difficult to determine whether or not a collection of foreign material is present, it is not yet possible, by the appearances within the tonsils, to prove that such a collection, if present, is, at the moment, acting as an infection

focus. We believe, however, that ultimately even that obstacle may be removed, and that the characteristics of the hyperemic display around a focus will at least suggest its latent nature or its activity. Of course, in the absence of other demonstrable focal origins, an existing infection can be attributed quite positively to active bacteria in tonsils which are seen to be diseased. But there is, happily, one other means by which, in many cases, we may not only decide this highly important question in a very short time but also, if the relationship between the disease in the tonsils and a systemic infection is established, bring about a marked amelioration, or indeed complete relief, of the symptoms before or without resorting to radical measures. It is this: in subjects within the age of reason, to remove by the time worn method a considerable quantity, if not all, of the disease making material in the crypts, pockets, or sacs with a knife or curette, or both, followed by injections of fifty per cent. alcohol into the various openings through which the material was released. We have, in this way, in the few months since the tonsilloscope was perfected, been able to prove, in many cases of infection, that tonsillar foci were solely responsible. The association of facial neuralgia, flat foot, obstinate pains in various parts of the body, rheumatism, arthritis deformans, glandular enlargement, neuritis, regional paralysis, and labyrinthine deafness, with morbid material in the tonsils were definitely determined. In a few of the cases the effects of conservative treatment alone were somewhat startling because, though improvement in the symptoms was hoped for, their disappearance was not expected. The most striking illustration of an unlooked for result of such treatment was in a lady, thirty-five years of age, who for eighteen months had been the subject of complete nerve deafness in one ear. The tonsil on the affected side, though very small, was seen to contain, in the depths of its substance, four or five collections of necrotic material set in a field of moderately translucent hyperemia. The hearing returned suddenly to nearly its normal power at the end of the second week of treatment in which the curette and alcohol injections alone were employed.

This measure cannot, however, always be depended upon, for in a small percentage of cases, especially in adults, too few of the mouths of the crypts remain patent to permit the removal with the curette of enough detritus to make a definite impression upon the systemic disorder. In a few such cases we have, however, secured locked-in collections of foreign material, which could be seen in the substance of the tonsil, by cutting down to and removing them while the tissues were filled with light from a lamp held behind the gland.

While, therefore, in many subjects with tonsils in Classes 2, 3, and 5, of the code, we have been able, with conservative measures, to prove that they were the sources of systemic infections, and have succeeded, in the course of time, in partly or entirely relieving the symptoms, we have also, of course, in cases in which the relief was definite but only partial, been enabled positively to decide that enucleation held out the only, but well founded hope of complete and permanent relief.

This opens up the subject of systemic infections

and, doubtless, this method of detecting tonsillar diseases will make the study of relationships much easier. Through it we may learn much of the harmful potentialities of the tonsils, and with its aid we may be assisted in placing the responsibility for many of the now mysteriously caused diseases of the vital organs.

It may be doubted if tonsils which are the seats of extensive or even considerable disease can ever fail, at some time, to produce local, remote, or general disorders. Certainly, it must be regarded as a reasonable belief that every individual possessing tonsils of such a character, even if there should be no localized expressions of remote infections, would, under certain conditions, be the subjects of a bacteriemia or toxemia with the lowering of tissue resistance in the entire body. This belief applies to adults with small tonsils which often contain compressed packings of detritus and pus, as well as to children with larger tonsils and, therefore, probably, a larger quantity of disease-making contents. The degeneracy of the body to be accounted for in this way and the commanding importance of the tonsils in pathogenesis, has already been demonstrated to a large extent, but we must all agree that by far the largest measure of information needed to solve this pressing question has yet to be supplied. It is, perhaps, more than likely that a protective envelope, or capsule, is, at times, formed about necrotic tissues in the tonsil analogous to the hypothesis of Professor Theobald Smith in regard to latent foci of tubercle bacilli. In other words, the defensive powers of the body may make even pathogenic collections innocuous, and under those conditions individuals in whose tonsils such collections exist would be immune to injury from them. But however that may be, the fact remains that the human tonsil, with surprising frequency, can be seen to contain locked up material which is either innocuous or is a menace to the health of the host. While, therefore, we are not in a position to determine without doubt, except by the means already pointed out, whether such material may be regarded as actively injurious or only potentially so, we are, we believe, quite safe in saying that until we are capable of distinguishing positively between latent and active foci we shall look upon all such collections of foreign material with at least a considerable degree of suspicion. Given, however, a disorder of the body the cause of which cannot be clearly traced, and given also in the same body tonsils, large or small, in which the presence of foreign material has been positively disclosed, then the removal of such material, in an effort to determine the existence of a possible relationship of cause and effect, must be regarded as a logical sequence.

What has been said in regard to the indications of the presence of collections of detritus and pus will, doubtless, apply to the presence in the tonsils of tuberculous foci, but in what way such foci will affect the circulation, as shown in transillumination, or in what particular way the material itself will appear in the tonsil microscope, must be determined by future experimentation, for we have not yet reached that feature of the study. When, however, it is reached it will, probably, prove to be a fertile field for investigation.

In this study we have submitted many adenoid growths to examination in the external tonsilloscope, and have found that in health and disease the conditions within them correspond closely to those found in the tonsils. One interesting and instructive feature of those examinations was that, as seen in the gross, the vascularity of the overgrowths of the pharyngeal tonsils was shown to be greater than that of the faucial tonsils. At first the excess of coloring in the adenoid growths was thought to be due to an excess of disease, but investigation soon proved that an excess in the number of the blood channels themselves was the cause of the difference in the shades of coloring. While we have not yet experimented with it, it seems likely that much will be learned of the conditions in adenoid growths by examining them *in situ* with the pharyngoscope, while the mass is made luminous with a lamp carried up behind the velum and buried in the soft tissues.

It may be of interest to note, in passing, two by-products of the study with this method of exploring the interior of the tonsils, the first being that tonsils which are the seat of extreme disease and are, therefore, seen to be excessively hyperemic, bleed freely when cut into, and while we know that they are no more liable to postoperative hemorrhage than are those in the other classes, the demonstrated presence of hyperemia enables us to predict that free immediate bleeding will accompany operative procedures upon them. By determining before operation the degree of turgescence and, therefore, the degree of dilatation of the blood channels, the probable blood loss can, all other things being equal, be fairly well anticipated in operations upon tonsils of either of the classes. From this the postulate can be framed that except for vocal and respiratory obstruction, the greater the need of a tonsil operation, the greater the hemorrhage which will accompany it.

The second byproduct is the disclosure of the ease with which the inner wall of a peritonsillar abscess can be located and mapped out, thus enabling us in early cases to release the pus soon after it has formed. In late cases even the novice need never fail to make an accurate puncture in the first attempt.

Because of the amount and variety of clinical work required, it would not have been possible to elaborate the details of this study without the keen interest and loyal cooperation of our two assistants in the Long Island College Hospital, and we gladly embrace this opportunity to express our grateful appreciation of the long continued display of enthusiasm and of skill of Dr. Albert J. Keenan and Dr. John A. Quell. Their desire to assist in developing a method which had for its object a high degree of accuracy in tonsil diagnosis is, to a considerable extent, responsible for the attainment of the end which was sought.

While this method of diagnosis, in revealing the fallacy of former methods of detecting tonsillar diseases, has been our undoing, we desire, nevertheless, to place it in expert hands for a test of its value, for we do not now doubt that it carries within it the brightest promise of future helpful achievements.

150 JEROME STREET.

INEFFECTIVE APPENDICECTOMIES.*

By ROBERT T. MORRIS, M. D.,

New York,

Professor of Surgery, Post-Graduate Medical School.

So many ineffective appendicectomies are done upon a basis of incomplete diagnosis, that some of us must call a halt. The matter is getting to be a scandal. During the year a number of cases are sent in to my service in the hospital, with a wrong diagnosis of appendicitis. Some of these are believed to be cases of acute infection of the appendix, but a larger number are sent in with a statement that the appendix has given trouble for a considerable time and requires removal. I have not kept notes relating to the proportion of these cases which are not really ones of appendicitis, but it corresponds pretty closely with reports of what I hear of patients operated upon without result, so far as appendix symptoms are concerned.

Let us first consider a group of cases in which the appendix is really a factor in the patient's discomfort, but not the principal one. The two chief irritative lesions of the appendix, not infective, are fibroid degeneration and syngoegestive appendicitis.

Fibroid degeneration seems to occur as a normal involution process, but its symptoms appear to be most marked in that group of patients who present a number of stigmata of arrested development. In neurasthenic patients with relaxation of peritoneal supports and in the patient with a defective chromaffin system, allowing various abdominal manifestations to appear, fibroid degeneration of the appendix adds a factor. Removal of the fibroid appendix leaves these patients with all of their other defects still present. Attention which has been concentrated upon symptoms in the appendix region, is then transferred to some other organ or structure, and the mental prodding which is given to symptoms gradually increases the symptoms to the point where the patient is quite as ill as before. Fibroid degeneration, however, is a definite pathological entity and sometimes an important precipitating factor for symptoms. The reason appears to depend upon irritation of terminal nerve filaments which remain in contracting hyperplastic connective tissue up to the time when practically all other structures of the appendix have disappeared.

An impulse from irritated nerve filaments is sent to the autonomic centres, to sympathetic centres in general, and to cerebrospinal centres. A number of reciprocal reactions then appear.

In cases of syngoegestive appendicitis (the other common irritative lesion of the appendix) we have a distention of the inner coats of the appendix with interstitial infiltrates, along with a similar infiltration of other organs beside the appendix, because of some organic disease, with obstruction to the blood and lymph circulatory systems. The reason why the appendix speaks up is probably because the inner soft coats cannot swell freely within the tight outer sheath of peritoneum, and an irritation of nerve filaments results in these appendixes. It follows that in these two irritative lesions of the appendix, removal of that organ simply disposes of one unimportant factor in the patient's symptoms,

and the cases as a whole must be taken into consideration or the operation will be a failure.

A still larger group of cases in which the appendix is removed ineffectively includes patients who never had appendicitis at all. Concerning the acute cases I have commonly found that the symptoms were due to some infective lesion of the pelvis or some infective lesion of the stomach or gallbladder, with accompanying tenderness of groups of abdominal sympathetic ganglia. Sometimes the cases have been bubonocoele with pinching of a small area of bowel; sometimes they have been cases of pneumonia with pain referred to the right lower abdomen, and sometimes they have been cases of toxic irritation of spinal cord centres with efferent impulses sent out along the ilioinguinal and iliohypogastric nerves. The reason why these toxic neurones appear oftenest on the right side is perhaps the fact that the ascending colon is such a fertile focus for enteric toxemia. Not only are patients of this group sent in frequently for operation at the hospital, but I am sometimes called to a distance and asked to be prepared for immediate operation upon the appendix.

A still larger group of cases with symptoms in the appendix region, but not including the appendix, appears to depend upon a large and complicated variety of irritative lesions of the spinal cord, with efferent impulses sent out, not only to the cerebrospinal nerves, but also to the sympathetic nervous system, and possibly to the autonomic centres, although Langley and his followers appear to believe that the autonomic system does not send out efferent impulses.

The most important single diagnostic point upon which I depend is one to which I called attention some years ago, and which is now included in a number of textbooks. If we press about an inch and a half to the right of the navel and a trifle below, and if we press deeply enough to bring out a response from the right group of lumbar sympathetic ganglia, there is definite evidence that we are to look to the appendix for the source of that particular irritation, provided that the left group of sympathetic lumbar ganglia is not hyperesthetic. This point of tenderness situated several inches away from McBurney's point is one which relates to a chronic irritative lesion of the appendix. Having determined that the appendix is a seat of chronic disturbance, we are still left to exercise surgical judgment, and to determine if removal of this factor of disturbance will decapitate the demon of all of the patient's ills. This means that we are to determine if the patient is one with neurasthenic habit and relaxation of peritoneal supports; if the patient is one with chronic enteric toxemia; or if the patient is one with syngoegestive appendicitis along with important organic lesions at a distance.

If the right group of sympathetic lumbar ganglia is not hypersensitive on pressure we may practically rule out the appendix altogether. This may be done in perhaps the larger number of cases which are sent in with the diagnosis of chronic appendicitis, but in which symptoms are dependent upon impulses from various cerebrospinal or sympathetic centres.

*Presented at the meeting of the Gastro-Enterology Club, New York, March 31, 1916.

SPECIFIC THERAPY IN CERTAIN ACUTE INFECTIOUS DISEASES.*

By FRANCIS J. DEVER, M. D.
Philadelphia,

Associate Professor of Clinical Medicine, Medico-Chirurgical College;
Assistant Visiting Physician, Medico-Chirurgical and
Philadelphia General Hospital.

Specific therapy consists in the use of bacterial vaccines, sensitized vaccine, or immune serum.

A bacterial vaccine is a suspension of killed microorganisms which, when injected into the patient, are destroyed by the body cells, liberating substances from the bodies of the bacteria, which substances stimulate the production of antibodies. A considerable time is required to develop immunity in this way. Sensitized vaccines are suspensions of killed microorganisms which have been subjected to the action of the appropriate immune serum, the antibodies in which unite with the bacteria, rendering them more susceptible of destruction by the phagocytes. Immunization is probably more rapid when sensitized vaccines are used.

Serum therapy consists in the use of the serum of an animal, usually the horse, which has been rendered immune by repeated injections of the organisms against which it is desired to protect. The serum contains the specific antibodies, i. e., antitoxins, bacteriolyins, etc., and when injected into man, supply these antibodies without effort on the part of the recipient's cells.

Vaccines, whether sensitized or unsensitized, produce an active immunity which is defined by Kolmer (1) as that form of resistance to infection brought about by the activity of the cells of a person or animal as a result of having had the actual disease in question, or as a result of artificial inoculation with a modified or attenuated form of the causative microparasite.

Immune serum, when injected, produces a passive immunity which the same author describes as that form of immunity that depends upon defensive factors not originating in the person or animal protected, but passively acquired by the injection of serum from one that has acquired an active immunity to the disease in question.

The antibodies developed in the blood of the patient by the use of vaccines and those introduced into the circulation by injections of immune serum are effective against the organism that was used as the antigen. Antibodies called forth by the presence of staphylococci are potent to destroy staphylococci only. It has been discovered that the specificity of the immune bodies may even be limited to a certain strain of a species of microorganism and will not be effectual against other strains of the same family of bacteria. This has been very clearly demonstrated by Cole and Douchez at the Rockefeller Hospital in New York. It is therefore obvious that the primary essential in rational specific therapy is an exact etiological diagnosis. In the majority of instances the services of an expert bacteriologist are required. Unquestionably, specific therapy is loosely and unintelligently employed, and though popular at the present time, it is probably safe to predict that because of the inevitable

failures that follow such use, this valuable method of combating infections will fall into general disfavor and neglect by the body of the profession.

Patients recovering from an infectious disease do so because their tissues have produced substances that either kill the infecting organisms, or neutralize their toxins. Those who die, do so because their tissues fail to respond at all, or respond so inefficiently that the toxins of the offending organisms poison the cells of the vital organs. The production of suitable antibodies is, therefore, the essence of the fight between the patient's cells and the infection. Quite naturally, attempts have been made to supply this essential; with what success, a study of the recent literature reveals.

The marvelous value of the serum treatment of diphtheria is so thoroughly well proved and so widely known that its further consideration in this paper is unnecessary.

Good results have followed the use of specific serum in other acute infections, notably epidemic cerebrospinal meningitis. During the years from 1904 to 1909 inclusive a severe epidemic of this justly dreaded disease raged in various parts of the world. The mortality rate was variously reported from seventy to ninety per cent., most observers reporting about seventy-five per cent. Early in the epidemic, Simon Flexner, at the Rockefeller Institute in New York, began investigations resulting in the production of a serum, the employment of which in human cases was begun in 1906 by clinicians to whom the serum was supplied. In 1908, Flexner and Jobling (2) reported the results in forty-seven cases treated by the clinicians in various places. Thirteen of the forty-seven patients died, giving a mortality rate of 27.6 per cent. In cases in which the injections were begun during the first three days of the illness, the mortality rate was reduced to 11.1 per cent. This was so decidedly encouraging that the work was continued, and in 1913, Flexner (3) published a report of 1,300 cases treated with the serum. A few of the patients so treated were moribund at the time of the first injection, and as it was obviously unfair to include them in a statistical study, they were omitted. In 1,204 cases treated the mortality rate was 30.9 per cent.; a reduction of over forty per cent. compared with those untreated. The earlier the serum was employed, the better were the results. In those injected prior to the third day of the disease the mortality rate was 18.1 per cent. Between the third and seventh day it was 27.2 per cent., and after the seventh day the mortality rose to 36.5 per cent. It was observed also that the age of the patient influenced the result. During the first year of life the mortality rate was very high, was lowest between the second and the twentieth year, and after the twentieth year a steady rise was observed. Sequels, such as deafness, visual and mental impairment were less frequently observed, but deafness was more common than the others. The tendency to hydrocephalus in the young was diminished. Parmelee (4) reported a mortality rate of 46.5 per cent., which was about thirty per cent. lower than in the untreated cases occurring during the epidemic of 1904-1909. Netter (5) reported a mortality rate of but 12.5 per cent. in 226 cases,

*Lecture to the South Branch of the Philadelphia County Medical Society, February 11, 1916.

and stated that the symptoms in the serum treated cases were attenuated, recovery was hastened, and complications were rare.

The serum should be kept in a refrigerator, and just before use should be warmed to the temperature of the body. The injections should be made into the spinal canal, the dose not exceeding thirty c. c. A somewhat greater quantity of spinal fluid should be withdrawn than the quantity of serum injected, and care must be taken to avoid a dangerous increase in the cerebrospinal pressure. This may best be done by injecting slowly. Introducing the serum by gravity is much safer than with a syringe. The first dose should be about thirty c. c. Twelve to eighteen hours later, a second dose of twenty to thirty c. c. should be administered, and subsequently at intervals of twenty-four hours, one or two doses of twenty to thirty c. c. and one or two of ten to fifteen c. c.

Kramer (6) reported six deaths from respiratory paralysis, occurring a few minutes after the injection, and two cases in which respiratory paralysis was relieved by artificial respiration, the patients dying subsequently of the infection. These fatalities he attributed to the tricrosol of which 0.5 per cent. was added to the serum as a preservative. Flexner (7) attributed these deaths to increased cerebrospinal pressure. Hale (8) made a number of experiments in animals, and demonstrated that death through respiratory failure could be produced easily by the injection of small amounts of tricrosol into the spinal canal. Sophian (9) found that blood pressure observations during the subdural administration of serum warned of impending danger, and were much more valuable than observations on the cerebrospinal fluid pressure. The withdrawal of cerebrospinal fluid causes a fall in blood pressure, and when a reduction of ten mm. in adults or five mm. in children has been obtained, the withdrawal of spinal fluid should be discontinued. With the injection of the serum the blood pressure falls still further. A drop of twenty mm. necessitates the discontinuance of the injection. Symptoms of collapse, such as superficial or deep stupor, irregular and slow respirations, and dilatation of the pupils are preceded by a marked drop in blood pressure. The pulse may continue good or become slow and irregular, and therefore is not a dependable guide. Incontinence of urine and feces may occur. If such symptoms appear, the serum should be allowed to flow from the spinal canal by lowering the funnel of the gravity apparatus, or, if a syringe is used, by gently withdrawing the piston. After a few moments the symptoms may disappear, in which event the remainder of the serum may be cautiously introduced. Hypodermic injections of atropine and caffeine may be required, and when respiratory collapse is present artificial respiration must be practised. The intraspinal injections should be given, as a rule, every day for three or four days, and then every second day until acute symptoms have subsided.

Martin (10) reports the case of a man, age nineteen years, who grew gradually worse, notwithstanding ten lumbar intradural injections of the serum, but who speedily recovered when a dose of

serum was introduced directly into the left lateral ventricle.

Under the influence of the serum the phagocytic action of the leucocytes is increased, and as a result, more meningococci are found to be intracellular and fewer extracellular. In many instances the diplococci speedily disappear from the cerebrospinal fluid. In cases that tend to relapse the recurrence of symptoms is coincident with the reappearance of the organisms in the spinal fluid. The serum treatment must be continued as long as they are present.

The risk to the patient in the proper use of the serum is not great, and does not signify in the face of the gravity of the disease for which it is to be administered.

Important advances have been made in the therapeutic use of serum in tetanus. Until recently tetanus antitoxin was administered subcutaneously with very disappointing results. This is not surprising when the pathogenesis of the disease is considered. The bacilli and spores do not reach the circulation, but remain localized at the site of injury, where they multiply and generate the toxin which travels to the central nervous system, for which it has a very strong affinity, along the motor nerves supplying the injured part. Some of the toxin is carried by the blood and lymph currents to other muscles, from which it reaches the central nervous system by traveling along the nerves. Permin (11) was able to produce tetanus experimentally in animals by injecting toxin directly into the nerves, even though antitoxin had been given previously. By intraspinal injections, however, he was able to neutralize the toxin. Park and Nicoll (12), by experiments on guineapigs, demonstrated that hypodermic and intramuscular injections are of no value. By intravenous injections they were able to save a small proportion of the pigs. Nearly all the pigs recovered when treated by subdural injections. It is recommended that in every case of tetanus, 3,000 to 5,000 units of antitoxin should be given intraspinally, slowly by the gravity method after the withdrawal of sufficient spinal fluid. At the same time 10,000 to 15,000 units should be given intravenously. The intraspinal injection should be repeated in twenty-four hours. Three or four days later 10,000 to 15,000 units given subcutaneously will insure a continuance of the highly antitoxic condition during the next few days. Irons (13) outlines a similar plan of treatment, and adds that when only a small amount of antitoxin is available it should be given intraspinally. In a later report he (14) states the mortality rate in serum treated cases under the subcutaneous method from 1908 to 1913 inclusive was 75.6 per cent. In 1914, fourteen cases were treated by the combined intraspinal and intravenous method with a mortality rate of 51.1 per cent., a lowering of about twenty per cent. The new method of subdural combined with intravenous injections of tetanus antitoxin appears to be much more efficacious than the old method, and is undoubtedly the method to be used.

There are numerous reports in the literature concerning the use of vaccines in typhoid fever. Most

of those who have used them are evidently impressed with the benefit to the patient after such treatment; but when we analyse the cases they report, we cannot see that much was accomplished. From a scientific viewpoint it does not seem probable that in an acute infection a treatment based upon the principle of the development of an active immunity can be of much value. Semple (15) believes that the production of the bacteriolytic substances by the cells of the body is local and confined to the seat of infection, and thinks that the subcutaneous injection of vaccine is of benefit. Russel (16) believes that the subcutaneous injection of the vaccine does good by stimulating the subcutaneous tissue to antibody formation. As this tissue is not infected, and is therefore inactive in typhoid fever, the vaccine throws into activity this unused centre. Wright (17) also holds the view that the production of antibodies is local. Hektoen (18) conducted experiments which demonstrated that they are not produced locally. It seems unlikely that when the bodies of dead typhoid bacilli are injected, the endotoxins remain at the site of injection. It is more probable that they are carried by the blood and lymph streams to distant parts. It would be just as reasonable to suppose that the toxin of the disease is also purely local.

Watters (19) is an advocate of vaccine therapy in typhoid fever. He states that the mortality rate in 148 cases treated was 4.7 per cent. Eighty-nine cases were treated in a hospital where careful records could be kept. Eighty-seven cases were used as controls. The average duration of fever in the treated cases was 19.9 days, compared with 29.3 days in the untreated cases. About 4.9 per cent. of the treated cases had relapses, also twenty per cent. of those not treated. In a collection of 1,120 cases treated with vaccines the mortality rate was five per cent. The best results were obtained with a vaccine prepared from an old nonvirulent culture that had been subcultured for years in connection with the Widal test. Bosselli (20) treated seventeen cases without seeing any benefit. The mortality rate was twenty per cent. and fifteen per cent. relapsed.

The dose advised varies with the reporter of the cases. There seems to be no unanimity of opinion as to what is the best dose, but there is a decided tendency to give larger doses than formerly. Thus, Semple (15) began with doses of six to fifty million in his earlier cases. Now he recommends an initial dose of 100 million, gradually increasing to 300 million. As a general rule, the more severe the disease, the smaller should be the dose. The injections are repeated every twenty-four to forty-eight hours, depending on the effects secured. The best results are observed when treatment is begun before the tenth day. Therefore, blood cultures should be employed in suspected cases so that an early diagnosis may be made. Vaccine therapy is contraindicated in very toxic cases, in those suspected of hemorrhage or perforation, and in the presence of a complication such as pneumonia. Garbat (21) prefers the use of sensitized vaccine. He says the beneficial effects from the use of non-sensitized vaccines in the majority of cases are not sufficient to warrant their use as a routine. In sev-

enteen cases treated with sensitized vaccines he gained the impression that the course of the disease was milder. The average dose used was 500 million. We must be guided in doses by the severity of the illness, the age of the patient, and the reaction following the injection. The vaccine should be repeated every second, third, or fourth day. Once during convalescence, a dose of 250 million is advised, with the idea of preventing a relapse. The local and general reactions are reported as slight. Bellner (22) treated eighty cases with sensitized vaccine. He administered 500 million as the initial dose, one billion the next day, one and a half billion on the third day, and two billion on the fourth day. On the sixth day two and a half billion were injected. The duration of the disease was shortened by half in sixty per cent. of the cases. Complications occurred about half as often as in the untreated cases. Loss of weight was less, and the convalescence was shorter. No difference in the mortality rate was observed. Boral (23) reports a severe intestinal hemorrhage two hours after the injection of 250 million sensitized bacilli. There was marked vasodilatation following the injection evidenced by the intense redness of the skin. Ichikawa (24) obtained striking results from the intravenous administration of sensitized living bacilli. Koranyi (25) injected twenty-four cases of typhoid fever with Ichikawa's vaccine. A reaction was observed, consisting of a chill, increase in temperature, followed by a fall to nearly normal with sweating. All the patients recovered. He believes the disease can be aborted before complications set in.

In the treatment of lobar pneumonia vaccines have been of no value. The reason for this is clear in the light of the work of Rufus Cole and A. R. Douche, at the Rockefeller Institute in New York. They studied pneumococci obtained from patients suffering with acute lobar pneumonia, and by agglutination and immunity tests found that pneumococci were separable into four groups, which they numbered Groups one, two, three, and four. Serum antagonistic to the organisms of the first group is inert against organisms of the other groups. In other words, the organisms of each group call forth antibodies which are definitely specific. It was also learned that the virulence of the individual groups differed. The mortality rate in infections with Group I was found to be twenty-four per cent.; Group II, sixty-one per cent.; Group III, sixty per cent.; and Group IV, seven per cent. Studies are now being made in serum therapy from this standpoint, and it is probable that important results will be obtained. It appears thus far that cases of infection with organisms of Groups I and II are much improved by the administration of the appropriate serum. The mortality rate has been reduced materially. The serum is not available at the present time for general use. The serum treatment of lobar pneumonia is still in the stage of investigation, and belongs entirely in the domain of experimental medicine.

CONCLUSIONS.

Since beneficial effects from the use of vaccines are obtained through the production of an active immunity, and since active immunity is developed

relatively slowly, it is difficult to understand how their employment will be of advantage to the patient suffering from an acute infectious disease, even though sensitized vaccines are employed. Hope for the future seems to lie rather in the use of specific serum, which supplies the antibodies without calling upon the cells of the body to do additional work.

Experience in the treatment of typhoid fever and pneumonia does not justify their use, even though reports of harmful effects of such serums are infrequent in literature.

The value of antimeningococcus serum is demonstrated, so that the treatment with serum must be recognized as of the utmost importance in epidemic cerebrospinal meningitis.

The subcutaneous or the intramuscular use of tetanus antitoxin therapeutically is of little or no value. The combined use of the intraspinal and intravenous injections has reduced the mortality, and is therefore the method to be used at the present time.

The serum treatment of pneumonia is still in the early investigative stage and is not available for general use. The reports of the investigations, however, are encouraging, and lead us to hope that in the near future serums will be available against the various groups of pneumococci.

REFERENCES.

1. KOLMER: *Infection, Immunity, and Specific Therapy*. 2. S. FLEXNER and J. W. JOBLING: *Jour. Exp. Med.*, x, 141, 1908.
3. S. FLEXNER: *Idem*, xvii, 553, 1913. 4. A. H. PARMELEE: *Jour. A. M. A.*, ix, 659, 1913. 5. A. KETTER: *Bull. l'Académie méd.*, lxxii, 29, 1913. 6. P. KRUMHOLTZ: *Jour. A. M. A.*, ix, 1243, 1913. 7. S. FLEXNER: *Idem*, ix, 1937, 1913. 8. W. HALE: *Bull. Hyg. Lab. U. S. P. H. S.*, Dec., 1913. 9. SOPHIAN: *Epidemic Cerebrospinal Meningitis*. 10. R. V. MARTIN: *Southern Med. Jour.*, vii, 2, 1914. 11. C. PERMIN: *Mém. o. d. Genesgebiet d. Med. u. Chir.*, xxviii, 1913. 12. W. H. PARK and M. NICOLL: *Jour. A. M. A.*, lxxii, 235, 1914. 13. E. E. IRONS: *Jour. Infect. Dis.*, xiv, Sept. 1914. 14. *Idem*, *Jour. A. M. A.*, lxxiv, 1552, 1915. 15. D. SEMPLE: *Jour. l'Académie Thérapeut.*, i, 31, 1912. 16. RUSSELL: *Boston Med. and Surg. Jour.*, cxxiv, 1, 1911. 17. WRIGHT: *Studies on Immunization*. 18. LUDVIG HEKTOEN: *Jour. Infect. Dis.*, ix, 103, 1911. 19. W. H. WATTERS: *Med. Rec.*, lxxxix, 518, 1913. 20. BOSSELL: *Policlinico*, xxiii, 32, 1915. 21. A. L. GARBAT: *Jour. A. M. A.*, lxxiv, 489, 1915. 22. B. BELLNER: *Med. Klin.*, xi, 1074, 1915. 23. H. BORAL: *Wiener klin. Wochschr.*, xxviii, 415, 1915. 24. ICHIKAWA: *Ztschr. f. Immunitätsforsch. u. exper. Therap.*, xxiii, 32, 1914. 25. A. KORANYI: *Wiener klin. Wochschr.*, xxviii, 85, 1915.

319 SOUTH EIGHTEENTH STREET.

POTASSIUM IODIDE POISONING.*

By REYNOLD WEBB WILCOX, M. D., LL. D., D.C.L.,
New York.

Formerly Professor of Medicine, Post-Graduate Medical School and Hospital; Consulting Physician, St. Mark's, Ossining, Eastern Long Island, and Nassau Hospitals.

Iodide punishment, thus named by Field many years ago, is familiar to most physicians of experience. In greater or less degree we expect it when medication is necessarily intensive, and when reached, the results must be mitigated or the dose held at that maximum or properly and generally reduced.

The symptoms in the sequence of their appearance are metallic taste in the mouth, nausea, salivation, respiratory catarrhs, gastric pain, intestinal cramps, and irritation of the kidneys. Generally by the time gastric disturbances are established the cutaneous manifestations appear; such are erythema-

tous patches, with or without purpuric spots, papules, pustules, blebs, and finally even furuncles.

Two groups of symptoms appear to be common to iodide punishment and to hyperthyroidism. These are: 1. Circulatory palpitation, frequent pulse, warm and sweating skin; 2. nervous tremor, vasomotor disturbances, asthmatic attacks, insomnia, and nervous exhaustion.

If the iodide cachexia is established we have atrophy of the breasts and testicles, general emaciation, and rarely severe, but possibly fatal marasmus. As soon as emaciation becomes pronounced, there is generally intense cardiac palpitation and often a ravenous appetite. All these symptoms result from the administration of moderate doses of an iodide salt continued over considerable periods of time, but they are not of serious moment. They may be mitigated by coincident administration of alkalies, by the use of boiled starch as a vehicle, by the chewing of pelitory; and five drops of tincture of belladonna with each dose will generally obviate the respiratory catarrhs.

The quantitative estimation of potassium iodide in the urine is easily determined by Hilger's test (which rather constantly yields too small results) or preferably by Kerstrung's method.

Acute iodide poisoning is indeed of considerable rarity. The symptoms involving the alimentary system are: Thirst, nausea, salivation, vomiting, gripping abdominal pains, and purging. In the respiratory tract: Inflammation of nostrils (coryza) and frontal sinuses, swelling of the tonsils, fauces, and larynx. In this stage the eyes are suffused (conjunctivitis). In more severe instances, bronchorrhea is marked and pulmonary edema of high degree, with fever, may supervene. Occasionally, the symptoms may resemble those of hay asthma. In the circulatory system: Palpitation, frequent and feeble pulse, and fainting are observed. In the urinary system: Albumin and casts are found, there may be edema of the face and scanty urine, which may go on to complete suppression. In the nervous system: Headache, giddiness, tinnitus aurium, neuralgic pains, anxiety, convulsions, disturbed mentality, and active delirium have been recorded. Death may occur from respiratory paralysis.

CASE. E. B., single, aged about thirty-five years, had acquired syphilis ten years previously. The primary lesion had been recognized and, upon the appearance of the roseola, treatment with mercury had been instituted and carried out with reasonable thoroughness for about eighteen months, followed by the iodides for a like period. For more than seven years no symptoms or signs which would indicate the recrudescence of the original disease had been noted after careful and repeated examinations. So far as the methods in vogue at that time indicated, that he was cured of syphilis was a legitimate conclusion.

On October 7, 1909, he was found to be suffering from a moderate amount of conjunctivitis, coryza, with marked frontal headache, salivation, and cough with considerable mucous expectoration. The pulse was 96, respiration 22, and temperature 99.8° F. On careful examination, the heart was negative, the lungs showed no change of percussion or auscultation, excepting abundant, coarse, mucous rales. The urine was of a specific gravity of 1.023, urea 2.3 per cent., and beyond a very distinct trace of albumin, increased urobilin, and a small amount of mucus, was absolutely normal. On the following day, all symptoms were aggravated, the pulse was weaker, the respiration rate unchanged, but the temperature was 100.2° F. A specimen of the blood was reported to be absolutely normal by the board of health. On the 13th the symptoms and physical

*Read by title at the sixteenth annual meeting of the American Therapeutic Society, San Francisco, Cal., June 21 and 22, 1915.

signs remained about the same. The urine was strongly alkaline, specific gravity 1.020, with a trace of indican, urea 1.2 per cent., but otherwise normal. On the following day, microscopical examination of the sputum showed that it was mostly mucus, with some fibrinous matter and but little pus. There were a few diplococci, such as might be found in any normal sputum, but no pathogenic micro-organisms. The chlorides in the urine were moderately increased, and it was still alkaline, of a specific gravity of 1.023, containing one per cent. of urea and an increased amount of carbonates.

On the 15th the conjunctivitis, salivation, coryza, and bronchorrhoea persisted, the pulse was 88, weak but regular, the respiration 22, and the temperature 100.2° F. The patient was nervous, restless, and excitable. The heart sounds were weak, but no murmurs could be heard. Examination of the lungs showed abundant coarse, and fine mucous rales, and the patient was continually expectorating a clear, frothy mucus. On the following day, the restlessness continued and became more pronounced, with the exception of an elevation of one degree more of temperature, there was no change in the signs. During the night he became somewhat delirious and made several attempts to get out of bed. His urine was found to contain iodine in large quantity. After much questioning it was ascertained that he had been taking one half ounce of potassium iodide daily, for several days, for just how long, his excitable mental condition prevented us from securing accurate information, but it was probably for more than a week. He stated that he had taken an ounce that day; this, however, is doubtful. During the night he became more delirious and early in the morning the family called a physician, who made a diagnosis of "grippal pneumonia" and in the belief that sleep was an absolute necessity, gave twenty grains of hydrated chloral with thirty grains of potassium bromide. After some seven hours of more or less disturbed sleep, the physical signs and symptoms remained the same, excepting that the pulse became 120 and very weak. An examination of the sputum was negative for all bacteria. The urine showed a specific gravity of 1.020, was alkaline, urea 1.1 per cent., chlorides enormously increased, and some carbonates, with plenty of iodine. No albumin, peptones, sugar, or casts were found. A few triple phosphate crystals were found in the sediment. The fever, conjunctivitis, coryza, salivation, and bronchorrhoea gradually subsided and coincidently his restlessness. As the mucous rales diminished a ventriculosystolic murmur loudest at the apex, was discovered, and this persisted for more than a year.

On October 25th he passed ninety-eight ounces of urine, of a specific gravity of 1.015 (morning) to 1.020 (night), acid in reaction, urea one per cent., chlorides normal, albumin, peptones, sugar, bile, and indican absent; the urobilin was diminished. The sediment contained a very few hyaline casts, few leucocytes, a small amount of mucus, and few squamous epithelial cells. Vigorous interrogation on this date developed the detailed history so long missing and afforded a complete explanation of his condition. A friend of the patient had acquired syphilis at about the same time, perhaps from the same source. This friend had not been properly and thoroughly treated, and within the previous six months had suffered from a perforation of the hard palate, caries of the nasal bones, with a sunken nasal bridge. With this very definite result of uncurd syphilis before him, he himself determined to take no chances. He had learned from another friend who had suffered from syphilitic myelitis, that from a half to one ounce of potassium iodide, taken daily, would work wonders. His information, however, did not include the fact that these doses are reached by degrees, while the patient is under the observation of a physician. In addition, he had recently become engaged to be married, and wished to be sure that the dread disease was "driven out of his system." So far as could be ascertained, he had taken half an ounce of potassium iodide for twelve days; the ounce dose which he said he had taken upon the last day of his self determined treatment, is uncertain. The symptoms resulted from six ounces of potassium iodide distributed over twelve days, and had become marked enough for medical attention on the third day of administration. About a year after this episode, he married and in due course of time became the father of a healthy child which, so far as known, has remained healthy. He was firmly convinced that the unfortunate result was entirely due to his having thoroughly cleared his system of syphilis by the

method which he reasoned out and adopted with so much resulting commotion. He was warned, however, that at present a method had come into use, unknown in practice at the time of his experiment, which determined the cure of syphilis with great accuracy, and that he was to recommend neither his theories nor practice to any of his friends who might have been in their past likewise indiscreet.

979 MADISON AVENUE.

THE CURATELLE AND MODERN PSYCHIATRY.*

A Critical Review, with Suggestions for Reform.

BY GEORGE W. JACOBY, M. D.,
New York.

When a young person attains his majority, the laws of his country accord him the right to manage his own affairs and to exercise the duties of citizenship; during the preceding period, he has been a minor and legally incapacitated for the performance of certain acts. All these acts then, to be legal, must be transacted through a legal representative. A person, on attaining his majority, may thenceforth act for himself. Normally, and in most countries, a person's minority ceases when he has completed his twenty-first year. Under certain circumstances, however, in consequence of psychic defects and their concomitant restriction or annulment of free determination and responsibility, adult individuals remain minors or must, by means of curatelle proceedings, be put back into a state of minority. In this dissertation we are concerned only with the curatelle or declaration of incompetency, on account of psychic defects.

He only can be deprived of his competency who has at some previous time been competent and in full possession of the legal right to act for himself. In its strict sense, therefore, the curatelle concerns only adult individuals. Nevertheless we shall see that under special conditions persons under twenty-one years of age may be placed under curatelle; then, however, strictly speaking, we are not dealing with a curatelle, but with a declaration of continued incompetency, in consequence of which such persons, because of psychic defect, will remain legally incompetent after the completion of their twenty-first year.

It would be futile to attempt to demonstrate the far reaching influence of mental disorder in bringing misfortune and ruin upon the family of a person thus afflicted. Let it suffice to say that no other disease can so rapidly and so thoroughly undermine the social and economic standing, not only of the patient but of his entire family, as can insanity.

For this reason alone, if for no other, it becomes one of the most urgent obligations of every physician to recognize such impending danger as early as possible and to do all in his power to prevent an actual outbreak of the disease, or, if this cannot be, to convince the family of the patient that he

*Curatelle is defined in Boullier's *Théorie des mesures des incapacités des adultes*, as the office of a *curateur*. In its turn *curateur* is defined as he who, among the French, is commissioned by law to exercise charge of the interests and goods of another. A *curatelle* is appointed in cases of *impuissance* (excluding a minor from paternal control), *interdiction* (deprivation of civil rights on account of insanity, etc.), vacant succession, bankruptcy, posthumous gestation, etc. Curatelschism seems to be a fair equivalent of curatelle. (Lam.)

must be placed in a proper institution in order to establish the conditions essential to improvement or recovery and to protect him against himself, and his family against the consequences of his uncontrolled acts.

What, however, can we do when the patient resists removal to an institution? Every psychiatrist is familiar with the legal obstacles which, in all countries, are frequently called upon to obstruct the prompt internment of urgent cases. Such obstacles once overcome, and the patient safely sheltered under the organized care of a proper sanatorium, his family need no longer fear those outbreaks and excesses which, notwithstanding the most vigilant and affectionate solicitude, had theretofore threatened to cause a public scandal and to bring about social as well as economic ruin. The more prominent the social position of the patient, and the more responsible his business activities, the greater and more imminent will such danger be.

Undoubtedly some insane persons, under favorable home surroundings, are relatively harmless, but unfortunately this cannot be said of the majority of the insane. In an unfavorable environment every apparently harmless insane person may at any time, through unforeseen provocation or impulse, be the cause of disaster. For reasons which we can understand, but which we cannot indorse, insane patients are placed in sanatoriums only with extreme reluctance. Until that step is taken, however, much valuable time is being wasted and much mischief done; or, only too often, when, as a result of sanatorium care, improvement has set in and the patient is taken away too soon, he is again exposed to the same noxious influences that originally caused the breakdown and must be returned to the institution with prospects of recovery lessened or effaced. On the other hand, many persons afflicted with mental disorders are not proper subjects for sanatorium care, and if they can be placed in a suitable environment, if the conditions of their life can be properly modified, may be better cared for outside of an institution. No sanatorium exists which is perfectly adapted to the individual requirements of each and every case of insanity. If, then, we admit that some cases of mental disturbance must be cared for outside of an institution, the question must be answered: How can such patients and their families be protected against danger and ruin?

In view of the inadequacy of all human provisions, a complete solution of this problem is impossible. All we can do is to mitigate the danger as much as lies in our power.

Many of the civil wrongs, mainly economic ones, which the actions of an insane person may have brought upon himself or his family, may in part be remedied by a contest of the legal but prejudicial acts, by proving the existence of mental disease in the individual case and also, where contracts are concerned, by showing that the existence of the disease was known to the other party to the contract. But right here, at the very beginning of our reflections, we find the law furnishing different answers to one and the same problem, for not all decisions of the courts sustain the latter part of this proposition, and others make a distinction between contracts which have been executed and those which are still

to be completed (executed and executory contracts).

In view of the varying decisions of the courts and considering that the insanity or incompetence of the person who has been prejudiced as a result of his own acts, frequently lies far away in the past and therefore may be difficult or even impossible of proof, we easily can appreciate the desirability of some other mode of protection than a post factum contest. Such protection, indeed, is given by the institution of guardianship—the curatelle—a regulation which is well established theoretically, but which practically is still by far too little known and employed. In the domain of civil law, the curatelle protects the patient against the consequences of his acts. Under the principle of such guardianship we are enabled not only to place the patient without further ado in a sanatorium for protection, care, and treatment, in conformity with the requirements of the individual case, but we can also supervise his acts and treat him outside of the confines of an asylum, thus protecting him against deleterious influences and giving him the advantage of beneficial ones in a manner not otherwise practicable.

While under all circumstances a curatelle is a measure of great stringency, for that very reason it will prove to be a great boon when employed at the proper time and place. In order to avoid any misapplication of the curatelle, the law has surrounded this procedure with all possible safeguards against error. The rational use of this measure being thus guaranteed, its salutary effects cannot be overestimated, especially when we remember that the laws of all civilized peoples provide for a curatelle, not only on account of insanity in a strict sense, but also on account of mental defects or disorders which, although of minor importance medically, are none the less important from the viewpoint of civil law.

Historically, the curatelle is first encountered in Roman law as a guardianship on account of improvidence. This curatelle (*interdictio*) based upon the time honored laws of custom, or common law, was originally applied in case of dissipation of a patrimony inherited through lawful succession and not through testamentary bequest. Later that limitation of the curatelle for improvidence can no longer be found in the Roman law. By the magisterial decree of interdiction, the spendthrift was placed upon a par with an immature minor. There was assigned to him a guardian (*curator*) whose sanction was not required for the transaction of business pertaining to property rights so long as the proceedings accrued to the benefit of the ward (transactions of pure acquisition), but without whose cooperation no other business transactions (sales, mortgages, obligations), could be effected. The spendthrift was entirely incompetent to make a will or testament. This state of limited business competency lasted, irrespective of any temporary betterment of the prodigal, until the interdiction had been formally annulled. Improvidence of itself was assumed to be the ground upon which a guardianship for extravagance was always established, but the Roman law did not possess any formal standard for the establishment of a curatelle on account of insanity.

Transactions executed in a state of insanity were

ineffective, the insane person being as incompetent as a child of less than seven years, while upon the other hand it appears that he who was merely feeble-minded was upon the same legal footing as the mentally healthy. In case of mental disorder of long duration, a guardian was appointed with the power to act in place of the patient, but in case of the occurrence of so called lucid intervals the latter at once became legally competent to act for himself, notwithstanding the existence of a guardianship, and, in case of recovery, the guardianship ceased of itself without entailing any procedure for its formal annulment. How unsatisfactory such a condition of affairs must have been from a business point of view may easily be conceived.

In sharp contrast to the Roman law stands the old Germanic law. According to the latter the insane and the feeble-minded, whom the law placed upon an equal footing, were not incompetent in all matters and, when they had regained their reason, they might within a certain time limit or revoke business transactions which they had effected during their sickness and which had resulted to their detriment. In this regard they were on a plane with minors. The insecurity thus given to their transactions naturally precluded them from all business intercourse, but did not cause the want of a curatelle on account of insanity and feeble-mindedness to be seriously felt. While, therefore, insanity, according to the Germanic law, did not necessarily entail the appointment of a guardian, it was, upon the other hand, the privilege of the clan, and later of the family, to place the insane person under guardianship and to prevent him by means of actual force from squandering his possessions. So, in the absence of any magisterial institution of guardianship, it was the province of the clan to exert such restraint as was necessary for the protection of the patient and others.

Further development brought into both Roman and Germanic law a formal guardianship on account of insanity in addition to the formal curatelle on account of improvidence which already existed. Uniformity in the law for all localities, however, was not attained. Some places had no curatelle for the improvident, while others had various ways of dealing with the lucid interval, the latter of itself conferring competency in one place, while in another its existence had no effect unless the guardianship was formally annulled.

The law's development has for the time being come to a stop with the system of curatelle elaborated in every detail, which has been adopted throughout the German Empire and which has been in operation since January, 1900, and in its amended form, since April, 1910. While all countries today possess some system of curatelle covering both insanity and improvidence, the newest and most complete is undoubtedly that of Germany. For this reason I have made use of the amended German law as a basis for the following discussion.

There are at present four kinds of curatelle, namely: Curatelle for insanity, for feeble-mindedness, for improvidence, and for inebriety, the last being a new creation.

The social and economic purpose of the four kinds of curatelle is inevitably the same, namely,

the protection of the incompetent against himself and against the dangers which threaten him as a result of his diseased or abnormal state, and the concurrent protection of his family and of the community in general.

Inasmuch as the motives and causes for the establishment of the curatelle differ essentially for each form, the uniform purpose can be attained only through different means. Without further discussion it must be clear that the protection of an otherwise inoffensive spendthrift must be achieved in a different manner from that of a person suffering from an acute outbreak of insanity; upon the other hand, it must be quite as clear that, notwithstanding differences in cause and motive, there must under all circumstances be uniformity of purpose. While no one will deny that feeble-mindedness, like insanity, is a disease, prodigality and inebriety, on the contrary, are apt to arouse in the minds of most people, cultured or ignorant, a dominant feeling of indignation, emphasizing the vice and overlooking what the physician at once notes—that the vice is only the expression of a disordered equilibrium, due to disease or faults of development or environment.

I will admit without question that not every inebriate or spendthrift is such from necessity, and that the factors which determine his condition may often be traced to a laxity of morals or other avoidable conditions, but all the more emphatically must I maintain that whoever is a pronounced drinker or spendthrift is, solely because of his defect, a fit subject for medical supervision. In all four kinds of curatelle a person's commercial or business competency alone is involved. His criminal responsibility is in no wise affected by any of them. Wherever in any criminal case doubts arise concerning the responsibility of the defendant this responsibility must be tested for itself by means of all pertinent evidence. Similarly a curatelle in itself does not preclude the civil liability which results from a criminal act.

To all kinds of curatelle, moreover, the following points are common: The curatelle is applicable not only to persons of full age, but also to minors more than seven years old. A curator must be provided forthwith for every incompetent.

As already stated, the degree of business incompetency resulting from the establishment of a curatelle on account of insanity differs from that which results from a guardianship on account of improvidence or inebriety. He who has been placed under curatelle on account of insanity, whether a minor, i. e., under twenty-one years of age, or of full age, i. e., one who has completed his twenty-first year, is entirely incompetent. He can carry out no legal transactions validly, even when they accrue to his own benefit. In the eyes of the law he is on a par with a child of less than seven years of age. This explains the legal reason why minors more than seven years of age may be placed under curatelle on account of insanity. The incompetent by reason of insanity can neither purchase anything, nor borrow money, nor accept a gift, nor enter upon a marriage.

In all relations which admit of representation, whether they pertain to property or person, he is represented by his curator. In property matters the curator transacts all business for the incom-

petent, who, having no legal power of determination, is of course bound by the acts of the curator. Inasmuch as final testamentary disposal is dependent upon free and uninfluenced determination and cannot be effected through a substitute, the curator may make no will and testament for his ward. On the other hand, he may, acting for his ward, accept or reject any property which the latter may inherit; in case of rejection, however, as well as for a number of other business transactions, he must first obtain the sanction of the court. In regard to all rights of person, it is the duty of the curator to protect and care for his ward as a father for his child. Thus he may determine the ward's place of abode, and, if special measures of restraint are necessary, he may petition the court for authority to apply them. The incompetent on account of insanity, not having any legal will and not being able to enter into any agreement with his curator, cannot contract a legal marriage even with the consent of his curator.

So far as control of the person of the ward is concerned, the law establishes a difference between an incompetent minor and one who has attained his majority. Over the former the guardian possesses general powers of discipline, while over the latter he may exert his authority only so far as may be requisite in connection with the special failing for which the curatelle has been instituted. While a curatelle on account of insanity deprives the incompetent of all legal personal will, the curatelle on account of feeble-mindedness, improvidence, or inebriety is not so far reaching, in that the incompetent is placed upon the same plane as a minor more than seven years of age, and may carry out all legal acts in the same way as such a minor. He can, with legal validity and without the cooperation of his curator, carry out property transactions so long as they accrue to his benefit or profit, while, on the other hand, all such transactions which do not accrue to his benefit are binding only if they have been effected with the sanction of his curator.

In one particular, however, the incompetent, so declared on account of insanity, differs from a minor more than seven years of age. While the latter, when not declared incompetent, and still under the authority of his parents or of an ordinary guardian, can freely make effective testamentary disposal of his personal property, provided that he has completed his sixteenth or eighteenth year, as the case may be, an incompetent, whether so declared on account of insanity, feeble-mindedness, improvidence, or inebriety, can make no valid testamentary disposal so long as the curatelle remains in force. This is one of the considerations which the law desires to meet in establishing a curatelle over a minor more than seven years of age, for although such minor naturally enjoys only a limited competency, he would, if not placed under curatelle, be competent to dispose by will of his belongings, and it may well be seen how such testamentary capacity would be hazardous in the case of an insane, feeble-minded, improvident, or inebriate minor.

Another important ground for being able to place a minor under curatelle is feeble-mindedness of a form that will probably jeopardize an individual's economic existence when he attains his majority. Take the case of a boy whose unstableness of char-

acter is well known, whose dispositions, tendencies, emotions, and lack of insight show him to be constitutionally unfit. Should it be necessary to wait passively until, having outgrown parental authority, he may in a brief span of time ruin the economic existence of himself or his relatives, or compromise his entire future? Certainly not! The establishment of a curatelle before it is too late gives the means for prophylactic relief.

Finally, we must state that certain special business transactions essential for the maintenance of the incompetent's station in life and occupation may be carried out by him with the consent of his curator, that consent, however, being subject in turn to the approval of the court. The personal rights of such incompetent are governed by similar considerations. The curator has the same rights and duties in relation to the incompetent, so declared on account of improvidence or inebriety, as he has in relation to him who has been declared incompetent on account of insanity; he may determine his place of sojourn and must protect and care for his person, yet always with the proviso that he may use measures of restraint only with the court's approval, and, in the case of an incompetent who is of age, the authority of the curator must be confined to the purpose for which the curatelle has been instituted. While, in general, the curator is independent in the execution of his obligations and is bound only by his best judgment, just as is the parent toward his minor children, still his office is hedged in by forceful provisions against malfeasance and arbitrary action. The prescribed legal status of the incompetent remains in force and unchanged until the curatelle has been annulled. Up to that time all changes in the condition or comportment of the incompetent, improvement or recovery, have no influence in the eye of the law. "Lucid intervals" do not exist. The annulment can be effected only by the court upon application by the proper parties.

After this general sketch, let us turn to a consideration of the individual forms or kinds of curatelle.

1. *Curatelle on account of insanity.* Continuing with the German statute as a basis, we find the code of civil procedure states, "a person can be placed under guardianship who, as a result of insanity, is unable to conduct his affairs." But what are we to understand by "insanity"?

The definition given by this code of civil procedure is based upon that found in the code of criminal procedure. The latter defines insanity which renders a person irresponsible in the following way: "A punishable action does not exist if, at the time of the commission of the act, the offender was in a state of unconsciousness or in a condition of disordered mental activity due to disease, in consequence of which his free determination was impossible."

In evident conformity with this definition of irresponsibility as given by the criminal code, the civil code declares a person incompetent to transact business—that is to say, irresponsible from the viewpoint of civil law—if, in consequence of a disordered state of mental activity, he is unable to exercise free determination unless such state is of a transitory nature. The code, furthermore, explains

the effect of business incompetency as follows: "A declaration of purpose of a person incompetent to transact business is void, as is also a declaration of purpose which has been made in a state of unconsciousness or transitory disorder of mental activity."

Here, however, the term, disorder, signifies only such disorder as has caused a suspension of free action of the will. Parenthetically, we may add that the code of civil procedure declares any person incompetent to transact business who has not completed the seventh year of age or who has been placed under curatelle on account of insanity. We see, therefore, that the civil code makes very stringent demands for the recognition of insanity as such, that is to say, the mental disorder must be of such nature as to result in a suspension of the free action of the will.

We must bear in mind that certain acts which take place in a state of unconsciousness or transitory mental disorder causing a suspension of freedom of voluntary action are regarded by the law as the actions of an insane person. The law has not deemed it wise to set up any further test. Therefore, aside from its statement as to the exclusion of freedom of voluntary action, the law does not offer any more specific legal definition to make it possible to determine whether insanity exists, but leaves it essentially to medical science to decide that question.

But the existence of insanity alone is not sufficient ground for the institution of a curatelle, for the law expressly maintains that the person to be declared incompetent must, in consequence of insanity, be incapable of transacting his affairs. It would seem, therefore, that the notion of insanity necessary or sufficient for the institution of a curatelle and the notion of insanity in general, are not one and the same. That this is correct is shown by the fact that insanity may exist in people of an otherwise high degree of intelligence, who, notwithstanding their disease, are able to transact their business affairs. Thus, for instance, in a medicolegal case with which I was associated, the appointment of a guardian was refused, although the medical expert testimony showed the patient to be undoubtedly insane, but at the same time made it clear that, in consequence of extraordinary intelligence, unusual education, and special business adaptability, the man had been able despite his disease, to transact complicated financial affairs as well as any professional banker. A few years later, it is true, the disease had progressed so far that when a new application was made for the appointment of a guardian, this patient was placed under curatelle.

A special class of insane persons, who often cannot be legally declared insane, but who at least require the protection of a guardianship, consists of those known as *querulants* or litigants. Every psychiatrist has had to deal with litigious insane persons who have sacrificed their entire fortunes in order to enforce their supposed rights. In these cases, when a curatelle on account of insanity cannot be obtained on account of legal difficulties, the establishment of a guardianship on account of extravagance would meet all requirements.

Under certain conditions, therefore, more than mere proof of the existence of insanity is demanded for the appointment of a guardian. On the other

hand, in some ways the law demands rather less for the institution of a curatelle than it does for other purposes, for it is not necessary that a disease be present that will abolish all freedom of the will, but only a defect that disables the patient from conducting his affairs. And here again the law is right, for we all know of conditions in which a patient is actually incapable of transacting his affairs as a result of his disease, and yet need not have lost his freedom of will.

(To be continued.)

CANCER OF THE BREAST.

BY JOHN EDWARD JENNINGS, M. D.,
New York,

Surgeon, Brooklyn Hospital.

The successful treatment of cancer of the breast depends entirely on the early recognition of the disease and on the thoroughness of its removal. This is a fact which has long been recognized by surgeons and admitted by the medical men, who are first consulted by patients. It is in a great part ignored by the victims themselves, in some cases because they are uninstructed, and in others because they hesitate to face the truth. It would be better if this hesitation, in the face of fact, were not shared by the medical advisor and if he lived up to the knowledge which he shares with all the world, that an early cancer is curable, and that a late one is not, and that the chance of cure depends on the promptness with which radical surgery is done.

The diagnosis of cancer of the breast is a matter of probability and exclusion. The patient comes for diagnosis because she is anxious about a lump in her breast, and it may be that her anxiety is not well grounded. It may be that there is no lump in her breast at all. These pseudotumor patients, by the way, are likely to be young. The mass may be quite imaginary or it may be a prominent and angular rib which she has just discovered, or it may be, and this is especially true in young, unmarried, anemic women, an undue engorgement of the breast at the menstrual period. At such times the ducts may be felt thickened, engorged, tender, radiating from the nipple. Most of these subside after menstruation. Some of them remain and show a gradual thickening of one lobe of the breast after another, sometimes with pain, always with tenderness and often with an involvement of both breasts. It is much more common in virgin breasts, and shades into chronic mastitis by ill defined degrees.

But if a tumor is present the patient's anxiety is proper, and the case should be approached with the intention of definitely discovering the nature of the disease. The probability is well expressed by the statistics of Warren, of Boston, who found in 758 cases of all varieties of breast tumor seventy-six per cent. of the cases in women over thirty years of age, malignant. In cases under that age less than ten per cent. Even in the decade from thirty to forty, sixty per cent. of the cases were carcinoma. This does not refer to neoplasms, but to lumps in the breast. So that merely as a matter of probability, if the woman

is under thirty years of age, the chance is nine to one that the growth is innocent, if she is over thirty years it is worse than even, and if she is over forty it is three or four to one in favor of malignancy. Apart from this, all other factors in the history are of minor importance. There may or may not be a

as in benign growths? It is a property of scirrhus carcinoma to cause contraction of the suspensory ligament of the breast and so to shorten the radial axis in which it lies. This often precedes skin dimpling or retraction of the nipple, and may be made out plainly in breasts that are not too fat.

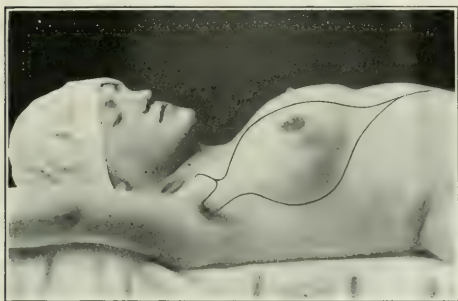


FIG. 1. Line of incision.

family history of malignancy, there may very likely be a story of some blow, the relation of child bearing, of lactation, the scar of an abscess, previous exacerbations of a chronic mastitis, all deserving of note, but not of prolonged attention. The examination of the breast is the thing. And for this the patient is to be suitably prepared, merely opening the dress and lifting the breast above the corset will not do. All the clothing above the waist should be removed, and both breasts carefully inspected and gently palpated and compared. Inspection should be made from the front and from each side, with the eyes on a level with the breasts and in a good light. The diagnosis may sometimes be made by this alone. One observes any difference in the level of the nipples, any irregularity of outline, skin

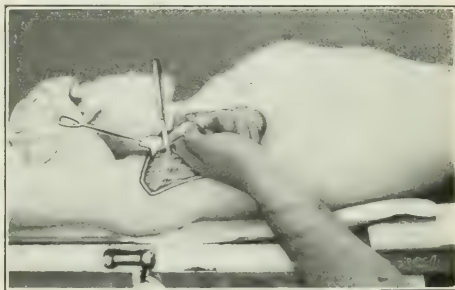


FIG. 3. Dividing the pectoralis minor.

Easier to observe than this measurement of a radius, however, is a measurement of the distance from the clavicle to the nipple and a comparison with a corresponding measurement on the opposite side.

In scirrhus tumors it will be found that the nipple on the affected side is elevated from one half to one inch, or even more, while in the larger, more rapidly growing adenocarcinoma, as well as in benign growths, the weight of the mass carries the breast and the nipple down. This measurement is taken first with the arms at the sides, and second, with both arms raised above the head. It will be found that the excursion of the nipple on the sound side is greater than that of the affected breast. I do not wish to emphasize this sign unduly nor to

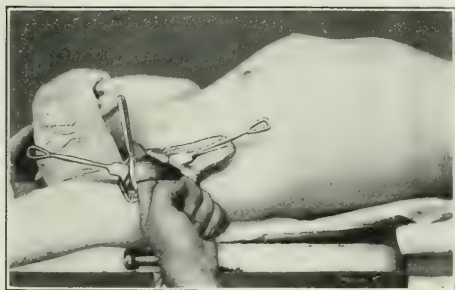


FIG. 2. Dividing the pectoralis major.

dimpling, or flattening of contour. Is a manifest tumor present? If so, what is its situation in the breast? Cancer is more common in the upper quadrant, under the nipple, and on the outer side. Benign neoplasms, on the other hand, occur more often in the inner quadrant of the breast. Is the nipple retracted more on one side than on the other? Is it flattened disproportionately on one breast? Is there any shortening of one radius or lengthening,



FIG. 4. Clearing the axilla.

insist upon its importance unless further observation upon normal variations and its occurrence in disease should corroborate its value. I believe, however, that it is worthy of note and consideration.

In the later cases, when the skin is itself infiltrated, difference in color may be seen, or the rough, orange or pig skin pitting will make its appearance, or chronic eczema, with discharge from the nipple and thickening beneath it in the rather rare Paget's

disease. All these are characteristic and late in their appearance, but it is in the earlier stages, before the skin itself is involved, and when the contraction of the growth draws upon the suspensory ligaments of fibrous tissue that pass from the breast to the skin, that the localized skin retraction is to

the skin of moving the breast and the tumor under it. Sometimes the attachment of a growth to the skin will be most easily recognized by encircling the base away from the chest.

Palpation should be gentle; the rough manipulation of cancers of the breast by osteopaths has shown quite clearly that the disease may be readily disseminated in this way, and it is illogical to take elaborate care to avoid pressure on a breast at operation after little short of massage before. Halsted once wrote, "It well repays the experienced surgeon to spend perhaps an hour in examination of certain breasts," and that "the firm circumscribed pressure exercised in the effort to determine the elasticity of a tumor occasionally ruptures, I believe, the capsule of a fat lobule." This cannot be good for malignant tumor, and in this connection it seems too that the patient ought to be cautioned not to palpate her own breast to see if the tumor is grow-

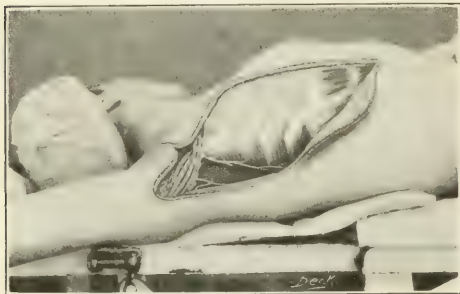


FIG. 5.—Breast removed.

be sought. This is the important early sign if scirrhus is to be looked for, felt for, and looked for again, while the breast is made to move to and fro under the skin. The nipple is retracted in the majority of cases of central scirrhus when the victims seek advice, but it cannot be considered an early sign. In medullary carcinoma these signs are absent, as they are in adenocarcinoma.

Palpation is best done, in the examination of most breasts, with the palm of the hand and the palmar surfaces of the fingers pressing the breast against the chest, the examiner standing behind the patient. With fat breasts, particularly if they are pendulous also, this is not so good a method as the palpation of the breast between the flat hands. In pendulous breasts, not very fat, the lower half of the breast is best palpated while the nipple is lifted upward by the other hand. We note the size of the mass,



FIG. 7.—Well advanced scirrhus of the breast, showing the elevation of the nipple and involvement of the skin of the axilla.



FIG. 6.—Suture line.

and if there is more than one, its consistence, its shape and outline, whether discrete or not, the presence of nodularity, and, most of all, its mobility on the deeper parts under the skin and in the gland itself. After palpation alone the breast should again be inspected with palpation, to note the effect upon

ing, as it is so natural for her to do. The palpation of the axilla, best made from behind, will be routine, of course, but too much stress has been laid upon it as a part of the diagnostic examination for diseases of the breast. The presence of enlarged axillary or supraclavicular lymph nodes is important, if malignant disease can be recognized, as indicating the stage of the disease. Their presence, however, does not guarantee a tumor malignant, nor does their absence in any way assure the reverse.

The most frequent form of cancer of the breast is scirrhus, and the common type of scirrhus is the infiltrating tumor. The earliest sign that this tumor gives is the dimpling of the skin, which is to be sought for by such an examination as has been outlined above.

In case no such pathognomonic sign can be made out, however, and in case the tumor cannot be differentiated, what is to be done? It will declare it-

self in time, too late. Out of ten cases in which the diagnosis was made on the table, only one recurred in three years. Bloodgood's figures are better—one in twenty-five. The mass should be explored, and if a diagnosis is not to be made on gross examination, a frozen section should be made and an appropriate operation done. The objections to frozen sections are that they are made by pathologists who too often do not apparently realize the absolute difference between a tissue diagnosis made before surgical treatment has been instituted and one submitted some time after. In the first instance, the knowledge so gained is a factor in diagnosis; in the second, it is too late. It is quite true that gross examination will usually be enough to reveal the presence of cancer, particularly scirrhus, in a mass cut down upon with the knife. There are, however, enough cases in which early adenocarcinoma is revealed to make the measure well worth while.

The essentials of a radical removal of the breast for cancer are, a sufficiently wide skin incision with a wider removal of the deep fascia, the pectoralis

phatics which lie on the deep fascia are the plane in which the disease spreads, the breast itself lies between the layers of the superficial fascia, a structure also supplied with lymphatic vessels. I believe it is not too bold to call this area the dangerous area in breast amputation, and I submit that it should be at least as radically dealt with as regions more remote from the disease. Do the operations of Halsted, Kocher, or Rodman fulfill this condition? The figures show an operation which I have used for the last four years, and which, I believe, has certain advantages in this regard, and the closure of the wound does not hamper the use of the arm.

CONCLUSION.

It is still unfortunately true that the larger number of women with breast cancer seek advice at a stage when the diagnosis may be made by a careful clinical examination, and the elicitation of well known signs; but there are a considerable number of cases in which a diagnosis cannot be made save by operation or delay. Delay is the more radical measure in women over thirty years old, and it is the gravest danger such cases have to face. All such suspected masses should be cut down upon, recognized by gross or microscopical examination made at the time, and treated as the conditions indicate. The prognosis in cases so recognized is really disproportionately good.

282 JEFFERSON AVENUE, BROOKLYN.

GAS GANGRENE.

Its Importance and Its Treatment During the Present War,

By E. KILBOURNE TULLIDGE, M. D.,

Philadelphia,

Military Surgeon, French Red Cross; formerly Captain Surgeon, Austrian Army.



FIG. 8.—Unrestricted use of the arm three weeks after operation.

major and minor, and the axillary fat and lymphatics. The fascia removal should reach below the ensiform, and the epigastric triangle of Handley cleared of fat. In cases in which the tumor involves the upper or inner part of the gland, the supraclavicular glands should also be removed. We know that the spread of the disease is by centrifugal dissemination in the lymphatics, and it is desirable that the tissues removed should include the areas likely to be involved. The disease may recur at points quite remote from the margin of tissue removal without evidence of invasion nearer the site of operation. In three recent cases I have noted involvement of the margin of the opposite breast, involvement of the opposite axilla, four years after operation, and involvement of the opposite breast and the axillary lymphatics. It appears to me that the area most likely to be neglected lies in and directly under the skin, between the breast and the axilla. Many breasts have an extension of gland tissue reaching well up toward the axilla, and in all cases the great trunk lymphatics run in this direction. Moreover, while Handley has shown how frequently the lym-

Of the important complications met with on the field and in the base hospital, gas gangrene has proved the most serious. It is not accompanied by supuration, but resembles a malignant edema, developing at times in from twelve to eighteen hours after inoculation. A smear stained with a dilute solution of carbolfuchsin will show the gas bacillus or *Bacillus aerogenes capsulatus*, with its rounded ends and short thick shape, a contrast to the beveled edges of the anthrax bacillus or to the slender form of the bacillus of malignant edema. As yet no serotherapy or internal remedy has proved of value in this infection, the one important aim being to keep up the patient's strength and general condition, both of which are early and easily attacked.

From observation and treatment of over 230 cases of gas gangrene, I found in a section of eighty-one cases, twenty developing four days, twenty-two cases developing five days, and thirty-seven cases, three days, after a shell wound of the extremity.

The onset in every case was sudden and stormy, the limb becomes swollen, discolored, and painful, the symptoms in every way resembling those of an acute, rapidly progressing venous thrombosis, except for the accumulating gas and the crepitus elicited, and the contused lacerated opening or break in the skin through which the infection has entered. In

every case upon palpation if there was no crepitus, no crackle beneath the skin on pressure by the finger, we reasonably doubted the presence of this infection, for it was not there. The zone of inflammatory demarcation is more painful on pressure than the peripheral areas. In fact, severe and excruciating pain results at times from pressure upon this area. I have seen patients go into convulsions or

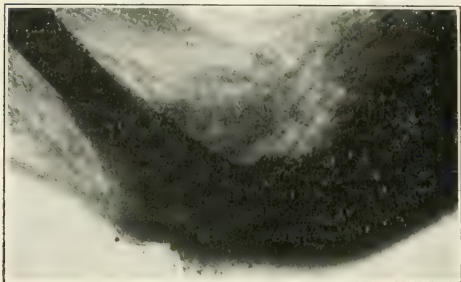


FIG. 1.—Well advanced gas phlegmon or gas gangrene of elbow, after five days. The black shadow below bones of forearm is necrotic gangrenous tissue; above elbow and humerus is seen gas in the tissues. Wound was caused by shrapnel.

collapse utterly as the result of slight tension in the examination of this zone.

The infection spreads rapidly, and the decision as to the advisability of an operation must be made when the patient is first seen. In five of the foregoing cases prompt amputation of the limb (thigh in two cases, arm in two cases, foot in one case) resulted in complete recovery. Amputation of the infected limb far above the seat of invasion or crepitus having been the teaching and practice in gas gangrene infections for the past several years, in fact, long before the Civil War, I employed this method in the first twenty-four cases that I had occasion to treat with results that could not be called discouraging, but which were in no sense gratifying, inasmuch as seven patients died as a result. One case, however, arrived with a wide involvement of the thigh and hip joint, with spreading crepitus beneath the abdominal muscles above Poupart's ligament, on the left side of the body. Amputation was here out of the question, and the area was opened with large incisions through the skin and muscular tissues, exposing great areas of gangrene and mortification. These were cut away, including the origin of the sartorius and much of the fascia lata on the outer aspect of the thigh. Jets of hydrogen peroxide were forced into the wound and beneath the remaining muscles and tendons. To our astonishment, the patient, after lingering several days with marked indications of sepsis, rapidly improved, and finally recovered. In 177 cases that followed, large incisions were made over the infected areas, and as much as possible of the gangrenous tissues, usually muscular and tendinous, were cut away. In several cases it was necessary to remove practically all of the triceps and part of the biceps muscles of the arm.

Care should be exercised to examine all the tendinous sheaths bordering on or near the infection, and

when as much as possible of the gangrenous tissues is removed, sprays or jets of hydrogen peroxide should be thoroughly played upon all of the remaining structures, taking pains that every corner and crevice receives its share. Following this, a wet dressing of sublimate solution, one in 1,000, should be applied, and the treatment repeated each day for the following four days, after which the time is lengthened to every other day. As a result of this treatment not one case was lost, all ended in recovery, and amputation for gas gangrene became a practice of the past. The remaining patients unaccounted for above, were either too feeble to withstand the operation or were received in a dying condition.

The phenolization treatment described by Menci re, I have not tried, but as the technic is somewhat similar to the one I have described above, it may be of great value if carried out as follows: After long incisions, clean up the gangrenous areas by the removal of splinters and fragments of clothing and the extraction of the projectile, usually a bullet or piece of shell. Block up the other openings with a tampon, and hold up the edges of the wound with Kocher's forceps, in order to form a pit or hollow, into which may be poured a solution of crystals of nine parts pure phenol and one part alcohol, and with small tampons swab out all the small recesses. Allow this solution to remain in contact with the wound from one to one and one half minute, avoiding cauterization of the surrounding skin, which requires a small amount of dexterity. At the end of this time remove all excess of phenol and irrigate the wound with a strong solution of alcohol, and apply afterward six to eight ounces of a solution consisting of one liter of ether, ten grams each of iodoform, guaiacol, and eucalyptol; thirty grams of balsam of Peru, and 100 c. c. of ninety per cent. alcohol. This all will agree with me is a tedious treatment when we can arrive at the same results by a much simpler, quicker, less expensive method.

The gangrenous tissue is for the most part lacer-

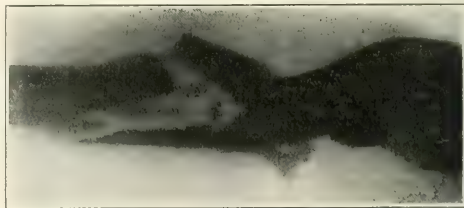


FIG. 2.—Early stage of gas gangrene (gas phlegmon) on the second day after injury of the humerus by shrapnel.

ated in texture, giving a greenish black or dark blue, stringy, pulpy, stinking character to the area. The formation of the external gas blebs so often spoken of is seldom seen, and they are rare rather than common phenomena. The infection is extremely violent, of a nature sufficient to devitalize the tissues, and was the dread of the surgeons before the days of Listerism, and even today causes a great number of deaths or permanent incapacities because

of sepsis and amputation in the military hospitals. It is more rapidly destructive and widespread than any other forms of necrosis.

Microscopical examination shows the tissue cells thus involved to be more homogeneous than normal and a lack of ability of the nucleus to retain the stains. The fibres of the connective tissue swell and become distinct preparatory to solution. It is a true colliquation necrosis followed by mortification, a necrotic process accompanied by putrefaction of the tissues. Cartilages, ligaments, and sometimes bones often melt away before the onslaught of the organism.

Bacillus aerogenes capsulatus is not the only organism found in this form of gangrene. Upon microscopic examination in twenty-four cases I found that *Streptococcus* and *Staphylococcus pyogenes aureus* were closely associated with it, and that *Bacillus proteus vulgaris*, first observed by Huser, *Bacillus pyocyaneus* and *Bacillus tetani* were often present, accompanied by many other saprophytic bacteria. It can thus be plainly seen that in dealing with wounds involved or complicated by so many different destructive pyogenic organisms, measures should be resorted to other than those applicable to the localized symptoms. General sepsis must be combated, the digestive and circulatory tract scrupulously cared for, and the general hygienic environment of the patients considered. This unfortunately is from necessity often poor and the military surgeon is forced to work in and utilize surroundings that are far from the ones he would ordinarily choose under different circumstances. General sepsis with developing septicemia caused great anxiety, as it is from this alone that most of the cases are lost. A fortunate and probably a big factor influencing our results in treatment was the possession and administration in every case possible of mixed streptococcic and staphylococcic vaccines sent to us by the American Red Cross Society. These vaccines I considered of exceptional value inasmuch as they produced by far better and more lasting and reliable effects than any of the Austrian or German prepared products reaching us. It was formerly understood that the line of demarcation or the zone of inflammation existing between the dead and the living tissues occurring in other gangrenes, was also common in gas gangrene. This, however, is only partially true; a line of demarcation does occur, but the organism giving rise to the symptomatic crepitus extends beneath the skin far beyond this line into the so called area of living tissue, and therefore gives, to the extent of the involvement, a deceptive character.

Peritonitis sometimes occurs by the spread of the infection, usually from a wound of the hip or the thighs; I have witnessed but three of these cases. The onset was marked by intense abdominal pain, mostly below the umbilicus; the thighs were drawn up, and respiration was of the costal type, as great pain resulted from diaphragmatic expansion. The abdominal muscles were rigid, contracted, and greatly distended, reaching an enormous size in about three hours, obliterating the hepatic, splenic, and cardiac dullness below the

fourth ribs. Convulsions developed early at the onset and lasted periodically for about ten hours. The Hippocratic facies was present, as pointed out by Osler. A sharp nose, hollow eyes, collapsed temples, ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, wrinkled, and parched; the face lead colored, the pulse irregular, the heart sounds weak, the skin cold, and the temperature by mouth in the neighborhood of 105° F. This is a group of symptoms indicating profound failure of the vital functions, and called by Gee lipothymia. Coma, followed by death two hours later, ended the agonies.

The group of anaerobes causing gas gangrene are, as we know, spore bearing, and spores are especially difficult to kill in antiseptic solutions, or even by boiling. I found it necessary therefore to combine these two methods in order to sterilize the instruments and other articles that came in contact with them. All blankets, bed linen, or clothing soaked by the discharge, I ordered destroyed or heated in an air oven for one hour at a temperature of 120° C., or boiled for one hour in a solution of one in twenty carbolic acid or other antiseptic.

The mud and earth on the clothes of the men coming from the front are also infected, and care should therefore be exercised to see that the areas in which dressings or operations are performed are kept free of contamination from such a source, not only because of the seriousness of the infection, but because of the odor that accompanies it.

843 NORTH SIXTY-THIRD STREET.

COLLECTING BLOOD BY VENEPUNCTURE.

An Improved Method,

By LOYD THOMPSON, PH. B., M. D.,

Hot Springs, Ark.

Physician to the Syphilis Clinic, Government Free Bath House.

A number of methods for collecting blood by venepuncture for the Wassermann test and for other purposes have been proposed, but all are open to objection.

The use of a hypodermic needle and syringe is probably the most frequently employed method. When blood is to be collected in a sterile manner, however, and it usually is, this method necessitates the sterilizing of both syringe and needle, and if a number of specimens of blood are to be collected the sterilization must be carried out before the collection of each specimen, or several syringes must be used. Further, the all glass syringes usually employed are more or less fragile and breakage is not uncommon.

The method of collecting the blood by allowing it to run through a needle and a short piece of rubber tubing is very satisfactory, except that the cleaning and sterilizing of these entail considerable labor if many specimens are collected.

The Keidel tube is convenient, except that if the needle has not entered the vein when the tip of the tube is broken, the blood does not flow, and further the cost of these tubes is prohibitive when much of this work is being done.

For several months I have been employing with

the most satisfactory results the following method of collecting blood:

A platinum needle, A, is used which has a square collar firmly attached to it, as shown in the illustration (Fig. 1). This is caught with a pair of artery

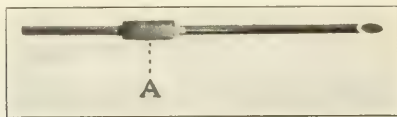


FIG. 1.—Platinum needle for venepuncture, showing collar (A).

forceps, B (Fig. 2), which has had the tips bent at a right angle, the collar preventing the needle from becoming dented. The needle is sterilized by placing in a Bunsen flame. A sterile test tube of convenient size, C, is placed in the right angle of the forceps so that the proximal end of the needle projects into its mouth and is held against the forceps either by a rubber band or by the right hand of the operator. When the blood is to be collected, a tourniquet is placed around the arm in the usual manner, and after sterilizing the area the needle is thrust into

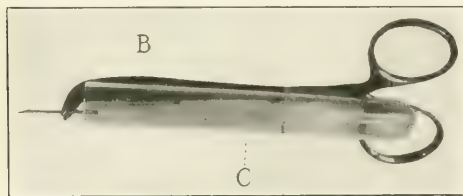


FIG. 2.—Artery forceps (B) for needle, showing position of test tube, C, sterile test tube.

one of the prominent veins of the elbow, the forceps holding it steady and furnishing a convenient handle. The blood usually will flow in a stream, and five or six c. c. may be collected in a few seconds. By holding the needle under running water the blood will be washed out and it may be resterilized.

I usually use a twenty gauge needle, but if large quantities of blood are to be collected a sixteen or eighteen gauge is better. As will be seen, any number of specimens may be collected in a short time with little trouble in sterilizing the needle.

DUGAN-STUART BUILDING.

CONCEALED MEASLES.

A Fatal Case Following Pertussis and Influenza, and Complicated by Meningitis and Mastoiditis,

By RALPH OPDYKE, M. D.,
New York.

Ordinarily mastoiditis follows one special infection, such as influenza, measles, scarlet fever, pertussis, etc., with, of course, staphylococci or streptococci organisms as the exciting factor; but seldom is a patient so unfortunate as to have so many of the exanthemata as in this instance, preceding the mastoidal involvement.

CASE. C. M., girl, aged seven years, American, only child, parentage healthy; mother living and well, father died accidentally several years previously. History practically normal since infancy till in the winter of 1914 when she had a severe attack of whooping cough which was of a protracted form and left her in a nervous condition of lowered resistance. Hardly had she recovered, when she had a severe gripe, which greatly aggravated her bronchial irritation from the earlier pertussis and attacked her gastric and intestinal tract in such a manner as to make it difficult to supply a sufficiently nourishing diet. This naturally aided not a little to aggravate her nervous abnormally high tension and made her unusually sensitive to the slightest pain or noise.

As the gripe was subsiding her ears were attacked, first the right and then the left, and the frail little girl was in constant distress. She showed a rather unusually frequent pulse and high temperature and seemed to have more than the ordinary severe earaches. Prompt incision of the drums relieved her, and for a time, it seemed as though her troubles were over. Though the left ear made a complete recovery, the right continued to discharge, the pain in the middle ear persisted, and there was tenderness over the right mastoid. As the blood count showed a relative severe infection with continued lowered resistance and her general condition failed to respond, even though the aural discharge was mixed and only very few streptococci were present, an immediate mastoid operation was done on the right side. The findings were as follows: Cells but fairly broken down, only a few drops of pus present, the lateral sinus situated well forward, and when exposed from the knee nearly to the bulb, appeared normal in every way and was not interfered with.

Patient did fairly well, but the temperature, pulse, and condition, both local and general, did not immediately improve. Though the wound remained perfectly clean and the aural discharge was scant, the temperature ranged from 103.5° to 105° F. at night and from 102° to 104° F. mornings, with a correspondingly frequent pulse. Respirations stayed at about thirty and there was cough, though the lungs were negative. Her throat remained very red and inflamed and bothered her. Cultures were negative for any specific germ. Measles was watched for as she had been exposed to it a few days before the mastoid operation, but no rash nor coryza appeared nor any other diagnostic symptom.

Another blood count was taken, showing leucocytes of 15,000 and polymorphonuclears 90 per cent. The various urinalyses were practically negative. Hiss serum was given at frequent intervals, also vaccines; but nothing reduced the pyrexia, nor improved her resistance. Some symptoms of an incipient meningitis were present, but all the various lumbar punctures were negative.

April 1st, eight days after the mastoid operation, the patient was taken home as the advent of measles was feared, the only symptoms of which were the suspicious looking throat and the appearance of a rash after repeated hot baths. This rash disappeared, the temperature again rose, and symptoms of a meningeal nature manifested themselves. Still nothing about the mastoid region gave any help and the sinus continued to have a normal appearance and there was no tenderness in the neck nor evidence of a thrombus. Several consultations by other aurists and pediatricists failed to clear up the picture, and the child gave further evidence of hidden measles with meningeal symptoms. Her mind was perfectly clear and wonderfully alert up to within two days of her demise. Successive convulsions with cortical irritation appeared now, and a fairly typical erythema spread over her chest, face, and neck. Both optic discs became injected and cloudy and her vision failed to some extent.

On the day of her death and many hours previous thereto she turned almost black with a typical advanced form of measles, and her eyes and nose gave every evidence of a tremendously severe form of infection. During the last few hours she was in coma, and her meningeal symptoms subsided entirely. No autopsy was permitted, and it is a moot question how much it would have helped to clear up the important factor, whether the

aural condition, existing for some time, had any active bearing in the later meningeal condition or whether the latter was entirely due to the exceedingly severe measles infection which did not declare itself, but, on the contrary, well nigh burned up the little body, already weakened and without resistance from the successive infections from within and from without. Certainly, during the last thirty-six hours no one could possibly have mistaken the picture of a most virulent measles; and earlier the meningeal element was not in all respects plain, that is, so far as it resulted from a local and definite cause.

As an otologist, I cannot believe that resection of the jugular or excision of the lateral sinus would have been of any avail. It is possible, of course, that the various cerebral, probably diploic, veins were involved in the measles poison, but certainly none in such manner or in a place whereby operative measures would have been of any avail. Everything possible was done to hasten the appearance of measles, and thus relieve the absorbing poison.

The appearance of the mastoid when exposed, the child's continued cachexia, the blood count, and the protracted varied illnesses, proved beyond peradventure the patient's greatly lowered resistance and explain most conclusively how a favorable outcome was almost impossible.

40 EAST FORTY-FIRST STREET.

THE PATHOLOGIST, THE FAMILY, AND THE FAMILY PHYSICIAN.*

By M. T. HANSELL, M. D.,
New York.

I wish to present, as forcibly as I can, my belief, compelled by repeated experiences, first, that clinical pathology, in certain cases, yields facts of prime importance unobtainable by the most painstaking bedside observation, facts frequently unaccompanied by observable signs sufficient to warrant more than a tentative diagnosis and sometimes not even that; second, that the family often stands between the physician and the obtaining of these vital facts; and, third, that it is not only in the line of duty, but also to the interest of the physician to labor to overcome this hindrance by the family to the full enjoyment of the services offered by the pathologist.

As an instance of facts entirely beyond reach of observation by the eye alone, it serves to cite that large and important class of cases coming under the head of autointoxication, not the acute cases of purging and vomiting, but the form arising from more or less chronic intestinal stasis. Here the symptoms are so widely varied and so closely resemble those caused by other conditions, that treatment based on anything but the finding of indican in the urine must be largely empirical.

As to insufficient evidence presented by the eye and fingers, I call to mind a little boy whose only symptom was high and rising fever. His very competent family doctor discarded the idea of appendicitis and expected to explain the blood count of 31,000 by finding pus in the urine, but did not. Operation showed an appendix full of pus and about to

rupture. Again, the little daughter of a doctor friend of mine slipped and fell in the bath tub, thereafter complaining of pain in the hip and knee, limping, and displaying a slight fever, which, not abating, led to a blood count. The count pointed to pus and an operation disclosed a psoas abscess. The abscess had been the cause of both the pain and the fall, instead of the fall causing the pain as it seemed. Recently I made a Vidal test for a woman who had for three weeks been more or less sick, and came to her doctor displaying every symptom which would lead to a diagnosis of typhoid fever. In making a blood count, I threw in an extra dollar's worth of work and also made a search for malaria, finding the organisms. Recently I made a blood count for a woman with almost typical symptoms of appendicitis, whose cell count suggested the presence of pus. But the consulting surgeon reserved his decision until an examination of the urine showed him the true diagnosis, pyelitis.

As the arrangement of the title suggests, the family often stands between the physician and the pathologist, preventing the former from giving the family the fullest measure of service in his power and often preventing his reputation from expanding as it ought. In witness of the last statement two cases are pertinent. A doctor in a New Jersey town had, as a patient, a young woman who had been given up as hopelessly ill by a consulting physician from a neighboring city. A careful examination of her urine revealed the true cause of her condition, pyelitis, and a cure resulted, not to the lessening of our friend's reputation. Again, one of our well known brothers sent me the urine of a young girl who had been unsuccessfully treated for four weeks by a colleague. A diagnosis of pyelitis enabled him to clear up the case in one week, by which his reputation did not suffer.

Now my reader expects me to say why the family stands between the family physician and the pathologist. The reasons are four, which I do not give as being in the order of their importance. That varies with the individual family; it doubtless varies in the doctor's opinion. The point is, all of them are very real reasons and one applies in one case and one in another.

First, then, the family thinks that the calling in of the pathologist is a reflection on the doctor's ability to make a diagnosis. They think that he should do it alone. Or else they think that the doctor should make all these examinations alone, and that he does not know how, is too poor to buy the instruments, or is too lazy.

Second, they think that the calling of the pathologist is a sign that the case is beyond the control of the unaided family doctor. Not long ago I made a blood count on a young man suffering from acute lymphatic leucemia and called with the family physician. As we entered, the father met us with the words, "Well, has it come to this?" Do you appreciate his state of mind? I said, "Now cheer up, I am not a surgeon." Rough on the surgeons, I know, but I had to say something to try to relieve his mind. Now the subsequent death of his son confirmed his impression that the entrance of another doctor boded ill, and his family doctor should have been at some pains to correct that un-

*Read before the Bronx County Medical Society, New York, November 20, 1915.

fortunate impression, if possible, for the benefit of future visits. In this connection, as possibly explaining some of the family fears, I want to tell what a friend of mine, himself a doctor, had to say when I talked with him on this point. He said that too often the family doctor succeeded on his first visit in convincing the family that if he could not cope successfully with the case, nobody could; which is highly satisfactory from one point of view, but may put thorns in his path when the time comes to wish to call some one into a case with him.

Thirdly, there is a matter of expense. While this point requires the briefest mention, it is not the least important. Because, after the family doctor is paid, the druggist is paid, and the nurse is paid, and the wages are not paid, the pathologist's fee often assumes big proportions.

Fourthly, the family often does not understand the fact that the severity of the disease is not always proportionate to symptoms. They fail to realize that a person may need a laparotomy, while he is laughing and free from any markedly bad symptoms. They are therefore likely to regard the calling in of the pathologist as a possible dodge on the part of the doctor to get his young and struggling friend a much needed fee. I recall a case of this sort where the little girl had no symptom except tenderness and some fretfulness, yet operation showed a fecalith in the appendix, from the effects of which she afterward died.

My readers will note that I have made no attempt to cover the entire field of clinical pathology. The cases which I have cited are not given as being rare and noteworthy. They occur repeatedly in the practice of every physician. I wish only to impress the fact, as I began by saying, that clinical pathology very often yields vital facts before positively confirming symptoms appear and gives the patient thus more ample warning, that it often brings to light facts that are otherwise unknown even after the case is fully developed, and that the family, from one reason or another, often prevents the physician from obtaining these facts as early as he ought. In the interest of the patient and in the interest of his own reputation, the family physician ought, by such means as seem desirable, to try to overcome the hindrance which the family often may be to the best practice of his art.

813 ELSMERE PLACE.

Contemporary Notes.

Met Death with Calm Eyes.—Under this heading, the *Times* of New York for May 10, 1916, writes of a much regretted former assistant editor of the *NEW YORK MEDICAL JOURNAL*: There has just died at Saranac Lake, and of the malady from which so many have there found relief or cure, a man who, a few years ago, while still in early life, had attained eminence among the surgeons of this city. His professional career was closed, of course, when he was driven to the mountains, but he retained no little of ambition and of mental energy, and though he had small hope of recovery and was for most of the time forbidden indulgence in any

physical activities, he retained his cheerfulness and activity of mind.

The letters written by Dr. Samuel Brickner to friends in the city never referred to his health except now and then in reply to insistent questions, and always briefly, as if his interest in it was slight. What did interest him was the magazine he had started, devoted to humorous and picturesque sides of medicine as found in its history, ancient and modern, and the production of verses that often were of notable excellence. At the time of the unveiling at Saranac Lake of the Stevenson memorial tablet, Doctor Brickner sent to the *Times* a still remembered poem that only to those who knew the circumstances hinted the special sympathy of its author for the other victim of the white plague. To others it seemed but one of many appreciative tributes to the Scotch genius. Only a few weeks ago came another and last set of verses, entitled significantly, *The Feast*. They are reprinted here now as showing how a brave man met what he perfectly well knew was the near approach of death:

There is no more Lucullan feast than this

At which I daily sit;

Laughter and sunshine, love, a tender kiss—

These are the sweets of it.

If, by some chance, black storm clouds lowly bend

My unresisting head,

It is no symbol that my joy shall end,

For still my feast is spread.

A day will come with laughter just as sweet,

The sun will fill the air,

Love still be young, but other lips will meet:

I shall have had my share!

First Year of the Harrison Narcotic Act.—The provisions of the Federal act regulating the dispensing and distribution of narcotic drugs, which went into effect March 1, 1915, remarks the *Boston Medical and Surgical Journal* for March 23, 1916, were summarized in an insert in the *Journal* for February 18, 1915, and editorial comment followed in the issue of March 4, 1915. Druggists are very generally obeying the law, and the peddling of morphine and cocaine by vendors who had purchased the drugs on prescriptions from irregular practitioners of medicine has been very nearly abolished in this neighborhood, but that there are still unprincipled physicians who are making money in the following fashion: A morphine eater consults a physician whose name has been given him by another addict and says, "Doctor, I am a morphine user. Will you prescribe for me?" "How much morphine are you accustomed to use?" "About ten grains a day." The doctor makes out a prescription for a dram of morphine and counsels the patient to use only as much as he directs. Whereupon the drug user departs to have his prescription filled and another unfortunate mortal with a craving takes his place. Naturally this is not the *lawful practice of medicine* within the meaning of the language of the act. To gather proof that the law is being invaded by this particular method of prescribing is by no means easy of accomplishment, and the Federal authorities need, and should have any assistance the right minded members of the profession can give in bringing to justice those who are thus stultifying themselves and their calling.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M. D., LL. D., Sc. D.

CLAUDE L. WHEELER, A. B., M. D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 20, 1916.

PHYSIOLOGICAL BALANCE.

Professor Dearborn has called attention to the fact that we can, any of us, live on more than one level of bodily activity, or "efficiency," if we choose to prefer that much abused word, from the low plane of the man who sits all day bent over his ledger to the extraordinary output of muscular labor of the Nova Scotian lumberman. He points out that either of these men, or the same man under different conditions of labor, may live a healthy life, provided that his intake of food is proportioned to his metabolic needs.

We have pointed out in these pages that the need for muscular exercise is often very much overdrawn, and that men have lived and worked to an advanced age with practically no exercise other than was needed for merely getting about. The sedentary man may live so, but he is at a disadvantage in that his tendency is always to take in more fuel than he needs, and to lose his health in consequence of overstocking, whereas the lumberman, needing to stoke to the limit, has no such temptation to physiological unbalancing.

Two causes are at work to bring about this tendency; one is the fact that we inherit from at least a distant ancestry a metabolic machine which was ad-

justed to a higher degree of muscular work. The natural tendency, after adult years are reached, is to make use of this disproportioned machinery and to take in more food than we need. The wild animal in captivity is in the same condition, and no experienced keeper dares feed his beasts as much as they would eat. It has not been so very long, comparatively speaking, since our ancestors were almost exclusively animal in their daily pursuits. Since then the blessing of cooking has proved often a curse, in that it adds temptation to our natural tendency to take more food than we need for sedentary purposes, merely for the sake of the savor thereof. It is such a joy to dine, and other sources of pleasure seem so scarce, or of such less moment to the average man, that, to a large extent, eating has become one of the reasons for existence. Even our churches seem to have reached the conclusion that it is necessary, or at least easy, to eat one's way into the kingdom of heaven. We have made much of the evil of treating to alcoholic drinks, but the temptation held out to intemperance in foods is a more widespread evil, with serious consequences in the long run.

With a reasonable amount of muscular exercise, perhaps a truer physiological balance is reached than if we are purely sedentary. We approximate more nearly our animal ancestry as to muscular activity, and we can exercise our digestive powers a trifle more, without harm. Surely, if we do not expect to suffer in one way or another, the amount of bodily exercise must balance the intake of food, or the intake of food must be made to correspond with the degree of bodily activity.

THE ABUSE OF TINCTURE OF IODINE.

It is obvious that the dressing of a recent infected and suppurating wound ought not to be the same as that of one in process of rapid cicatrization; in the former case an energetic antiseptic action is required, which, in the latter, could do only harm. Nigay (*Journal de médecine de Paris*, April, 1916) has noticed a custom among dressers of using a routine procedure of, 1, cleansing; 2, two or three applications of a ten per cent. iodine solution; 3, application of a dry compress. Such a routine may injure the fine cellular layer which is at the basis of cicatrization, and iodine in such strength may even destroy the healthy epidermis, or cause a patch of eczema, especially if it is not freshly prepared and hydriodic acid has formed. Nigay remarks that this acid may be destroyed by adding one per cent. of iodic acid (HIO_3), which in the presence of hydriodic acid, forms iodine and water. The addi-

tion of four per cent. of potassium iodide will also destroy the irritating acid. The ninety-five per cent. alcohol of the tincture is, according to Nigay, too irritating to be applied to a healing wound; its great affinity for water dehydrates the cells and coagulates albumin. Reclus never used an iodine preparation stronger than one in fifteen of alcohol—about the strength of the U. S. P. tincture—and always insisted on a fresh preparation. Nigay thinks that even this formula of Reclus may cause damage if used too freely, and he has seen many wounds which were doing badly under its application, heal beautifully after it was stopped.

The final application of a dry dressing, according to the writer, is a mistake, as it is almost invariably too tight, and when removed with the speed required in military hospitals, generally takes with it an important layer of reconstructed tissue. Nigay's own method of treating wounds comprises irrigation without pressure, gentle wiping with a dry compress, and the application of an ointment, for example, that of Reclus:

R Corrosive sublimate,	gram 0.03;
Phenol in crystals,	gram 0.30;
Salol,	gram 1;
Iodoform,	gram 0.50;
Antipyrin,	grams 5;
Boric acid,	grams 5;
Sterile petrolatum,	grams 40.

M. fiat unguentum.

Where this ointment is not easily obtained, Nigay uses a four per cent. salol ointment or even sterilized petrolatum alone. Such treatment, he says, has proved much more efficacious in his hands than that of the indiscriminate application of tincture of iodine, a precious agent indeed, but not to be used without care and discretion.

ALCOHOL NOT AN ANTIDOTE TO PHENOL.

Martin I. Wilbert, of the Public Health Service, in the *Public Health Reports* for April 28, 1916, makes some valuable comments on the widespread belief in alcohol as an antidote to phenol poisoning, and the studious avoidance of it as a diluent for phenol when used as an antiseptic or disinfectant. The belief in alcohol as an antidote, he says, is growing, but it is based upon erroneous reasoning. Wilbert recalls that Dr. A. M. Phelps in the *NEW YORK MEDICAL JOURNAL* for January 14, 1899, was probably the first to call attention in print to the antagonism of alcohol to phenol; he cited the experiment of Dr. Seneca D. Powell, who was accustomed to rinse his hands alternately in phenol and alcohol as a demonstration to his classes at the Post-Graduate School. Powell, misunderstanding the significance

of this experiment, illogically announced that a similar action would take place in the stomach; in other words, alcohol would be found to be an antidote to phenol. Since then, the same error has crept into many publications; it was even suggested by Williams (*Druggists' Circular*, March, 1900) that a mixture of the two liquids would make a safe and excellent household preparation. The dangerous mistake has now become embodied in the laws of several States drawn to restrict the sale of carbolic acid.

The same line of reasoning has led to another error, equally absurd, but not dangerous, that mixtures of alcohol and phenol are less efficient as disinfectants. Again it was in the *NEW YORK MEDICAL JOURNAL* for March 6, 1909, that the antidotal power was first questioned. Dr. E. R. Zemp (*loco citato*) observed that no chemical action took place when the two drugs were brought together; the carbolic acid was simply diluted, hence its caustic power was diminished. Macht (*Johns Hopkins Hosp. Bull.*, xxvi, 1915) demonstrated that the internal use of alcohol in phenol poisoning might be unfavorable. He found that the influence of alcohol depended on the time of administration; if given at once, it might actually hasten death. On the other hand, he found that an animal previously intoxicated with alcohol could withstand better the effects of phenol taken afterward.

Recent experiments undertaken by the P. H. Service clearly show that ethyl alcohol in the presence of water has no appreciable influence on the toxicity or on the germicidal properties of phenol, and that, therefore, it may be advantageously used as a solvent, alone or in mixtures, to promote the solubility of phenol in water for use as a germicide or disinfectant. In the presence of water both alcohol and glycerin are practically inert so far as any detoxicating action is concerned. The results noted suggest the fallacy of enacting legislation designed to promote the sale of mixtures of phenol and alcohol under the impression that ethyl alcohol will serve as a detoxicant to phenol.

The experimental work clearly showed that the addition of ethyl alcohol to phenol not only increased the solubility of phenol in water, but also increased rather than diminished the antiseptic value of the resulting solution. Ethyl alcohol can be used to advantage as a substitute for glycerin in making antiseptic solutions of phenol.

The experiments with animals proved that the addition of ethyl alcohol to solutions of phenol in water does not, in any way, inhibit the toxic action of phenol, but rather tends to facilitate absorption and thus hasten death.

THE CAUSE OF SPRUE.

The extension of careful experimental methods to the major disease of warm climates has brought an astonishing harvest of new ideas both as to etiology and treatment. Investigation of the etiology of sprue (*Aptha tropica*) is now passing through a stage analogous to that traversed by beriberi and pellagra. Sprue is apparently on the increase among European residents in the tropics and orient, and yet in spite of extensive investigation, Stitt, in his *Diagnostics and Treatment of Tropical Diseases* as late as 1914, says, "the cause is unknown." Among the causes which have been assigned and which have in turn drawn many supporters, Stitt notes the excessive use of calomel, a so called "tropical pancreas" with exhausted function subsequent to congestion, various intestinal parasites, for example, *Strongylus stercoralis*, various bacteria, and finally oidia and monilia. Castellani assigned the excessive fermentation in the stools of sprue to monilia, which, however, he did not consider to be the essential cause. Sprue has also been considered a food deficiency disease.

Major Bailey K. Ashford, president of the board for the study of tropical diseases in Porto Rico, has found a monilia, which he believes to differ from *Monilia albicans*, to which had been ascribed an etiological role. He has isolated this new species from nearly one hundred cases of sprue. In the *American Journal of the Medical Sciences* for April, 1916, Ashford outlines experimental work on animals with this new monilia which he tentatively calls *Monilia X*. He found this to be an organism of such low virulence that when first isolated from a sprue patient it was not fatal to animals fed with it. In order to demonstrate its pathogenicity, its virulence must be increased by running it through a succession of animals. If injected into the ordinary laboratory animals, however, when first isolated, it rapidly causes a mycotic septicemia.

Some animals fed on *Monilia X* also develop a monilia septicemia, which Ashford attributes to a sudden primary pneumonia, the septicemia being secondary. If this does not happen, the animals die apparently from the action of a toxin elaborated in the intestinal tract, where the monilia is localized. Stomatitis was produced in two cases by feeding and severe diarrhea in several cases. Skin localization results in typical blastomycotic ulcers characterized by necrosis without suppuration. Ashford states that he has never seen pus produced by *Monilia X*. The microscopic localization of the monilia in certain cases in the muscle layer under the subepithelial layer, suggests that the characteristic relapses in sprue, after apparent feeding cures, are due to a regeneration and growth from monilia lying deep in

the tissues, which survives the destruction of the more superficial bodies and from the roots of which a new surface growth is developed. In experimental septicemia resulting from intraperitoneal injection of *Monilia X*, the lungs are chiefly affected and next the kidneys.

These studies throw definite light on a large and practical problem, and bid fair to reduce still further the list of diseases classified under the heading of unknown etiology.

THE EARLY DIAGNOSIS OF WHOOPING COUGH.

Dr. H. W. Jacob, of Malvern, writes to the *British Medical Journal* for April 22d that the early diagnosis of whooping cough is one of the trials of the general practitioner, and, in the absence of an epidemic, one is liable to be misled into allowing a child with an apparently harmless cough to infect others while the unmistakable signs which subsequently develop are still lacking.

During an outbreak last year Doctor Jacob had considerable opportunity for observing probable cases in the earliest stages, and found that every case of suspicious cough which showed marked conjunctival congestion in the region of the external canthus subsequently developed into whooping cough. In examining for the sign one directs the patient to look toward the nasal side of the eye under examination, when, on separating the lids at the external canthus, a tumid, congested mass somewhat resembling a large phlyctenule may appear on the bulbar conjunctiva, just within the external canthus. This swelling may or may not be accompanied by injection of the palpebral conjunctiva, but Doctor Jacob came to regard it as an indication in doubtful cases of this nature.

THE WORKMEN'S COMPENSATION LAW IN RHODE ISLAND.

The Supreme Court of Rhode Island, according to *Public Health Reports* for May 5, 1916, has decided—one justice dissenting—that an injury resulting from a fall which was partly "due to dizziness or unconsciousness induced by a disease" was an injury "arising out of and in the course of" employment, for which the employee was entitled to compensation under the workmen's compensation law. The injured employee was a hack driver suffering from "hardening of the arteries and Bright's disease." He fell from the seat of a hack which he was driving and was seriously injured.

THE PORT OF NEW YORK.

The NEW YORK MEDICAL JOURNAL is glad to congratulate all concerned in the appointment of Dr. Leland E. Cofer, assistant surgeon general of the Public Health Service, as quarantine officer of the port of New York. The JOURNAL worked hard to help the transfer of the port from State to Federal supervision and feels justified in laying claim to a share in the achievement.

News Items.

Change of Address.—Dr. Henry R. Harrower, to suite 715-719, Baker-Detwiler Building, Los Angeles, Cal.

Endowment Fund for New Department at Mount Sinai Hospital.—Mr. Charles A. Wimpheimer, of New York, has made a gift of \$150,000 to Mount Sinai Hospital for the endowment of a department of surgery of the stomach. The new department will have the cooperation of the hospital laboratories.

Surgeon General Gorgas to Study Yellow Fever in South America.—Surgeon General Gorgas, United States Army, has been granted leave of absence to make an extended tour of South America to study methods of eradicating yellow fever. He will head a party of physicians who leave on June 1st, and expects to spend four months in the work. He will visit Ecuador, Brazil, Colombia, and Venezuela.

Nurses Honor Dr. R. J. Carlisle.—Dr. Robert J. Carlisle, of 44 West Forty-eighth Street, who on May 16th rounded out thirty years as a visiting physician at Bellevue Hospital and as attending physician for the Nurses' Training School and Nurses' Home there, was presented with a gold watch, a platinum chain, and a gold pencil by the Bellevue Hospital Nurses' Alumni Association. The gift was said to have cost \$500.

Arizona Medical Association.—Dr. Robert Ferguson was elected president of this association at the annual meeting held in Phoenix on April 27th. Other officers were elected as follows: Dr. W. W. Watkins, of Phoenix, first vice-president; Dr. J. C. Carlson, of Jerome, second vice-president; Dr. J. P. Wright, of Douglas, third vice-president; Dr. C. E. Young, secretary; Dr. R. D. Kennedy, of Globe, treasurer. Next year's meeting will be held in Douglas, Cochise County.

American Association of Immunologists.—At the third annual meeting of this association, held in Washington, D. C., May 11th and 12th, the following officers were elected: President, Dr. Richard Weil, of New York; vice-president, Dr. John A. Kolmer, of Philadelphia; treasurer, Dr. Willard J. Stone, of Toledo, Ohio; secretary, Dr. Martin J. Synnott, of Montclair, N. J.; members of the council, Dr. William H. Park, of New York, and Dr. Arthur F. Coca, of New York.

Tennessee State Medical Association.—At the eighty-third annual meeting of the association, held in Knoxville, April 5th and 6th, under the presidency of Dr. Edward C. Ellett, of Memphis, the following officers were elected: President, Dr. Charles N. Cowden, of Nashville; first vice-president, Dr. Cawood J. Carmichael, of Knoxville; second vice-president, Dr. John T. Moore, of Allgood; third vice-president, Dr. John L. McGhee, Jr., of Memphis; secretary, Dr. Olin West, of Nashville (reelected). Next year's meeting will be held in Nashville.

Louisiana State Medical Society.—Dr. W. H. Seaman, of New Orleans, was elected president of this society at the thirty-seventh annual meeting, held in New Orleans on April 25th and 26th, and other officers were elected as follows: Dr. T. S. Jones, of Baton Rouge, first vice-president; Dr. C. V. Unsworth, of New Orleans, second vice-president; Dr. T. M. Bodenheimer, of Shreveport, third vice-president; Dr. L. R. De Buys, of New Orleans, reelected secretary-treasurer. Next year's meeting will be held in Alexandria.

Deaths from Congenital Defects More Prevalent Among Babies of the Rich.—Infant mortality studies made in connection with Baby Week by the Department of Health of the City of New York indicate that deaths from congenital defects are more prevalent among babies of the rich than among the babies of the poor, although the infant death rate as a whole is much lower among the wealthy classes. The infant mortality rate for the entire city of New York based on the 141,256 births reported during the year was 98 per 1,000, that is to say, 98 children died out of every 1,000 born during the year, approximately one in ten. This rate compares very favorably with the large cities of the

State Aid for Saratoga Springs.—A pledge that New York State would provide funds for the full development of the State Reservation at Saratoga Springs so as to place it on a par with the great health resorts of Europe, signalized the address of Governor Charles S. Whitman before the New York State Medical Society in Saratoga Springs on the evening of May 17th. The Governor made it plain that if the physicians of New York State did their part in advising patients to use the facilities offered at Saratoga, the State would then feel that it could afford to spend the money necessary for development.

New York Society of Anesthetists.—A regular meeting of this society will be held at the New York Academy of Medicine, Friday evening, May 26th, under the presidency of Dr. Charles J. Pick. Dr. William Brower will read a paper on Intrapharyngeal versus Intratracheal Anesthesia in Intrathoracic Surgery, which will be discussed by invitation by Dr. Willy Meyer and Dr. Howard Lilienthal. Dr. Paluel Joseph Flagg will read a paper entitled Suggestions Bearing upon the Standardization of Anesthesia for Teaching Purposes. Dr. Alvin R. Eaton, of Elizabeth, N. J., will exhibit a simple dropper for ether.

A Symposium on Cancer at the Academy of Medicine.—At a stated meeting of the New York Academy of Medicine, held on Thursday evening, May 18th, the program consisted of a symposium on cancer. Papers were read as follows: The Interest of the Community in the Problem of Cancer, by Louis L. Dublin, Ph. D., statistician of the Metropolitan Life Insurance Company; Our Present Knowledge of the Nature of Cancer, by Dr. Francis Carter Wood, of Columbia University; The Place of Surgery in the Treatment of Cancer, by Dr. George D. Stewart. The papers were discussed by Dr. John A. Hartwell, Dr. Eugene H. Pool, Dr. David Bovaird, Jr., Dr. William R. Williams, and others.

Work of the Division of Institution Inspection of the Health Department.—During the week ending May 13, 1916, the Division of Institution Inspection examined 320 children in child caring institutions, conducted thirty sanitary surveys of institutions, and arranged for the removal of thirty-three cases of infectious diseases to health department hospitals. Nine cases of typhoid fever having occurred in the House of Refuge on Randall's Island, the division has begun the immunization of all the 800 inmates. Ten cases of diphtheria having occurred in one building of the New York Catholic Protectorate, all children and employees in this building were subjected to trial cultures. Only one of these showed the presence of diphtheria bacilli. It is believed that this procedure will check the spread of the disease.

A New Department in the University of California.—A department of preventive medicine and hygiene has been established at the University of California, the object being to bring about the most effective cooperation between the university and the California State Board of Health. Dr. Wilbur A. Sawyer, secretary of the State Board of Health, has been appointed clinical professor of preventive medicine and hygiene; Dr. James G. Cumming, director of the Bureau of Communicable Diseases, has been appointed assistant professor; Dr. Jacob N. Geiger, assistant director of the Bureau of Communicable Diseases, Chester G. Gillespie, C. E., director of the Board of Sanitary Engineering of the department, Dr. William C. Hassler, and Dr. John N. Force, have been appointed lecturers.

Summer Schools at Rome, N. Y.—A course in clinical medicine and psychology is offered to physicians at the Rome State Custodial Asylum in June. It will cover a period of ten days, during which time the students will have an opportunity to observe and study groups of defective children. The institution will be able to accommodate from twelve to twenty men in each group for ten days. The course will be given June 6th to 16th, and will be repeated June 16th to June 26th. From July 3d to July 29th there will be held at this institution a summer training school for teachers who are preparing to teach special classes in the public schools and in institutions for the feeble-minded. All applications for information regarding these courses should be addressed to Dr. Charles Bernstein, superintendent of the Rome State Custodial Asylum, Rome, N. Y.

North Carolina Medical Society.—The sixty-third annual meeting of this society was held in Durham, April 18th, 19th, and 20th, under the presidency of Dr. M. H. Fletcher, of Asheville. An interesting feature of the program was an address on the spleen, by Dr. William J. Mayo, of Rochester, Minn. Officers were elected as follows: Dr. Charles O'Hagan Laughinghouse, of Greenville, president; Dr. D. J. Hill, of Lexington, first vice-president; Dr. J. I. Spruill, of Columbia, second vice-president; Dr. J. H. Shuford, of Hickory, third vice-president; Dr. Benjamin K. Harris, of Oxford, reelected secretary; Dr. W. M. Jones, of Greensboro, reelected treasurer. Next year's meeting will be held in Asheville.

Philadelphia Special to the Detroit Meeting of the American Medical Association.—A committee has been appointed by the president of the Philadelphia County Medical Society, consisting of Dr. James M. Anders, chairman, Dr. E. E. Montgomery, Dr. Jay F. Schamberg, Dr. Swithin Chandler, and Dr. John D. McLean, to arrange details with the Pennsylvania Railroad for the trip to Detroit to attend the annual meeting of the American Medical Association, to run under the auspices of the American Society for Physicians' Study Travels. This society has also arranged a side trip from Detroit to Battle Creek and return, and an interesting program at the Battle Creek Sanitarium has been promised, without cost to those who desire to take it.

American Laryngological, Rhinological, and Otolological Society.—The twenty-second annual meeting of this society was held in White Sulphur Springs, W. Va., May 5th and 6th, under the presidency of Dr. S. MacCuen Smith, of Philadelphia. Dr. Thomas J. Harris, of New York, formerly secretary of the society, was elected president, and other officers were elected as follows: Dr. John Culp, of Harrisburg, Pa., first vice-president; Dr. John E. Brown, of Columbus, Ohio, second vice-president; Dr. Richmond McKinney, of Memphis, third vice-president; Dr. James A. Patterson, of Colorado Springs, fourth vice-president; Dr. William H. Haskin, of New York, secretary; Dr. Ewing W. Day, of Pittsburgh, treasurer. It is said that this was the most successful meeting ever held by the society, both in point of attendance and of value in the papers read and discussed. A paper of special interest was that by Dr. Charles P. Grayson, of Philadelphia, on Our American Voice and Articulation.

Medical Intern, Government Hospital for the Insane.—The United States Civil Service Commission announces an examination on June 7th, open to both men and women, to fill vacancies in the position of medical intern in the Government Hospital for the Insane, Washington, D. C. The positions are tenable for one year and pay \$75 a month, with maintenance. During the year a postgraduate course in mental and neurological diagnostic methods is given, an examination is held, and promotions to the next grade, junior assistant surgeon, are made. Beyond this there is regular advancement for men whose services are satisfactory. The Government Hospital for the Insane has over 3,000 patients and 800 employees to care for, and in addition to the general medical practice offered, the scientific opportunities in neurology and psychiatry are unsurpassed. For full information regarding the requirements for this examination, address the United States Civil Service Commission, Washington, D. C.

Personal.—Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, delivered the Cutler Lecture at the Harvard Medical School on Wednesday, April 26th, his subject being the Finer Adjustments of the Immunity Reactions to Recovery from Infection.

Dr. John B. Deaver, of Philadelphia, was the guest of honor at a banquet given by the Chicago Medical Society on April 26th. At the scientific meeting which followed the dinner Doctor Deaver spoke on the Recurrence of Symptoms after Operations for Gallstone Disease.

Dr. Margaret J. Bullard, of Putnam, Conn., was elected president of the Windham County Medical Association at the annual meeting held on April 27th. This is the first time in the 123 years of its existence that a woman has been at the head of this society.

Death Rate of New York.—According to a bulletin issued by the Department of Health of the City of New York, 1,515 persons died in the city of New York during the week ending May 13, 1916, which is equivalent to a rate of 14.15 in a thousand of population. During the corresponding week of last year 1,472 deaths were reported and the rate was 14.04. The mortality of all the acute and infectious diseases, with the exception of whooping cough, was lower during the past week than during the corresponding week of last year; on the other hand, the mortality of cancer, chronic heart disease, nephritis, pulmonary tuberculosis, and lobar pneumonia was heavier during the past week. Compared with last year, the death rate was higher in the Bronx, Queens, and Richmond, and lower in Manhattan and Brooklyn. The death rate for the first twenty (20) weeks of 1916 was 15.34 compared with 15.15 for the corresponding period of last year.

Social Insurance Inquiry.—Under the auspices of the Committee on Insurance of the New York Chamber of Commerce, arrangements are being perfected for a comprehensive investigation into all essential phases of the subject of social insurance, between this and the next meeting of the New York legislature, with special regard to health insurance. Dr. J. F. Crowell, executive officer of the Chamber of Commerce, to whom communications may be addressed, will have charge of the inquiry. It is the purpose of this committee to go extensively into the subject so as to have at hand the desired data and to avail itself of the gist of experience in this and other countries. This inquiry will extend not only to the actual developments in countries where health insurance has made some progress, but is intended also to include a critical examination of the conditions, causes, and effects of the different systems with a view to their availability for American communities.

Doctor Cofer Appointed Health Officer of the Port of New York.—Pending the completion of arrangements to transfer the local quarantine station from State to Federal control, Dr. L. E. Cofer, assistant surgeon general, United States Public Health Service, has been appointed Health Officer of the Port of New York. The transfer was urged by Governor Whitman in his annual message. As passed by the Legislature, the bill provides for the appointment of a commission to negotiate the details of the transfer, including the appraisal and sale of the State property to the Federal Government. The bill had the active support of many civic, public health, and business organizations, and represents the successful completion of a campaign begun some years ago by the Public Health Committee of the New York Academy of Medicine. With the exception of the station at Baltimore, the United States Public Health Service now controls all the maritime quarantine stations in the United States and its dependencies.

Activities of the Public Health Committee of the New York Academy of Medicine.—Among the matters which received the attention of this committee during the months of March and April are the following: The matter of the present status of the dental schools in the city and State of New York and the desirability of recommending the establishment of university schools of dentistry; the proposed transfer of the quarantine station to the Federal Government; overcrowding in institutions for children; the fifth year of medical study; patent medicines; cellar dwellings; the Home Hospital for Consumptives; street accidents occurring in the city of New York; instruction in smallpox vaccination; the amendment to the Nursing Practice Act; Senator Works's resolution prohibiting the officers of the United States Public Health Service from joining any medical, public health, or other association; overcrowding in public conveyances.

Other matters which received the attention of the committee were the question of the regulation of commercial laboratories, the matter of street cleaning, and the development of the activities of the Merchants' Association of New York along public lines. This committee has twenty-two members; Dr. Charles L. Dana is chairman, Dr. James Alexander Miller, secretary, and Dr. E. H. Lewinski-Corwin, executive secretary.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Twentieth Communication.

STRYCHNINE.

For demonstration purposes one of the more favored drugs with experimental pharmacologists is the alkaloid of *nux vomica*. The promptitude with which frogs, for example, manifest the typical extensor spasms make especially impressive the leading physiological reaction of this drug. So heightened becomes the sensorimotor reflexes under the influence of strychnine that a slight jar, or a breath of air, suffices to arouse stimuli so sharp as to result in pronounced muscle rigidity. No student can see this result as exhibited by Rana without realizing the potency of the drug placed in his hands for study and observation; and when he is further informed that similar effects are produced in man by poisonous doses he immediately acquires further respect for the tool at his command.

Such experiments arouse a consuming curiosity as to the locus and manner of strychnine action; and many experiments have been conducted for the purpose of determining these points. Largely by the method of exclusion it has been discovered that strychnine exerts its influence at some point between the dendrites of the motor cells and the arborizing terminations of the afferent fibres. So the hypothesis is advanced that strychnine acts by either lowering the normal resistance at the sensorimotor synapses or by heightening conductivity in the same area—a process whose end results would be identical whatever the mechanics involved. The resulting greatly increased ease in transference of sensory stimuli into motor response multiplies tremendously the frequency and extent of such responses, so that even slight irritations, which normally would be shunted into relative nothingness, become provocative of excessive reflexes; and since these are promptly augmented by correlated sensations from muscles, bones, tendons, and joints, there is rapidly set up a series of effective stimuli resulting in a succession of motor impulses, so continuing to a temporary exhaustion of both sensory and motor cells. This cell exhaustion, too frequently repeated, quickly results in marked depression tending toward paralysis.

This remarkable effect on the sensorimotor synapse is not confined to the spinal cord, but is present wherever the reflex arc is the principal adaptive mechanism. All the great centres of the medulla are affected similarly, though not to the same degree; yet while small doses seem to produce a tonic effect only, large doses may so disrupt normal activity as to reverse, disorganize, or paralyze the neurons. Like effects, though much reduced in

force, may be noted in the cortex of the brain, there being with ordinary doses a mild accentuation in motor response, but an accompanying though slight diminution in the steadiness of muscle control. On the mental side, strychnine seems to have little or no direct effect, several studies by Poffenberger showing that in the fields of attention, association, and discrimination, this drug, unlike caffeine, produces no discernible effect. As other observers have pointed out, even in cases of poisoning, the mind remains clear until near death, except during the periods of asphyxia induced by spasm of the muscles of respiration. From this it seems that the use of strychnine to obtain stimulation of the intellectual processes is without experimental justification, at least with the apparently normal; whether or no depressions of mentality may be remedied by strychnine medication does not yet satisfactorily appear.

(To be continued.)

A Simple After Treatment for Perineal Wounds.—E. B. Young (*Boston Medical and Surgical Journal*, May 4th) has found that the methods ordinarily employed possess a distinct disadvantage in that they do not maintain dryness, nor the greatest possible cleanliness. Moist gauze keeps the skin and wound macerated, while dry gauze soon becomes moist, even when antiseptic powders are dusted over the parts, and then tissues about the sutures become sore and irritated, and sutures have a greater tendency to cut into a soggy skin. Ointments easily collect particles of feces, and once contaminated, are removed with difficulty. The vulvar pad increases the perspiration in every patient, especially in the obese, and often becomes soiled. He has used the following method for ten years: After twenty-four hours, when the bleeding has ceased, the gauze perineal pad is omitted, and the genitals and the fissure between the buttocks are kept liberally covered with a drying and antiseptic powder. The best mixture for this purpose seems to be the compound stearate of zinc with boric acid. This must not be simply dusted on, but applied in a thick layer, especially between the buttocks. The great advantage of the stearate of zinc is that it sheds water and keeps the parts dry, while there is less tendency to decomposition of whatever discharge comes from the wound if boric acid is added. With reasonable care it is usually possible to maintain absolute dryness. Occasionally there is a considerable tendency to moisture and maceration of the skin, and in such cases the application of a ten per cent. aqueous solution of ichthyol before applying the powder will be found effective. The patient, free from any dressing, lies upon a small pad which collects any discharge and can be changed when necessary. The genitals are washed carefully after urination and defecation, and as often as otherwise may be needed. The patients are more comfortable than with dressings.

A. Word about Pituitrin.—H. R. Cogburn (*New Orleans Medical and Surgical Journal*, May) makes the point that pituitrin should be used to assist and strengthen natural labor pains; it does not induce them. When the pains are good, but the intervals between them are so long that hours of waiting are required, the patient becomes worn out, and the child is born after much delay, pituitrin will greatly shorten the suffering and anxiety of the mother, to say nothing of the probable benefit to the child. He never gives the drug until the cervix is almost or completely dilated, but when the pains in the second stage of labor grow weak, the fetus is at a standstill, and the mother exhausted after a long, hard first stage, and the passage is clear, he feels free to use it. Alcohol renders pituitrin inert, so if the hypodermic syringe and needle have been sterilized with alcohol, they should be washed out with sterile water, or boiled, before they are used to inject the drug. An initial dose is one c. c. after the os is well dilated; if satisfactory results are not obtained the dose may be repeated in from one half to one hour.

Anilin Injuries of the Eye.—As anilin pencils are in common use it is well to call attention to a danger which is not well known, but is exemplified by a case reported by R. J. McCurdy (*Archives of Ophthalmology*, May). A lady while sharpening an anilin pencil got a considerable quantity of the anilin dust in her right eye. Four hours later a few fine particles were washed out, but most of it was dissolved and had stained the conjunctiva most deeply in the nasal half of that of the lower lid, but to some extent throughout the lower lid and the lower half of the globe. After five days the color had disappeared, the conjunctiva of the globe was congested and swollen, that of the lid red and raw as after a burn. Two weeks later the conjunctiva of the lower lid was covered by a sloughing false membrane, and two days after this signs of necrosis appeared in the nasal part of the lid, which continued for three weeks without apparent infection, and then the inflammation began to subside. The final result was a cicatricial adhesion of the lid to the eyeball, and a cicatricial eversion of the nasal half of the lid, conditions that had to be corrected by operation. During all the period of the inflammation, covering two months, there was much pain, sufficient to prevent sleep at times. Quite a number of similar cases have been reported, in many of which the injuries were trivial and consisted principally of staining, which disappeared in a few days, but in others the injuries were so serious as to cause the loss of the eye, so the accident of getting anilin dust into the eye is one to be guarded against sedulously. In case of its occurring, all anilin matter should be washed out as quickly as possible. A ten per cent. solution of tannic acid makes the undissolved anilin insoluble and may be instilled if the case is seen very soon after the accident, but usually it is of little benefit because the anilin dissolves rapidly and is apt to have penetrated beyond reach before the treatment can be applied. Anilin acts as a caustic and the treatment, in addition to cleansing and the use of tannic acid as an antidote, is that of ordinary burns of the eye.

The Choice of a Climate in Cases of Bright's Disease and Nephritis.—Guy Hinsdale (*Boston Medical and Surgical Journal*, May 4th) discusses the mortality records from twenty-five cities, shows the relative humidity as obtained from the United States Weather Bureau, temperature changes, wind, soil, and altitude, and concludes that nephritic diseases are clearly amenable to climatic treatment. Apparently the first requisite is that the air and soil shall be warm, sunny, reasonably dry, and free from malaria and disagreeable atmospheric changes. As the disease is attended by extensive degenerative changes in the renal and circulatory organs, it is highly necessary to insure an abundant and undisturbed action of the skin, and the locality should be conducive to an out of door life the year round. Our best course is to advise a warm climate first—one having moderate elevation and only a moderate rainfall, with small diurnal variations in temperature, the humidity being, perhaps, secondary in importance to temperature and wind. The fact that localities in the extreme northwest have diverse climates and yet fall in the favored group, should not determine their choice as health resorts for renal cases, but would indicate some advantage in the character of the population, and that the sum total of the elements of climate in those localities is conducive to a hardy race.

Effects of Wet and Cold: Trench Feet.—F. McKelvey Bell (*Canadian Medical Association Journal*, April) gives for the prevention of trench feet the following directions: Good feeding with plenty of fatty and nourishing food, served hot when possible, is essential. Warm but light woolen clothing and underclothing should be worn, woolen stocking, with waterproof stockings over them, and waterproof boots large enough to leave an air space between the foot and the leather. Socks should be changed frequently. Before entering the trenches the feet should be well washed with cold water, dried and greased. The shifts in the water should be as short as possible; at present two days usually is the minimum. Rest in a recumbent posture is beneficial. On leaving the trenches the men must not place the feet near the fire nor bathe them in warm water; they should wash well in cold water, rub the feet thoroughly, and have plenty of rest, lying with the feet slightly elevated. So far as cure is concerned so many remedies have been tried that it would be useless to enumerate them. A few general principles of treatment are agreed upon fairly well. Rest in the recumbent position for from two to three weeks with the feet elevated. Little or no dressings or coverings. No walking. After the first tenderness disappears gentle massage with oil of wintergreen or camphorated oil. Evaporating lotions such as lead and opium may be used in the red and inflamed type. Some paint the foot with tincture of iodine or picric acid. Opiates should not be used to relieve the incessant pain unless absolutely necessary, as the danger of forming a habit is great; he prefers two grains of phenacetin and seven of sodium salicylate three times a day. Very little better results are obtained with medicine than with only rest, elevation and massage. The actual pain disappears usually in from ten days to

three weeks, but the feet remain tender on walking for considerably longer periods and in moderately severe cases the patient is unfit for military service for from two to three months. The writer finds a certain analogy between trench feet and chilblains because feet that have once been affected by this condition are liable to a relapse on slight provocation.

Dymal in Ulcus cruris.—Excluding ulcers of syphilitic origin, Kurt Wohlgemuth and Heinz Wohlgemuth (*Berlin. klin. Wochenschr.*, November 8, 1915) advocate the following plan of treatment for cases of crural ulcer of any grade of severity. Primarily the attempt should be made to correct the underlying cause such as varicose veins, etc. The ulcer should first be thoroughly cleaned with soap and warm water and all dead tissue and crusts removed. It should then be dusted thoroughly with dymal and this should even be blown into pockets after they have been laid open. Then in every case, whether lymph stasis is present or not, the ulcer should be covered with a light dry dressing and a firm elastic bandage of tricot should be applied from the foot to the knee. Depending upon the abundance of the secretion, the dressing should be renewed daily or less often. Healing takes place kindly and the treatment can be completed without the patient having to lie off from work. Dymal is nonirritant, nontoxic, mildly antiseptic, stimulates granulation, and is all absorbed from the surface in twenty-four hours, so that it does not form hard crusts.

Treatment of Acetonemia and Vomiting in Children.—Howard Bucknell, in the *Atlanta Journal-Record of Medicine* for March, 1916, states that in all cases of recurrent vomiting in children, or where there is severe vomiting as a complication of other diseases, the urine should be tested for acetone, and if necessary, treatment instituted, whatever other conditions may be present. Vomiting, a serious complication in many infections, can thus be brought to assume a minor role. In cases of cyclic vomiting there is usually acetone, frequently combined with indican. Children thus afflicted have probably received carbohydrates in excess in a form not readily utilized by them, the result being intestinal indigestion, a relative carbohydrate insufficiency, and a compensatory rapid consumption of stored fat, part of which undergoes imperfect catabolism with liberation of acetone bodies. The writer deems it an error to state that while the cyclic attack is in progress little can be done to stay it. Many children vomiting for days till nearly pulseless, may be promptly relieved. Body fluids being rapidly drained through persistent loss of gastric juice and inability to take liquids by mouth, water should be supplied by rectum or, if diarrhea exists, by hypodermoclysis. If the stomach contains irritating substances, it should be washed out. The colon should also be irrigated, and a solution of sodium bicarbonate introduced into the rectum, to be retained if possible. To depress the vomiting reflex, bromides and chloral hydrate may be used by rectum, though chloretone gave the writer better results. Where vomiting is not too severe, a solution of chloretone in appropriate amount (e. g., one and a half grain

in water, a few drops at a time, in a child about one year old) may be given by mouth, or through a stomach tube, after stomach washing with sodium bicarbonate solution. To make up for the deficiency of carbohydrates four to eight ounces of a five per cent. solution of dextrose should be administered, by rectum, in alternation with sodium bicarbonate solution to be retained. Usually by the time the effect of the chloretone has passed off, the sodium bicarbonate and dextrose absorbed have so decreased the nausea that dextrose may be given by mouth—a few grains at a time, up to a dram every eight hours. After a few hours of such treatment, vomiting usually ceases permanently. If it recurs, the enemas are to be repeated. As soon as the vomiting has ceased and a cathartic, such as calomel and milk of magnesia, has, if necessary, been given, feeding may be resumed, unless otherwise contraindicated.

Results From Blood Transfusion.—The transfusion or intramuscular injection of whole blood and intravenous or subcutaneous injection of homologous serum, according to Edward W. Peterson (*Journal A. M. A.*, April 22, 1916), are the most efficient measures in the treatment of hemorrhage and the hemorrhagic diseases, and their efficiency varies in the order mentioned. Both in acute and chronic posthemorrhagic anemia, transfusion is the best of all methods, in the former to save life, in the latter to stimulate the blood forming tissues. Transfusion has also proved effective in pathological hemorrhages when all other measures have failed. In some cases the blood of one donor has proved ineffectual, while that of another has given prompt results. One whose blood is rich in platelets should be selected as donor when an intractable case of bleeding is to be treated, such as hemophilia or purpura. As there is no method of standardizing blood as a therapeutic agent, variable results must be expected, but practically a young, healthy, not fully matured donor is best.

Prostatectomy Under Local Anesthesia.—By means of local anesthesia of the sacral plexus in the sacral canal and infiltration of the region of the prostatic capsule after suprapubic cystotomy, the prostate can be removed painlessly, according to Arthur E. Hertzler (*Journal A. M. A.*, April 29, 1916). For the anesthesia either a half per cent. novocaine solution with epinephrine or a 0.6 per cent. solution of quinine and urea hydrochloride is used. The method is serviceable in weakened patients or in those with marked cystitis. It is sufficiently simple in technic to be generally available.

Treatment of Leg Ulcers.—Edward Adams (*International Journal of Surgery*, April, 1916) recommends scarlet red ointment to stimulate granulations. It should never exceed five per cent strength. The following formulae are advised:

I.	
Scarlet red (medicinal Biehrich),	gr. XXX.
Balsam of Peru,	℥i.
Petrolatum, q. s. ad	℥i.
II.	
Scarlet red (medicinal Biehrich),	gr. XLV.
Ung. zinci oxid., q. s. ad	℥i.
III.	
Scarlet red (medicinal Biehrich),	gr. XV.
Ung. ac. borici, q. s. ad	℥i.

Autoserum in the Treatment of Cancer.—Owen Paget (*Medical Record*, April 22, 1916) states that a belief that epithelial cells are most important in protection and immunization against disease and also in its cure, led him to stimulate the skin cells by a blister and to inoculate the fluid therefrom into a man with inoperable carcinoma of the rectum. This was followed by marked improvement, the patient not only gaining in weight, but the tumor also greatly diminishing in size and hardness.

Rosenbach's Tuberculin in Genitourinary Tuberculosis.—As the result of an experience of thirteen cases in which this modified tuberculin was given, A. Hyman (*Journal A. M. A.*, April 29, 1916) was able to observe some improvement in only two. The others were wholly unimproved, and some of these even developed additional foci of tuberculosis while under treatment. The very long period consumed in the treatment with the tuberculin may of itself have been the cause of the improvement in the two cases.

Treatment of Influenza.—In the *Medical Herald* for April, 1916, O. A. Schmid advocates the immediate administration of ten grains of Dover's powder and the placing of the patient in bed and prescribing a light nutritious diet with an abundance of cold drink. A capsule of the following composition is given every two hours:

R Acidi acetyl-salicylici, gr. v;
 Camphoræ monobromatæ, }
 Sodii benzoatis, } ãã gr. ii.
 M. et fac tales capsulas.
 Sig.: One every two hours.

For sleeplessness sulphonal is given, and for the coryza the application to the nose of a ten to twenty per cent. solution of argyrol followed by an oily spray is of much help. Nothing has any material effect on the distressing cough, though the following may be tried:

R Ammonii chloridi, 10.0;
 Potassii iodidi, 3.0;
 Fluidextr. glycyrrhizæ, 10.0;
 Syrupi pruni virg., q. s. ad 60.0.
 M. et Sig.: One teaspoonful every two or three hours.

If desired, codeine grain one eighth to the dose may be added. Small doses of atropine are serviceable in checking the profuse sweating often observed. Stock vaccines are of little use. Mustard plasters for counterirritation give relief in the respiratory form of the disease.

Simple Method of Shortening the Round Ligaments in Retroversion.—J. H. Kellogg (*Medical Record*, April 22, 1916) describes a new method which is done through external incision with a pulling of the round ligament out to its full extent, suturing it to the aponeurosis of the external oblique, and drawing the excess length of the ligament under this aponeurosis out above the external ring and back again through the original opening in the roof of the canal. A lever pessary is applied after the operation and retained for three or four months. The advantages are a small superficial incision, no injury to the ligaments, rapidity of execution, no subsequent complications in pregnancy. Kellogg also insists on the subsequent wearing of a spring abdominal supporter and discarding the ordinary corset.

A New Method of Treating Fracture of the Clavicle.—Luethi (*Correspondenz-Blatt für Schweizer Aerzte*, March 25) ascribes the following method to Wildbolz. The elbows are flexed, carried back, and a round stick of wood about three cm. in diameter is placed behind the back, passing through the crook of each elbow. To prevent unpleasant pressure a pad is placed between each elbow and the stick, and then the elbows are secured thus drawn backward with bandages. It is asserted that this position of the arms brings the fragments of the clavicle into good apposition, where they heal well. The stick can be removed at the end of twelve or fourteen days and the arms moved freely. The results in five cases are said to have been excellent.

Injections of Deep Sea Water and Radium.—Francis E. Park (*Medical Record*, April 29, 1916) uses injections of ten to 200 c. c. sea water into the back, sides of the abdomen, and the hollow space of the thigh behind the great trochanter in neurasthenia, psoriasis, chronic eczema, and convalescence. The water is taken at a depth of 100 feet and is made permanently radioactive by the addition of five micrograms of radium barium bromide solution to every 1,000 c. c. of a mixture of three parts sea water and five parts spring water. This method was first advocated by René Quinton.

Antiseptic Action of Ether in Peritoneal Infections.—Following the lead of French surgeons, John Saliba (*Journal A. M. A.*, April 22, 1916) has obtained gratifying results from the injection of ether into the infected peritoneal cavity. It has proved quite safe and has been demonstrated clinically and experimentally to have a bactericidal action. The dose for a child four years old and over is one ounce; for an adult three ounces, instilled into the peritoneal cavity just before its final closure. No untoward effects follow in the majority of cases. Evaporation and absorption are rapid and ether begins to be excreted in the breath in about three minutes after its peritoneal injection. In only two cases out of 248 was there any evidence of serious aftereffects which could have been attributed to the ether.

Bone Transplants in Infected Wounds.—Dean Lewis (*Lancet-Clinic*, April 1, 1916) asserts that clinical findings analogous to those observed in experimental work have convinced him of the viability of transplanted bone, such bone reacting to infection like normal bone and, in spite of severe infection, when death of an entire bone transplant might be expected, still remaining able to take part in involucrum and sequestrum formation. Although the transplantation of bone into infected areas has not often been attempted, the writer has used bone grafts for purposes of mechanical support for the prevention of radial deviation of the hand in cases already infected locally. The results showed that bone grafts inserted into infected fields will often live, and even when sequestrum formation occurs, necessitating a second operation for its removal, the bone grafts will have prevented deformity, while convalescence will be shortened. If infection is introduced only at the time of insertion of the graft, its deleterious effect is more marked; the entire graft is likely to be lost.

Treatment of Acute Colds.—C. B. Williams (*Texas State Journal of Medicine*, April, 1916) uses hexamethylenamine in every well defined case of acute cold, acute suppuration of the middle ear, acute sinusitis, and acute bronchitis. Adults are given from fifteen to thirty grains a day for from three to ten days, beginning with an initial dose of ten grains, followed by five or seven and one half grain doses. The results have been satisfactory.

The Intravenous Administration of Mercury in Syphilis.—Thad Shaw (*Medical Record*, May 6, 1916) reports sixteen cases where this method was used for the administration of mercuric chloride. The dose used was one eighth to one sixth grain to a patient of 140 to 150 pounds body weight every five to seven days. The results were speedy and gratifying, and Shaw commends the method as exact, safe, and rapid. There is a low grade of phlebitis produced which is in proportion to the concentration of the solution.

Roentgen Ray Treatment of Skin Diseases.—H. H. Hazen (*Interstate Medical Journal*, April, 1916) writes that the modern method is to give one, two or three large doses carefully measured; thus there is no stimulation, action is rapid, and there is no chronic dermatitis produced. A hard tube is preferred to a soft one, as there is less danger of skin irritation. The skin conditions most benefited by x rays are thick patches of squamous eczema, acne vulgaris, lupus vulgaris, tinea tonsurans, lichen planus, common warts, keloids, cancer. It is doubtful if radium can produce any effects that the x ray cannot equal.

New Treatment of Smallpox.—Teodora Taboada (*Cronica Medica*, March, 1916) asserts that he has treated sixty-four cases of smallpox by a new method with a mortality of only 12.5 per cent., compared with twenty-one per cent. in 134 cases treated by former methods. He employed a ten per cent. solution of camphor in ninety per cent. alcohol as a local application several times daily, followed by painting with a mixture of iodine, one part, and glycerin, two parts. Warm baths with lysol solution were given daily. The spirits of camphor acted as a pronounced antiseptic and accomplished the difficult effect of neutralizing the fetid odor of the disease.

Therapy of Cerebral Syphilis.—Morris J. Karpas (*Medical Record*, April 22, 1916) asserts that in addition to the usual hygienic, dietetic, and tonic measures, the actual treatment consists of three remedies, namely, salvarsan or neosalvarsan, mercury, and potassium iodide. Where there are no contraindications, salvarsan and neosalvarsan should be administered at once. The day following, salvarsan, mercurial injections or inunctions with potassium iodide should be given. Mercury salicylate injections are to be preferred from a standpoint of cleanliness and rapidity of action, and from two to three grains a week may be given, increased to the point of tolerance. Potassium iodide should be given in increasing doses. Intraspinal treatment with salvarsanized or mercurialized serum is efficacious, and the cerebrospinal fluid examination is quite as important as the Wassermann.

Treatment of Syphilis in the Secondary Stage.—Sigmund Pollitzer (*N. Y. State Jour. Med.*, April, 1916) advocates the attempt to abort syphilis when seen at the time of the appearance of the macular eruption. He excises the chancre, administers five injections of salvarsan in two weeks, and ten injections of salicylate of mercury in doses of two or three grains each week. If the patient is first seen at a later stage five doses of salvarsan at one week intervals and ten mercury injections are given, and this treatment, reduced to three and eight doses, respectively, is repeated at intervals of a couple of months for two years. This treatment is continued, even if the serum reaction becomes negative. If the patient remains negative to the Wassermann test after a provocative injection for one year after the end of the last course of treatment, he is discharged.

Stock Vaccine in Bacillus typhosus Infection.—T. H. Whittington (*Lancet*, April 8, 1916) was unable to note definite beneficial effect from stock vaccine. The cases treated were classified according to severity before treatment and there were equal numbers of cases treated with the vaccine and cases untreated in each group. In all other respects the treatment of the two groups in each class was the same. In the entire series of 230 cases, half treated with vaccine, there were fifty-two deaths, twenty-nine among the vaccinated and twenty-three in the unvaccinated. The average duration of the primary illness was twenty-nine days in the vaccinated and twenty-six in the controls. Complications or sequelae occurred in fifty-eight of the vaccinated and in fifty-three of the unvaccinated. In the severe cases with poor prognosis the vaccine gave no results. It was only in mild cases, in which the prognosis was good, that there was any evidence of a beneficial action. The observations suggested that the vaccine had a tendency to increase intestinal hemorrhage. Stock vaccine in the treatment of typhoid fever cannot, therefore, be recommended for routine practice.

Treatment of Simple Pruritus.—The action of some circulating toxin upon the endothelial nerves of the capillaries is the common cause of all forms of simple pruritus, whether they occur in advanced age, as the result of abuse of tobacco, in the presence of jaundice, or associated with some other condition. In addition to the need for correction of the general underlying condition, P. G. Unna (*Berlin. klin. Wochenschr.*, November 8, 1915) recommends local treatment:

℞ Acidi nitrici, i. o.;
Eucერი (anhydrous) }
Glycerini, ad 100.0.
M. et fiat unguentum.

For the itching which accompanies jaundice much relief can be secured by the liberal use of mineral waters containing sodium and calcium chlorides with potassium chlorate:

℞ Sodii chloridi, 40.0;
Calcii chloridi, 1.0;
Potassii chloratis, }
Sodii bicarbonatis, } ad 8.0
M. et fiat pulvis

Sig. Dissolve one teaspoonful in two quarts of water and drink during the day.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT

November 15, 1915.

The Reputed Presence of a Positive Wassermann Reaction in Pemphigus, by Ernst Nathan. —Quite contrary to the findings reported by Hesse were the results of the Wassermann tests made in twelve cases of pemphigus by Nathan. In every instance in the latter author's series the reaction was wholly negative. In no case, also, was there any history suggesting syphilis or any clinical evidence of the disease.

Agglutination in Dysentery, by L. Dünner. —A technic for the diagnostic agglutination reaction in dysentery due to the Kruse-Shiga bacillus is described which gives specific results indicating infection with this organism when the reaction is positive in a dilution of one to fifty or over. Two forms of agglutination are observed with the macroscopic method in testing for dysentery. The one is characterized by fine, granular turbidity, the other by a coarse clumping. The latter is the specific reaction, the former occurring under many conditions not associated with infection with the dysentery bacillus.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

March 28, 1916.

Nocturnal Blindness in Soldiers, by L. Weekers. —In a series of 3,977 ophthalmological patients at the French front, no less than 409, or over ten per cent., presented themselves because of a pronounced blindness at night. These men found themselves almost helpless in night marches, falling into trenches or shell craters, often filled with water, having to wait long periods in the same place until hunted up by their comrades, and being largely unfit for sentry duty or as wagon drivers. Examination of the eye revealed no retinal lesions, but refractive defects were noted in seventy-three per cent. of the cases. The general condition was often normal, but at times evidences of nervous depression were noted. Some patients undoubtedly had a congenital night blindness, but in many the condition had been acquired as a result of the combined influence of several etiological factors, such as nervous exhaustion from the physical trials, dangers, and nervous shocks attending active warfare, irregularity of sleep, and perhaps, above all, nostalgia and anxiety as to the fate of relatives residing in territory occupied by the enemy. Other factors are eyestrain due to refractive abnormality or external ocular inflammation, and possibly, excessive uniformity of diet. Work in the dark is not a factor in bringing on the trouble. Treatment comprises the use of smoked glasses in the daytime, prevention of eyestrain, a roborant and varied diet, and in the more obstinate cases, a period of rest with iron and arsenic medication.

Late Tetanus Resulting in Deformity of the Limbs, by Phocas and Rabaud. —Persistent, violent, and progressive contracture is known to be a constant manifestation of late tetanus. To this the authors add deformity of a limb, occurring especially in cases of fracture not as yet united. Thus, a patient with compound, comminuted fracture of the

left leg soon after the application of a plaster apparatus, and on the fortieth day after the injury, began to complain of a drawing sensation in the toes on the wounded side. Pain and spasm gradually increased and after a time the masseter showed a similar tendency. Spinal injection of tetanus antitoxin, chloral hydrate in large doses, and the Bacilli phenol treatment led to cessation of the muscular spasms in a week, but in spite of this and the plaster apparatus a posterior subluxation of the tibia took place, and the fragments of the fractured bone became markedly displaced.

Venereal Diseases in War Time, by Gaucher. —Statistical studies in Paris hospitals for venereal diseases showed that the number of cases of recently acquired syphilis had increased by nearly one half since the beginning of the war. The increase took place not only among military men but also in the civil population, and appears to result, in part, from a general lack of prudence arising from incessant exposure to danger, and partly from the disturbed social relations attendant upon mobilization. Gonorrheal disease is frequent, comprising not only new infections, but old infections revived by physical fatigue, and a few instances of artificially maintained gonorrhea for purposes of escape from military duties. Soft chancres are decidedly uncommon. Gaucher believes that most soft chancres are mixed chancres, followed, in due time, by constitutional syphilis; this applies, of course, to peace as well as to war time.

PARIS MÉDICAL

March 25, 1916.

Diagnosis and Prognosis in Paratyphoid Fever, by L. Rimbaud. —The clinical picture alone rarely permits a diagnosis of paratyphoid fever. The general mildness of the disease, the marked abdominal pains, the frequent absence of diarrhea, the short duration of the febrile period and the lower temperature, the rarity of cardiac involvement and of other complications, and the knowledge of a preceding antityphoid vaccination may lead to a suspicion of paratyphoid as against typhoid infection, but these are not conclusive diagnostic features. The agglutination test, if positive, affords valuable confirmatory evidence of paratyphoid fever, but if negative, is without significance. The blood culture alone permits of definite differentiation of paratyphoid fever, not only from typhoid fever, but from divers vague gastrointestinal disturbances too often labeled "gastric upset" or some similar unsatisfactory appellation. As for the prognosis, paratyphoid infections, in spite of some assertions to the contrary, are less grave than typhoid fever and present fewer complications. Antiparatyphoid prophylaxis is none the less desirable. Convalescence is generally prolonged and demands careful management. Grave forms, though infrequent, are not exceptional, and the mortality, while much lower than that of typhoid, appears to be between two and four per cent.

BRITISH MEDICAL JOURNAL.

April 15, 1916.

"The Soldier's Heart" and Its Relation to Thyroidism, by James Barr. —Analysis of the symptoms encountered in the victims of irritable heart, or "soldier's heart," as it is now commonly

called, shows that there are almost invariably evidences present which point to the occurrence of some degree of hyperthyroidism. Such thyroid symptoms are usually not pronounced and consist of mild symptoms, such as tachycardia, cyanosis and cold extremities or a slightly flushed skin, nervous hypersensitiveness, slight widening of the palpebral fissure, and at times slight enlargement of the thyroid gland. The condition is commonly associated with a deficient action of the suprarenals, and there is usually a low blood pressure, with insufficient capillary circulation. The same cases commonly are also the victims of frostbite due to this deficient circulation.

Heart Block in Jaundice, by R. D. Rudolf.—The case of an officer who was acutely ill with an affection of the liver associated with marked jaundice is reported on account of the occurrence of a partial heart block. The condition was permanently removed by the administration of a single dose of atropine, but the patient died shortly afterward from his liver affection. It has been stated that, though slowing of the heart is common in jaundice, heart block has never been observed to be due to this condition. The present case is reported to show that heart block may occur as a result of jaundice.

LANCET.

April 15, 1916.

Auscultation in Vascular Injuries, by George Makins.—In connection with the report of several cases occasion is taken to emphasize the value of auscultation in the diagnosis of injuries to the peripheral bloodvessels. Thus, often the most characteristic point in the diagnosis of an arteriovenous aneurysm of traumatic origin may be the presence of a continuous murmur heard near the site of the injury. Such a murmur, however, may not be confined to the injured region, or even to the extremity alone, but may be transmitted to the cardiac region. This is particularly true when the vessels involved are large and when both artery and vein are affected. Such a transmitted murmur may be heard at the apex of the heart, and its discovery has been the first evidence of the presence of the vascular injury in some cases. The systolic murmur when the artery alone has been wounded is less likely to be transmitted for long distances, but even this may, at times, be heard in the cardiac area. These transmitted murmurs are usually only present for a short time, after which they completely disappear. Their temporary presence is probably to be explained on the theory that the disturbance in the circulatory system leads at first to some back pressure in the heart with slight dilatation. When the heart has compensated, which usually occurs in a short time, the transmission of the murmur is interfered with and the murmur therefore disappears.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

May 6, 1916.

Endocrinopathic Inheritance, by Walter Timme.—The family history of four generations springing from the descendants of the marriage of a moderate giant with a diabetic woman is recorded and the inheritance of two factors—the growth factor and the metabolic factor—is worked out along

Mendelian lines. The results of the analysis show that the inheritance of each of these factors in the family studied followed almost perfectly the laws laid down by Mendel. The growth factor, however, was evidently not a simple one pertaining to gigantism, but rather one which was more generally concerned with growth leading to gigantism, on the one hand and defective growth on the other.

Industrial Anilin Poisoning in the United States, by Rey Vincent Luce and Alice Hamilton. Heretofore this form of industrial poisoning was very rare in this country, but with the outbreak of the war the anilin industry rapidly grew to considerable proportions, with the result that this occupational disease has become an important factor. Those engaged in the manufacture of anilin, in rubber work, and in the use of certain washes for printing press rollers are the ones subject to the intoxication. Poisoning is due to anilin itself and to its associated impurities, which are closely allied to it both chemically and toxicologically. The poisoning may occur through the skin, by way of the respiratory tract, or by both channels at once. Exposure does not have to be excessive to cause poisoning, and young persons and those who have previously been poisoned are the most susceptible. Hot weather and hot rooms increase the danger. The substance is a blood poison which produces methemoglobin and internal suffocation, with intense cyanosis and associated symptoms, including headache, vomiting, delirium, and coma. It is essential to diagnose the poisoning early so as to remove the victim from further exposure, although, in some, a certain amount of tolerance may be acquired. Treatment should include the use of stimulants, fresh air or oxygen, and the subsequent avoidance of exposure.

Outbreak of Typhoid Due to Oysters, by Paul B. Brooks.—An epidemic of fifty cases occurred in a city of moderate size and in several neighboring small towns. Investigation of the cause finally led to the direct association of the disease with the use of oysters in seventy-six per cent. of the cases. The oysters were all obtained from one of two wholesalers. The infected oysters were all included in two shipments to the wholesalers, but it was not possible to trace their origin farther back than to one of several sources in the south.

Dusty Occupations, by Valentine C. Baker.—The importance of dust in the production of pulmonary disease is demonstrated by this study of the incidence of such diseases among several groups of workers whose occupations exposed them to the inhalation of dust. Of sixty-nine furriers, over thirteen per cent. had pulmonary tuberculosis and nearly half had chronic respiratory disease; ten per cent. of 110 barbers had tuberculosis, and one third had chronic respiratory disease; the proportions were a little less for these two classes of diseases among bakers and among tobacco workers; marble workers gave an incidence of fifteen per cent. for tuberculosis and nearly twenty-five per cent. of chronic pulmonary disease; the conditions among stonecutters and among plasterers were much like those in the group of bakers. This high incidence of pulmonary tuberculosis and chronic pulmonary disease among these several groups could not be attributed to any greater exposure to infection, but was due to the

fact that the inhalation of dust caused injuries to their pulmonary tissues, which made the invasion of pathogenic organisms easier than among other classes of workers under the same social and hygienic conditions. The corollary from these observations is the evident need for the adoption of methods for continuous removal of dust in these occupations and protection of individuals from danger of continuous inhalation of the particles.

Stasis of Vesical Urine, by Arthur H. Curtis.—It is pointed out that bladder infection from the use of catheters or instruments seldom follows their employment in the hands of physicians, while it is very common under other conditions, even where asepsis is quite as rigidly observed. The reason for this difference is found, on analysis of the conditions, to be due to the fact that in the first instance the instrumentation is usually undertaken in a relatively normal bladder, at least in one free from urinary stasis. In the second class of cases retention to some extent is the usual condition, and it is the contamination of the residual urine which results in cystitis.

MEDICAL RECORD.

May 6, 1916.

The Causation and Treatment of Pellagra, by H. E. Bond.—A review of recent work seems to show that pellagra is related to Addison's disease, that the causal bacteria are in the intestines, that actinic rays of the sun are irritating to the skin in this disease, and that it responds to the internal use of intestinal antiseptics and the external use of protective ointments.

A Urinary Test for Syphilis and Its Comparison with the Wassermann Reaction, by Carl D. Gray.—This test is made with two solutions, of which the first consists of one gram of resublimed iodine in chloroform or carbon tetrachloride, and the second is ten per cent. phosphoric acid. To six c. c. of fresh urine is added one c. c. of the first solution and the mixture is shaken for two or three minutes. The tube is set aside when the chloroform settles to the bottom, being pearly white if the reaction is negative and pink or deep purple if the reaction is positive. One c. c. of the second solution is then added and the test tube again shaken—if then, after standing three to five minutes, the chloroform clears and becomes white, the test is negative. Nervous or diuretic polyuria gives a positive reaction, as does the drinking of alcoholic beverages and the presence of sugar in the urine. With these exceptions its trial in 200 cases would seem to make it a positive test for syphilis, and it closely parallels the Wassermann, in no case being negative where the Wassermann was positive. On the other hand, in a few cases of suspected syphilis it was positive where the Wassermann was negative.

ARCHIVES OF INTERNAL MEDICINE.

January, 1916.

Serum Sickness among 500 Patients Receiving Diphtheria Antitoxin, by Mills Sturtevant.—Of the 500 cases, 422 received serum once, while seventy-eight received two or more injections. The frequency of reaction—a rash being always the criterion—increased with the amount of serum. Of

the 422 cases receiving one injection, twenty per cent. showed a reaction, the rash being urticarial in sixty-three instances, and erythematous in twenty-one; small vesicles were also noted in two cases. Reaction took place from the first to the seventeenth day, usually occurring between the fifth to the ninth day. The time of its appearance had no relation to the dose. In nineteen per cent. of the reacting cases, nausea and vomiting were noted. Joint pains, at times marked and with local redness and swelling, occurred in about fourteen per cent. of these cases, and also occasionally albuminuria and edema. Administration of a given amount of serum in two or more doses is not less likely to produce a reaction than if it is injected as one dose.

Poisoning from Creamed Codfish, by M. A. Blankenhorn, G. E. Harmon, and P. J. Hanzlik.—About eighty patients and kitchen employees in a hospital were seized with epigastric distress, nausea, vomiting, colic, and diarrhea in one and a half to three hours after eating some "creamed" salted codfish. All recovered within twenty-four hours, some having been subjected to gastric lavage. The chemical and pharmacological peculiarities of the creamed fish were investigated and found to be those of some base such as putrescine, cadaverine, or histamine.

AMERICAN JOURNAL OF TROPICAL DISEASES AND PREVENTIVE MEDICINE.

January, 1916.

Endamoeba buccalis in Alveolodental Pyorrhea, by F. M. Johns.—A study of the manner in which the endameba produces pyorrhoeal disease is presented. Pus obtained from pyorrhea pockets by massage showed an almost entire absence of endamebas, but scrapings of the bottom of a pocket with a dental scaler revealed it, often in large numbers, along with pus cells, red cells, connective tissue fibres, and bacteria. A mass of bacteria was often seen attached to one part of the ameba, with only rare suggestion of phagocytosis. The mere presence of the ameba in tissue did not appear to be the sole factor in the production of the lesion, the opening of avenues of infection or the direct transportation and constant replanting of adherent bacteria into and about the granulating tissue seemingly being an important factor. Relief from soreness and bleeding generally occurs within the first twenty-four or forty-eight hours after the use of emetine hydrochloride. The numbers of the ameba are not appreciably lessened until after two or three administrations. Apparently, they diminish in number without being morphologically altered.

February, 1916.

Anopheles punctipennis in the Transmission of Tertian Malaria, by W. V. King.—Previous investigations left in doubt the susceptibility of this abundant and widely distributed species of mosquito to infection with the parasites of human malaria. In comparative experiments by the author, the punctipennis insect proved itself an efficient host for the tertian malaria parasite, *Plasmodium vivax*. Of six specimens fed on a human patient, five became definitely infected. In one specimen, ruptured oocysts were found on the stomach wall and sporozoites in the salivary glands.

Proceedings of Societies.

SOUTHERN MEDICAL ASSOCIATION.

*Ninth Annual Meeting, Held at Dallas, Texas,
November 8, 9, 10 and 11, 1915.*

The President, Dr. OSCAR DOWLING, of Shreveport, Louisiana, in the Chair.

(Continued from page 957.)

Etiology of Pellagra, with Reference to Amebic Invasion.—Doctor LEVINE, of New Orleans, stated that a study of the intestinal tract was the most important thing in making a diagnosis of pellagra. There was a class of cases where the skin symptoms were lacking. Involvement of the nervous system was not present, and the only symptom was the involvement of the gastrointestinal tract. Patients would complain of stomach disturbance; they had symptoms of heaviness and fullness and pain, with slight cramps and loose bowels. That pellagra was on the increase was due to the further fact that they were not sufficiently expert to differentiate cases of pellagra.

Dr. CHARLES W. GARRISON, of Little Rock, challenged the statement that the publication of the dietary treatment of pellagra was injurious to the people and the profession. In Arkansas they had a slogan, "let Arkansas feed herself," and they were using pellagra to assist them in that movement. There had not been a single speaker, representing either the infectious or opposite theory of pellagra, who had not admitted that diet was one of the most essential and important factors in the prevention and treatment of the disease.

Dr. FRANK H. CLARKE, of Lexington, Kentucky, said that those who had the pleasure of visiting Lexington two years ago would recall the splendid agricultural district. It was a short horn and Jersey cattle country, a fine race horse country, and a great many wealthy people had settled there, and yet pellagra had appeared among the rich as well as among the poor.

Doctor BRUCE, of Alabama, recalled two patients who had returned from Johns Hopkins, who were treated there for amebiasis with secondary anemia. These patients came under his observation with the later symptoms of pellagra. The skin symptoms had shown up and the severe nervous symptoms. In the beginning these cases were incorrectly diagnosed and were treated as amebic dysentery, and since then had developed all of the later symptoms of pellagra.

Dr. LOUIS LEROY, of Memphis, wished to report in this connection an interesting case of pellagra which he had in the spring, developing in an old woman who had also inoperable rectal cancer. Wherever there was a lesion in the intestinal mucosa there was also a possible port of entry for a subsequent pellagra. He had no respect for the statement that it was too early for any one to get up and assure the people that there was no danger of contracting pellagra. One could name any one locality, and when one case occurred, if there were open earth closets, if there was ground infection, they could look for more cases.

Dr. WILLIAM KRAUSS, of Memphis, stated that

with reference to the open closet, until very recent times, they had no pellagra originating in Memphis, but recently he had seen many cases which had originated there, and they had no open closets in their city. Something was said about personal cleanliness, and they might infer that only people filthy in their habits contracted pellagra, and yet they had an increasing number of cases of the disease in Memphis among the best people who lived in the best surroundings, who took two baths a day, and ate good nourishing food. Let them, when they made an analysis, put a blue pencil across those things that were finished and definite, and start something new.

Dr. THOMPSON FRAZER, of Asheville, several years ago, saw a great many cases of pellagra, and had heard so much about it that he decided to look it up. He had looked over a great many cases and had not recognized the disease; then he had a good many cases referred to him. He had seen from seventy-five to 100 cases, but in the last two years he had seen but few, which he found was in keeping with the history of the disease, which had tended to spread from one section to another.

Dr. C. B. BOWYER, of Stonega, Virginia, for the benefit of those who made a study of pellagra, would report the results of some observations he had made in the coal mining district. He had never seen a case of pellagra in a miner. So far as he knew, pellagra had never developed in miners in Kentucky.

Dr. W. L. ALLISON, of Fort Worth, when he came to this meeting, was opposed to Goldberger's theory, because he believed at that time he had made the definite statement that pellagra was due to poor diet alone. He now agreed with him and believed that diet stood as a predisposing factor. When they fed pellagrins good nourishing food lots of them got well, but it did not hold true in Texas that pellagra occurred only among the poor. The first quarrel he had with the relatives of a pellagrin occurred about six years ago. A woman with pronounced symptoms of the disease died under his care, and the family came to see him about the nature of her trouble, and he told them she died of pellagra. They resented the statement; they wanted it distinctly understood that this woman was well fed. He had seen many cases of pellagra in people who were well off financially and who lived well. He did not believe the disease incidence could be explained by diet any more than tuberculosis and typhoid fever could.

Quinine and Urea Injections in Hyperthyroidism.—This article, by Dr. LEIGH F. WATSON, of Oklahoma, was published in the JOURNAL, April 22, 1916.

The Small Town, the Neglected Unit in Sanitary Administration.—Dr. A. W. FREEMAN, of Washington, D. C., said that sanitarians had almost completely overlooked the small towns, the towns in the agricultural districts of the country, ranging in population from a few scattering families to one thousand people. Such towns were merely groups of country homes without the intervening farm land. The population was essentially rural, composed of people just one step removed from the farm. The fundamental sanitary needs of the

small town were those of water supply and excreta disposal. It had been his observation that neither the well nor the privy was sufficiently protected. He deplored the aversion the average American had to paying taxes, and pointed out by a slight increase of taxes matters of sanitation could be easily taken care of and the public health protected. A public scavenger and the can privy were advocated. Such privies were easily cleaned and the breeding of flies was kept down and public health protected. The cleaning of the can or vault privy could be made often enough to insure a high degree of sanitation. The work could be done for about thirty cents a month for each family. The great need of the South today was the improvement of the rural home.

Sanitating the Rural Home.—Dr. R. N. WHITFIELD, of Florence, Mississippi, stated that the rural home needed improvement as a rule more than any other home, because in the south the rural population was greatly in excess of that of the cities and towns, and, most of all, the public health services had been performed in the cities and towns to the exclusion of the rural districts. One exception had been made, and that was the work done by the Rockefeller Commission, which had been laboring five or six years in eleven of the southern States. The second greatest need in the south was the divorcement of the public health from peanut politics. He condemned the pie hunting and the coat tail hangers on for positions on public health boards, and declared that no physician would be a success as a health officer if he was allowed to practise. A full time health officer should be placed in charge of every county in the south, and he should be a capable and competent man.

Intensive Community Health Work.—Dr. JOHN A. FERRELL, of the Rockefeller Foundation, New York, stated that intensive community health work differed from ordinary health work in that a concrete health problem was taken and adhered to until measurable progress had been made. It was limited to a relatively small circumscribed area instead of being diffused throughout a large area, such as a State or a county. A detailed record of a survey was made of the area selected, including every home, school, church, road, and stream, and usually the information was shown on a map. Every home was visited and inspected and every person examined as far as practicable with reference to the particular health problem under consideration. A record of the disease in the past and its probable consequences was made so that when the work began there was a definite starting point.

Rural Sanitation in the South.—Dr. J. HOWELL MAY, of Waynesville, South Carolina, placed the chief responsibility on the 1,310 county governments of the southern States for the improvement of conditions. He advocated the employment of a full time country health officer on scientific merits rather than on a political basis for the present. The chief difficulty in county work was the lack of a well defined plan of procedure, and he insisted that a rule of standards and model system would be worked out for counties soon. Eventually, when methods of rural sanitation became standardized, and their counties grow in population as well, the

unit system operated by State boards of health would naturally and appropriately give place to the whole time county health officer, but for the next five to fifteen years the unit system possibly was destined to exercise a more practical helpful influence on the progress of rural sanitation than could be evolved solely for the whole time county health officer plan, which so many counties did not feel they might institute as yet.

Immediate Necessity of Health Work in the South.—Dr. A. L. LINCEUM, of Austin, Texas, said that housing conditions were deplorable among the tenants in the southern farming districts. The cost of screens on the doors, windows and porches on these homes would be less annually than the treatment of malaria.

Treatment of Suppurative Appendicitis.—Dr. SOUTHGATE LEIGH, of Norfolk, Virginia, regretted the subject of suppurative appendicitis had not received the attention at past meetings of the association that it deserved. While the mortality rate had been greatly reduced in appendicitis, it should be reduced even more. Great improvement could yet be made in the early handling of cases. As soon as a patient was suspected of infection he should be placed upon a proper stretcher, the head of which was elevated, and in all cases the patient should be kept lying inclined to the right side, so that in case rupture of the pus sac took place the upper region of the abdominal cavity would be protected from the pus. Transportation of the patient was most important; he should be well propped up. Cathartics should never be given in acute cases. Delay in operating was often advisable, if the condition of the patient would permit, especially if he was fatigued from the journey. However, where all conditions were favorable operating as soon as possible after the case had been properly diagnosed should be advocated.

Radium in Uterine Bleeding, Due to Myometrial Degeneration.—Dr. C. JEFF MILLER, of New Orleans, stated that radium had proved a boon in inoperable cases of carcinoma, but he would not recommend it as the sole treatment. The only treatment that promised relief from cancer was early removal. Radium, when properly screened, might be used as economically inside the body of a patient as by being kept in a medicine case at the office.

A National Health Problem.—Dr. ARTHUR T. MCCORMACK, of Bowling Green, Kentucky, brought a strong indictment against the United States Government for its failure to preserve the health of its citizens. The present food and drugs act was criticized. Enforcement of the law was so slow that it made possible patent medicine fakes and really encouraged violations. He pleaded for prompt action in the department of chemistry and in the publishing of its findings. He advocated the correlation of the Bureau of Animal Industry with the Bureau of Health, saying that the health of animals and that of man were too closely intermingled to be separated. He wanted the Child's Welfare Bureau to be taken out of the Department of the Interior and placed in the Health Department. Research, education, leadership, organization, interstate, foreign, and maritime quarantine, prompt statistics, as

accurate as possible without being devitalized by delay, enforcement of food and drugs acts, detailed solution of special problems of State and counties—but, above all, leadership and study in methods of execution would be the beginning functions of such a Federal department. The bringing together of all the health departments, even down to the municipal department, under the fountain head of the United States Public Health Service, was advocated. When such a time came he believed then diseases known to be preventable would be stamped out.

Malaria and Hookworm Disease.—Dr. W. S. LEATHERS, of University, Mississippi, stated that either malaria or hookworm disease so devitalized the human body that typhoid and tuberculosis had but little trouble in completing the destruction. These diseases made the other diseases more deadly. The insidious diseases must be stamped out before any noticeable impression could be made upon the diseases having a higher degree of mortality. Public health depended almost entirely upon education, and when the people became educated along the lines of protection against the ravages of the insidious diseases, a great step in advance would be made. Teaching simple sanitation to the people was one of the great duties of public health departments. The southern States reported for the year 1914 between two and three million cases of chills and fever and fifteen thousand deaths from malaria. The State of Mississippi reported 22,000 cases of chills and fever for the month of September, 1914. The land in the Mississippi delta was being held down in price today because it was generally understood that living there was almost impossible. He could not understand why the Government was spending millions to put water on lands in the west that would never be as productive as their lands of the south, and it would not give one cent to take the water off the land of the south. Their richest lands were those which became covered with water. Lands in the Mississippi Delta sold from \$20 to \$100 an acre when they should be selling for \$400. Malaria made living almost impossible in the Delta. This meant that millions of dollars were lost each year to the south from this disease.

Treatment of Malaria, with Reference to Its Eradication.—Dr. T. E. WRIGHT, of Monroe, Louisiana, said that in one of the hospitals in northern Louisiana, 747 cases of malaria among the railroad men were treated during the years 1912, 1913, and 1914. During this year, beginning January 1st and ending November 1st, 249 cases of malaria had been treated. The patients remained in the hospitals from four to six days. This short stay was due to the intensive treatment of malaria. This economic feature of intensive treatment and prompt results, when applied to the whole malarial district of the south, was a matter of much greater importance and should receive serious consideration on the part of medical men. The treatment used generally by him consisted of injecting quinine directly into the blood, and the dose was generally ten grains. The doses were given every eight to ten hours. Intensive treatment of malarial patients must be employed in order to decrease the number of carriers. The intravenous use of quinine, administered with proper

care, in doses of ten grains, in proper dilution, repeated in from eight to ten hours once or oftener, according to the case, was the type of treatment that more nearly sterilized the blood than any method heretofore employed. Fewer recurrences would follow the intravenous use of quinine. The discomfort was slight or of short duration, not lasting over five or six minutes. The technic was so simple that nurses in training might be taught to administer quinine by this method with reasonable certainty.

Treatment and Aftertreatment of Railway Injuries.—Dr. W. W. GRANT, of Denver, stated that the importance and necessity of immediate first aid treatment was apparent, because these accidents were generally defined as contused, lacerated, and mangled, and were more prone to infection than smooth wounds. The application of iodine, peroxide of hydrogen, and alcohol pending the transfer of the patient to a permanent place of treatment was common. Probing was seldom justified. There was danger in operating while the patient was still suffering from shock of the accident. Many surgeons did not realize the value of proper reaction before operating. To add a physical shock to physical injury generally proved hurtful to the patient. There was no more urgent field for skilled surgery than the treatment of mangled feet, hands, and fingers. Lacerated tissues were more liable to infection and healed more slowly than other wounds. The sewing up of torn and lacerated wounds was a sure harbinger of infection and they would have to be opened up again. Drainage tubes constituted the safest plan for the prevention of infection. Scalp wounds were not generally attended by severe shock and healed rapidly, but the most insidious wound was the small punctured fracture. Every such wound demanded early investigation or serious results would likely follow.

The Sex Question in Public Health.—Dr. ISADORE DYER, of New Orleans, said the sex question was essentially one of public health. Sex hygiene was today a fetish bandied about by the pedagogue, the preacher, the politician, and the physician. Congress debated some phases of sex hygiene; both sides were vehement in urging and opposing the dissemination of knowledge among the young, and while they continued to disagree, the young went on learning in the old fashioned way. Facts were needed in presentation of the sex question to young men and women, not preachments. He demanded in the future that the question be handled in an open and frank way with the children. He was of the opinion that perhaps the public school would be a good place to teach sex hygiene and he believed the proper men and women could be found to tell the children about the things that every child should know.

Dr. E. H. MARTIN, of Hot Springs, Arkansas, favored separation of children in the public schools, and said that segregation of sex was practised in Mississippi in the public schools. He opposed coeducation upon the grounds that a boy learning subservience to a woman was not liable to make a very good soldier in later years. He disagreed with Doctor Dyer in the handling of sex problems and did not believe it proper to recognize prostitution.

Dr. ALLAN W. FREEMAN, of Washington, D. C., had been attending public health meetings for a number of years, but had never heard a frank and honest discussion of the sex question. He agreed with Doctor Dyer that it was first a question of health and should be treated as such.

Syphilis: Its Relation to Public Health.—Dr. LLOYD THOMPSON, of Hot Springs, Arkansas, advocated the registration of all affected persons and a heavy fine to be imposed upon the physician for failure to report. The marriage license should not be given to any one until he had been thoroughly examined and had withstood certain tests. He urged the adoption of a plan by employers to require a bill of health of every employee and to refuse employment to any person who would not submit to a physical examination. If prostitution was permitted, it should be put under strict surveillance and regular medical examination.

Sanitary Preparedness.—Dr. RUPERT BLUE, surgeon general, U. S. Public Health Service, of Washington, D. C., said the maintenance of sanitary preparedness was no less the duty of the individual than of the community. The question was how this was to be accomplished. It was not altogether easy to teach so convincingly that the layman would appreciate these things. It must come in many ways. If upon the plastic mind of the school child the simple truths of sanitation were impressed, they gradually created a people with whom sanitary living was a habit. If by child hygiene they produced better and stronger men and women, these in turn would bring into the world stronger children, because they would have learned that mating with the weak and defective produced weak and defective children. Thus they would have a practical eugenic betterment.

He did not think it was necessary that he discuss the trite questions of the medical inspection of school children, the whole time health officer, diet, exercise, and the other thousand and one things concerning which they were practically of one mind. The impression he desired to leave in their minds was that, if America would avoid decay and retrogression, if she would be ready for the supreme trial of strength when the hour of calamity came, she must retain her sanitary defenses at all times. The sane and healthy nation, a republic of healthy minds in healthy bodies, adding by its labors, uninterrupted by disease, to the material and spiritual welfare of the world, was prepared alike for the piping times of peace and the stern realities of war.

National Board of Medical Examiners.—Dr. WILLIAM L. RODMAN, of Philadelphia, stated that the National board would not in any way interfere with the State boards. All the National board asked was that it would be treated with the same consideration, and that only, which was accorded to the several States. The examinations that would be required by the National board would be of the same high standard as that of the highest State boards, and there was no reason why a licentiate of the National board should not be recognized by the most exacting State board.

It was the patriotic duty of the several States to recognize the National board because of the advantages to the government service. It was not a Fed-

eral board under government control, but the Government saw that it was a splendid thing to supplement it in time of war and pestilence. The examinations for a time would be held in Washington, but later they might also be held in the middle west and perhaps in the far east to accommodate practitioners all over the country.

The standards would be high. First, the applicant must have had a four year high school course. Second, he must have had one year at least in the elemental biological sciences. Third, he must have had four years in a high grade medical school, and in addition at least one year of experience in a general hospital. The examination would be oral, written, in laboratory work, and clinical. Candidates would be required to make diagnoses, set fractured limbs, identify tissue under the microscope, and satisfy by a number of such tests their knowledge and ability.

Appeal for Military Preparedness.—Colonel M. W. IRELAND, of the United States Army Medical Corps, personal representative of Surgeon General Gorgas, of the United States Army, presented the new policy of the medical departments of the army and navy for preparedness in keeping with the new military program of the National government. They were beginning the reorganization of the army, which would increase materially the military establishment. They were working that the entire army might hold together in time of war without a breakdown. The surgeon general's office was seeking to provide the needed precautions to safeguard the troops. The surgeon general had secured the approval of the authorities of a plan that would allow seven medical officers for every 1,000 men. If war came, the medical departments of the army and the navy must be greatly increased. In the past they had relied upon the national guard, volunteers, and the Red Cross for this increase, but they were not sufficient for the medical department to perform its duty, as was shown by the experience of the Spanish-American War, when 21,000 cases of typhoid broke out in the concentration camps in the south and in our Santiago campaign.

The medical department must have a great force of doctors, trained as medical officers in the army. The department failed in the Spanish-American War. In the thirty-five years of peace they had forgotten the lessons of the Civil War, and as a result thousands of soldiers suffered and died with typhoid fever. It was to guard against the recurrence of such a thing that the medical departments of the army and navy were reorganizing and placing themselves upon an efficient preparedness basis.

(To be concluded.)

Letters to the Editors.

A PHYSICIAN'S RELIGION.

BROOKLYN, N. Y., April 3, 1916.

To the Editors:

I wish to tell you how much I appreciated your editorial article of April 1st on a physician's religion. It exactly expressed my sentiments, and I read it again and again. During a long practice I had tried to expound these views, without, however, being able to present them in so convincing a manner. Please accept my best thanks.

OSWALD JOERG, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Manual of Vital Function Testing Methods and Their Interpretation. By WILFRED M. BARTON, M.D., Associate Professor of Medicine, Medical Department, Georgetown University, Attending Physician to Georgetown University Hospital and Washington Asylum Hospital. Boston: Richard G. Badger; Toronto: The Copp Clark Co., 1916. Pp. 255. (Price, \$1.50.)

During recent years the world of medicine has busied itself in seeking methods by which diagnosis could be enhanced in accuracy, delicacy, range, and ease. Throughout the medical literature of the world new tests for the vital functions have been brought forth, discussed, modified, and to a greater or less extent evaluated. It has remained for Barton, however, to bring together in accessible form practically all that is of importance in connection with these several new tests. This he has done in a comprehensive yet concise way in the present manual, which is the first of its kind. The volume covers the tests of the functions of the liver, the kidneys, the pancreas, the heart, and the ductless glands. To each of these subjects a section is devoted and the subject is accorded a general discussion. This is followed by the precise technic of each of the suggested tests, including the modifications of importance. The several sections are closed by brief general discussions of the tests of the function under consideration. Extensive bibliographies accompany each section. The author is to be commended for his inspiration to give this valuable manual to the profession, and his just reward should be the very general entrance of his book into the working library of the practitioner as well as that of the laboratory worker.

Report of the Medicomilitary Aspects of the European War. From Observations Taken Behind the Allied Armies in France. By Surgeon A. M. FAUNTLEROY, United States Navy, Instructor in Surgery, United States Naval Medical School. Under the Direction of the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. Washington: Government Printing Office, 1915. Pp. vii-146.

Surgeon Fauntleroy's report of his observations behind the allied armies in France will be of great interest to American surgeons, military and civil. His exceptional opportunities to observe the military practice of French, English, and American surgeons, and his ability to sift the good from the bad make his book most valuable to one seeking a knowledge of the actual conditions in the first aid stations and base hospitals in France. As a preliminary contribution to the medical history of the great war it will be of great interest. Many excellent photographs of actual wound conditions, also of splints and other apparatus, have been reproduced and add much to the value of the book as a permanent record of the military practice of today.

Candy Medication. By BERNARD FANTUS, M.D., Professor of Pharmacology and Therapeutics, College of Medicine, University of Illinois, Chicago. St. Louis: C. V. Mosby, 1915. (Price, \$1.)

It is astonishing that the subject of making medicines palatable for children has not previously received serious consideration, since it plays an important role in daily practice. Most physicians have often been confronted with the problem of getting children to take needed drugs kindly in spite of their disagreeable flavors, and most have certainly encountered great difficulties in solving the problem. Fantus's work on this problem has become well known through its appearance from time to time during the past few years in medical and pharmaceutical journals, but its ready accessibility remained to be provided by the incorporation of the results of his researches in the present small volume. In this he discusses the need for palatable preparations for children and gives working formulæ for eight stock preparations with which nicely flavored sweet tablets may be prepared extemporaneously to contain any one of a large variety of important remedial agents. The book also includes a formulary comprising fifty-eight dif-

ferent prescriptions with their exact proportions worked out to give satisfactory results. Practically every drug likely to be required is included in the list. The discovery of the property of hydrous aluminum silicate to absorb certain bitter alkaloids and completely abolish their bitter flavor is made extensive use of in the preparation of tablets containing these valuable drugs, and enables us to prescribe adequate doses of them in the limits of moderate sized tablets. The tablets suggested by Fantus have the single disadvantage of being so pleasant that there is some danger in the case of poisonous drugs, lest the child accidentally get hold of the supply and consume it all at once for the sake of the "candy." Fantus has not only sought to disguise the disagreeable flavor, but has extended his efforts to include the concealment of the odor of some of the drugs used. His work leaves little to be desired and should make the strongest appeal to physicians who number children among their patients. The author is to be congratulated upon the service he has rendered both to the children and to medical practice.

An Introduction to Bacteriology for Nurses. By HENRY W. CAREY, A.B., M.D., Former Assistant Bacteriologist, Bender Hygienic Laboratory, Albany, N. Y.; Associate in Medicine, Samaritan Hospital, and City Bacteriologist, Troy, N. Y. Philadelphia: F. A. Davis Company; London: Stanley Phillips, 1915. Pp.vii-144. (Price, \$1.)

In this work Dr. H. W. Carey has incorporated the lecture notes used for the past eight years in teaching the nurses of the Samaritan Hospital Training School. This statement alone vouches for the practical character of the textbook, a copy of which every nurse, graduate, or undergraduate could wisely possess.

The first chapter gives the history of bacteriology; the second the classification, morphology, biology, and distribution of bacteria. Chapters on the destruction of bacteria, infection, and immunity, and the group of pyogenic cocci are followed by a discussion of the colon bacilli, the bacteria causing acute and chronic infections, the diseases caused by the moulds and yeasts, the bacteria in milk and water, diseases caused by protozoa, and the diseases caused by unknown microorganisms. The final chapter describes the technic of preparations and the collection of material for bacteriological examination.

The compactness, clear type, simple style, fine illustrations, marginal notes for quick reference, glossary, and blank pages at the conclusion of each chapter for making additional notes further recommend this manual to a wide audience.

The Principles and Practice of Perimetry. By LUTHER C. PETER, A.M., M.D., F.A.C.S., Associate Professor of Ophthalmology, Philadelphia Polyclinic and College for Graduates in Medicine; Ophthalmologist to the Rush Hospital for Consumption and Allied Diseases. Illustrated with 119 Engravings. Philadelphia and New York: Lea & Febiger, 1916. Pp. xiii-232.

The author has divided the subject matter of perimetry into five parts, every one of which is intensely interesting. The first part, serving as an introduction, details the normal fields for form and colors and describes the factors which influence these fields. Part 2 is devoted to the methods of examination, a description of the instruments employed, and the way in which the findings are charted. In part 3 the anatomy of the visual tracts and the physiology of vision are dealt with. This is followed by a chapter describing the general pathology of the visual field. Particular attention is paid to the various kinds of scotomata and the diseases in which they occur are enumerated. Special pathology of fields is covered in the fifth, the largest, chapter. The arrangement of this particular chapter is exceptionally good. For the purposes of study, the visual tract is divided into four parts: 1. The intraocular, including the choroid, retina, and nerve head; 2. the optic nerve proper; 3. the chiasm, and, 4. the intracerebral portion. The various fields seen in diseases of the different parts are carefully and clearly described. In the sixth and final part the fields of the functional nervous diseases are considered. In addition to the text there is an extensive reference to the literature of perimetry. The bibliography is systematically classified. The book is well illustrated, the style is excellent, and, as it is the only volume published in English which is devoted solely to perimetry, it should fill a long felt want.

Interclinical Notes.

Official News.

Dr. Anne E. Perkins, Dr. Thompson Frazer, Dr. Fredrick C. Warnshuis, and Amos R. Wells, Litt D., LL D., are among the contributors to the excellent May number of the *Nurse*, published at Jamestown, N. Y. There is also a symposium by nurses on Safety First; a story, The Twentieth Bed, by Marcia Easton Martyn, R. N.; and many instructive and interesting articles by other well equipped writers. We must not omit to mention the admirable editorial article, The Fireside Nurse, which defines the status of the nurse with regard to the doctor, and deserves thoughtful perusal by every woman in the business, especially, perhaps, by the nurse in the large cities.

* * *

American Science Saves War Victims in France, by James H. Hare, is the leading contribution to *Leslie's* for May 4th; it is realistically illustrated by photographs taken on the spot. After describing the building in America of an aeroplane that carries eight men and 3,600 pounds of explosives at 100 miles an hour, the author, F. J. Splitstone, remarks that he need hardly say that it is intended for use in Europe and not by our army in the United States, which can afford only antiquated machines like those exhibited at country fairs.

* * *

The *Outlook* for April 26th comments editorially on a law now before the Supreme Court of Oregon that declares that ten hours' work a day is too much for a man physically, beside tending to prevent him from attaining that degree of intelligence necessary to make him a useful and desirable citizen. We hope that many people will have an opportunity to read The Genius of France, by Anatole Le Braz, in this issue. Among other things the author remarks that France is the most homogeneous of nations. Mr. T. H. Price's admirable address to young men, The Four Corner Stones of Success, adorns this excellent double number.

* * *

The *Sun* for May 7th laments editorially the passing of Greek and Latin in the colleges in favor of academic bookkeeping and the teaching of commercial Spanish and railroad transportation. "Perhaps," it concludes, "if we had heard less of 'mental discipline' and 'culture' in connection with the Greek and Roman letters made for pure delight the classics would today be in better estate and the Phi Beta Kappa bauble in equal esteem with the gold football and the baccalaureate in bookkeeping. Scholarship is crowded out by dollarship."

◆

Meetings of Local Medical Societies.

MONDAY, May 22nd.—Medical Society of the County of New York.

TUESDAY, May 23rd.—New York Psychoanalytic Society; New York Dermatological Society (annual); Metropolitan Medical Society of New York City; Buffalo Academy of Medicine (Section in Pathology); New York Medical Union; New York Otological Society; New York City; Riverside Practitioners' Society; Valentine Mott Medical Society, New York; Washington Heights Medical Society, New York; Therapeutic Club.

WEDNESDAY, May 24th.—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine (annual); Schenectady Academy of Medicine.

THURSDAY, May 25th.—New York Academy of Medicine (Section in Obstetrics and Gynecology); Ex-Intern Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; Hospital Graduates' Club, New York; New York Physicians' Association.

FRIDAY, May 26th.—Society of New York German Physicians (annual); New York Clinical Society; Manhattan Medical Society; Brooklyn Society of Internal Medicine; Italian Medical Society of New York.

SATURDAY, May 27th.—New York Medical and Surgical Society; West End Medical Society; Lenox Medical and Surgical Society (annual).

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 10, 1916:

Agostini, I., Acting Assistant Surgeon. Granted twenty days' leave of absence, from May 4, 1916. Atwood, G. E., Acting Assistant Surgeon. Granted six days' leave of absence, from May 6, 1916. Burkhalter, John T., Surgeon. Granted one month's leave of absence, from June 6, 1916. Burnett, Burgh S., Field Investigator. Directed to proceed to Rome, Ga., for duty in studies of rural sanitation. Carter, H. R., Assistant Surgeon General. Directed to report to the Bureau on May 5th for conference; directed in carrying out orders of April 28, 1916, to stop en route in Dinwiddie County, Va., for conference with local health authorities in regard to antimalaria work. Cofer, L. E., Assistant Surgeon General. Relieved from duty in the Bureau as Assistant Surgeon General, in charge of the Division of Foreign and Insular Quarantine, effective April 20, 1916; granted two months and seven days' leave of absence from April 21, 1916, with pay, and one year from June 28, 1916, without pay. Cox, Ora H., Assistant Surgeon. Relieved at Boston, Mass., and directed to proceed to Ellis Island, N. Y., for duty. Fairbanks, George D., Acting Assistant Surgeon. Directed to proceed to Rio Grande City, Texas, on special duty in quarantine against typhus fever. Fox, Carroll, Surgeon. Directed to proceed to Youngstown, Ohio, for the investigation of sanitary administration and public health organization. Freeman, A. W., Epidemiologist. Directed to attend a meeting of the West Virginia Medical Association, Wheeling, W. Va., May 17, 1916. Frost, W. H., Passed Assistant Surgeon. Detailed to attend a meeting of the Ohio Medical Association at Cleveland, May 17-19, 1916. Gardner, C. H., Surgeon. Directed to proceed to Lewiston, N. Y., to inquire into conditions relative to the examination of arriving aliens. Glanville, William E., Assistant Surgeon. Granted two months and twenty-nine days' leave of absence, from April 28, 1916. Guiteras, G. M., Surgeon. Directed to proceed to Havana, Cuba, for conference relative to quarantine restrictions against vessels proceeding from that port to the United States. Knox, H. A., Assistant Surgeon. Granted thirty days' leave of absence, from May 2, 1916. Lake, G. C., Assistant Surgeon. Granted three days' leave of absence on account of sickness, from April 26, 1916. Neill, M. H., Assistant Surgeon. Directed to proceed to Spartanburg, S. C., for duty in connection with investigations of pellagra. Pierce, C. C., Senior Surgeon. Authorized to attend the Arizona Health Officers' Association and State Medical Society at Phoenix, April 24 to 27, 1916; thence to return to El Paso, Texas, via Douglas, Nogales, and Naco, Arizona. Robertson, H. McG., Surgeon. Directed to take charge of the Service at Philadelphia during the absence of Senior Surgeon Fairfax Irwin. Saunders, Samuel, Field Investigator. Directed to proceed to Rome, Ga., for duty in studies of rural sanitation. Schereschewsky, J. W., Surgeon. Directed to attend the conference of physicians engaged in industrial practice at Harrisburg, Pa., May 19, 1916, in connection with the investigations of industrial hygiene. Schug, F. J., Acting Assistant Surgeon. Directed to proceed to Seattle, Washington, for examination for color perception. Smith, Howard F., Assistant Surgeon. Directed to proceed to Duquesne, Pa., for duty in studies of the health of steel workers. Willets, D. G., Assistant Epidemiologist. Directed to proceed to Spartanburg, S. C., for duty in connection with the investigations of pellagra. Worley, J. F., Assistant Surgeon. Directed to report to Commanding Officer of Coast Guard Cutter McCulloch for duty. Tanner, W. F., Assistant Surgeon. Directed to proceed to Spartanburg, S. C., for duty in connection with the investigations of pellagra.

Boards Convened.

Board of commissioned medical officers convened at the Bureau to revise instructions relative to the examination for color blindness. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Surgeon James A. Nydegger; Surgeon J. W. Scherschewsky; Surgeon George L. Collins, recorder.

Board of commissioned medical officers convened at the Marine Hospital, Chicago, for the physical examination of a surftman of the United States Coast Guard to determine his fitness for promotion. Detail for the board: Surgeon J. O. Cobb, chairman; Assistant Surgeon P. J. Gorman, recorder.

Board of commissioned medical officers convened at the Marine Hospital, Stapleton, N. Y., for the examination of a commissioned officer of the United States Coast Guard. Detail for the board: Surgeon C. H. Lavinder, chairman; Surgeon A. D. Foster, member; Passed Assistant Surgeon L. Kolb, recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending May 13, 1916:

Bacon, Charles S., First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in the Medical Reserve Corps is accepted by the President, effective May 8, 1916. **Bierbower**, First Lieutenant, Medical Reserve Corps. Granted leave of absence for one month, effective upon arrival in the United States. **Brooke**, John D., First Lieutenant, Medical Reserve Corps. Ordered to active duty, and will report to the commanding officer at Fort Mead, South Dakota, for duty until further notice. **Burns**, Robert, Jr., First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer of the Medical Reserve Corps is accepted by the President, effective May 10, 1916. **Davis**, William R., Captain, Medical Corps. Relieved from duty at Fort Mead, South Dakota, and will proceed to Yellowstone, Wyoming, and report to the commanding officer of that post for duty. **Dowdle**, Edward, First Lieutenant, Medical Reserve Corps. Ordered to active duty and will report to the commanding officer, Fort Ontario, New York, for duty. **Edwards**, William McE., First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, and upon completion of the examination of Major Harley B. Ferguson, Corps of Engineers, will stand relieved from active duty in the Medical Reserve Corps. **Ekwurzel**, George M., Major, Medical Corps. Directed to proceed to Columbus, New Mexico, and report to the commanding officer, cantonment hospital, for temporary duty. **Garcia**, Leon C., Captain, Medical Corps. Directed to proceed to Columbus, New Mexico, and report to the commanding officer, cantonment hospital, for temporary duty. **Gorgas**, William C., Surgeon General, Medical Corps. Granted leave of absence for four months, effective on or about June 1, 1916, with permission to visit South America. **Heysinger**, James D., Captain, Medical Corps. Directed to proceed to Fort Bliss, Texas, and report in person to the commanding officer of that post for temporary duty at the base hospital, and by letter to the commanding general of the Southern Department. **Lamson**, Theodore, Captain, Medical Corps. Directed to proceed to Columbus, New Mexico, and report to the commanding officer of cantonment hospital for temporary duty. **Rice**, William F., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., and will proceed to Columbus, New Mexico, for assignment to duty. **Schlueter**, Robert E., First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer in the Medical Reserve Corps is accepted by the President, effective May 8, 1916. **Sinclair**, Charles G., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., and will proceed to Columbus, New Mexico, for assignment to duty.

The following named officers of the medical corps will proceed to Fort Sam Houston, Texas, and report

in person to the commanding general, Southern Department, for assignment to temporary station and duty in that department: Major Louis Brechemin, Jr., Medical Corps; Major Chandler P. Robbins, Medical Corps; Captain Thomas C. Austin, Medical Corps; Captain Robert H. Pierson, Medical Corps; First Lieutenant Harvard C. Moore, Medical Reserve Corps; First Lieutenant Edward A. Noyes, Medical Reserve Corps.

The following named officers of the Medical Corps will report at once by telegraph to the commanding general, Southern Department, for assignment to temporary station and duty in that department and will proceed to join the stations in which they may be assigned: Captain Frederick C. A. Kellam, Jr., Captain William H. Thearle, Captain Arthur O. Davis, and Captain William H. Tefft.

Births, Marriages, and Deaths.*Born.*

Coleman.—In New York, on Tuesday, May 9th, to Dr. and Mrs. Joseph Coleman, a daughter.

Married.

Richardson—Carpenter.—In New York, on Wednesday, May 3d, Dr. Henry B. Richardson, of Boston, and Miss Margaret Carpenter. **Thomas—Pierson**.—In Phoenixville, Pa., on Saturday, May 6th, Dr. C. M. Thomas, of Sunbury, Pa., and Miss Etta Marie Pierson.

Died.

Amable.—In New York, on Monday, May 8th, Dr. Felix Amable, aged fifty-five years. **Baldwin**.—In Freeland, Md., on Saturday, May 6th, Dr. Joseph S. Baldwin, aged sixty-eight years. **Campbell**.—In Brooklyn, N. Y., on Wednesday, May 10th, Dr. Francis W. Campbell, aged thirty-two years. **Dodge**.—In Oneida, N. Y., on Wednesday, May 3d, Dr. Amos P. Dodge, aged sixty-three years. **Gassett**.—In Framingham, Mass., on Saturday, May 6th, Dr. Charles B. Gassett, aged thirty-six years. **Gibson**.—In St. Albans, Vt., on Wednesday, May 3d, Dr. John Gibson, aged forty-nine years. **Hanifin**.—In Saranac Lake, N. Y., on Sunday, May 7th, Dr. John F. Hanifin, of Holyoke, Mass., aged thirty years. **Harville**.—In Denver, Colo., on Tuesday, May 2d, Dr. Charles P. Harville, of Salt Lake City, Utah, aged forty-one years. **Hedgpeth**.—In Paso Robles, Cal., on Tuesday, April 25th, Dr. William R. Hedgpeth, aged sixty years. **Hoyt**.—In Wenham, Mass., on Wednesday, May 3d, Dr. William H. Hoyt, aged fifty-four years. **Hunt**.—In Kansas City, Mo., on Saturday, April 29th, Dr. Jesse E. Hunt, aged thirty-eight years. **Kenney**.—In Chelsea, Mass., on Wednesday, May 3d, Dr. John Earle Kenney, aged fifty-three years. **Leaming**.—In New York, on Thursday, May 11th, Dr. Edward Leaming, aged fifty-four years. **Lisle**.—In Columbus, Ohio, on Thursday, May 4th, Dr. John M. Lisle, aged seventy years. **McCoy**.—In Fort Worth, Texas, on Saturday, April 29th, Dr. Isaac C. McCoy, aged sixty-eight years. **McGogney**.—In Castle Shannon, Pa., on Thursday, May 4th, Dr. Samuel McGogney, aged sixty years. **McKenzie**.—In Newark, N. J., on Wednesday, May 3d, Dr. William H. McKenzie, aged forty-eight years. **Miller**.—In Rossville, Kansas, on Monday, May 1st, Dr. Henry H. Miller, aged sixty-six years. **Osgood**.—In Ogden, Utah, on Tuesday, May 2d, Dr. Charles F. Osgood, aged forty-five years. **Paterson**.—In San Jose, Cal., on Monday, April 24th, Dr. Edward M. Paterson, of Oakland, Cal., aged seventy-two years. **Sledge**.—In Mobile, Ala., on Sunday, April 30th, Dr. William H. Sledge, aged sixty years. **Turner**.—In Waco, Texas, on Tuesday, May 2d, Dr. Robert B. Turner, aged seventy years. **Ward**.—In Indianapolis, Ind., on Monday, May 1st, Dr. Albert O. Ward, aged seventy-three years. **Webster**.—In Lexington, Mass., on Tuesday, May 9th, Dr. Joseph R. Webster. **Wheaton**.—In St. Paul, Minn., on Saturday, April 29th, Dr. Charles W. Wheaton, aged sixty-three years. **Zwetsch**.—In Gowanda, N. Y., on Saturday, May 6th, Dr. John D. Zwetsch, aged fifty-seven years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 22.

NEW YORK, SATURDAY, MAY 27, 1916.

WHOLE No. 1956.

Original Communications.

HYSTERICAL MUTISM.*

With Reports of Cases and Exhibition of a Patient,

By G. HUDSON MAKUEN, M. D.,
Philadelphia.

Hysteria is essentially a disease of the mind. It is a psychical disease with many and varied psychophysical manifestations and symptoms. It has been variously defined as a "psychological disaggregation," a "psychological immobilization," a "psychological forgetfulness," a "psychological lesion," and a "disease of the personality."

There was a time when the diagnosis of hysteria carried with it a feeling of reproach, and the hysterical woman was regarded as one to be avoided and of being worthy of but little if any professional consideration. All this, however, has now changed and we have found that hysteria is an actual rather than a purely imaginary disease, that it is no respecter of sex, there being nearly as many hysterical men as women, and that many of both sexes afflicted are by no means lacking in efficiency and some of them occupy high positions of trust. Moreover, hysteria is a disease common to all races and to all ages, and even animals do not escape it.

The reversal of opinion with regard to the nature of hysteria is probably the result of a better understanding of the relationship which exists between the mind and the body, and there is probably no disease which so strongly emphasizes the closeness of this relationship.

The new psychology teaches us that psychical diseases are no less real and have causes no less definite than physical diseases, hence the recent introduction of such terms as psychognosis and psychanalysis.

Freud's psychanalytic method, by which he attempts to establish a definite connection between such diseases as hysteria and their exciting causes, is now occupying the attention of the psychological and neurological world. It consists chiefly in an effort to ascertain the hidden causes of the various psychoneuroses by the use of so called association tests and the analysis of dreams.

Hysteria has frequently been confounded with neurasthenia, and the difficulties of making a differential diagnosis between the two diseases are increased by the fact that they often occur simultaneously in the same individual. Hysteria

differs from neurasthenia, however, in several important respects, one of which is the fact that the neurasthenic is introspective and deeply concerned about himself, whereas the hysterical individual usually appears to be quite indifferent as to his condition or its outcome.

Hysteria is said to be due primarily to a vulnerable suggestibility, and as most people are to some extent at least vulnerable in this respect, the affection may be latent in many hitherto unsuspected individuals. However that may be, suggestion emanating either from within the individual's own consciousness or from some extraneous source, is undoubtedly a frequent exciting cause of hysteria. Traumatism also appears to induce hysteria, but as has been pointed out, it is altogether probable that the causal factor in such instances is the emotional disturbance accompanying the injury rather than the injury itself.

Hysterical mutism is a form of hysteria which is by no means common. It bears a close resemblance to the various other manifestations of the disease, and occasionally it exists quite independently of all other hysterical symptoms.

Hysterical mutism differs from other forms of mutism in that it is of the profoundest character. As Charcot has observed, the hysterical mute is muter than the mute. The deaf mute frequently makes some attempts at speaking, but the hysterical mute makes no attempt whatsoever. He seems like one who has never had the power of speech. He seems to have forgotten that he has any organs of speech or that he ever had any. A similar psychical attitude characterizes those having other hysterical symptoms, such as hemiplegia, amaurosis, and deafness.

Intellectually, the hysterical mute appears to be somewhat below par. He appears to take but little interest in his own rather pitiable condition and to be able to make no effort whatsoever to overcome it. He has no cortical representations or memories of the movements required for speech production, and therefore he is like one who has never been in possession of the power of speech.

The psychological disaggregation or lesion is in relation with the motor rather than with the sensory mechanism. The patient usually understands well what is said to him, but, as I have said, he appears to have no power of oral expression and no psychical representations for it. He has no conceptions of the movements of the muscles employed in phonation and articulation.

In other words, the lesion, if I may so designate it, appears to be in Bastian's so called glossokines-

*Read before the College of Physicians of Philadelphia, March 1, 1916.

thetic area of the brain, where the memories of the muscular movements required for speech production are registered and stored. The kinesthetic memories, or memories for muscle movements, play an important part, not only in their relation to the speech processes, but also in relation to all the other motor processes of the human organism. But for such memories, walking, dancing, skating, and bicycle riding would all be impossible, and the acquirement of any kind of language by the deaf would also be impossible. It would appear, therefore, that too little attention has been given to this kinesthetic, or sixth sense, as it has been called, as a factor in psychophysical development.

Hysterical mutism differs from hysterical aphonia in that in the former condition the patient is both aphonic and inarticulate, while in the latter he is merely aphonic and can speak fairly well in whispered sounds. The hysterical mute is not only aphonic, but he cannot even whisper, a condition which Dr. Solis Cohen has designated as *apsithyria*. The hysterical mute, therefore, is aphonic, *apsithyric*, and inarticulate, the mute condition differing from the aphonic and *apsithyric* in that it involves all the motor mechanisms of speech, including even the respiratory mechanism as it is used in voice and speech production.

As I pointed out in a previous article, the terms aphonia and mutism have been used in scientific discussions with too little regard for their exact meaning. Aphonia should be used to designate a condition of complete phonatory disability, while the term mutism should be reserved to designate a condition of complete phonatory and articulatory disability.

I have also called attention to the fact that *aphe-mia* or motor aphasia is often confounded with mutism, but the aphasic are not altogether mute. They are usually able to produce occasional sounds or words, and this may serve to distinguish the conditions. Moreover, mutism is sometimes the result of actual organic lesions of the brain, and thus it may be very like aphasia, and the differential diagnosis may be difficult. It should be borne in mind, also, that the two diseases may exist simultaneously in the same individual, thus complicating still further the question of a differential diagnosis.

As I have said, hysterical mutism is not in my experience a very common disease, although Marcel Natier, of Paris, had collected seventy-one cases more than twenty-five years ago, and the affection has been studied in England and on the continent by some of the most careful investigators. It is said that the term hysterical mutism was first given to the condition in 1883, by Professor Revilliod, of Geneva, who wrote a paper on the subject which attracted much attention. Then followed papers and lectures on the subject by Charcot, Cartaz, and H. Bok, of Berlin.

I myself have seen only two well defined cases, the first being one reported before the American Laryngological Association in 1906. The patient was referred to me by Dr. John K. Mitchell, and his condition was carefully studied by several other Philadelphia specialists, including Dr. Weir Mitchell. For my full report of the case, I refer to the *International Clinics*, 1, 17th Series, and Doctor Mitchell's report of the same case may

be found in the *Journal of Nervous and Mental Diseases*.

Briefly, this case was that of a man twenty-two years of age, who had received a severe head injury, rendering him partially unconscious for a few moments, after which he complained of headaches and right sided tinnitus aurium with complete loss of speech. The family history was negative, and, two years previously, the patient had an attack of typhoid fever, which disease, it is said, sometimes induces hysteria in those predisposed to the affection, and he also had a severe attack of tonsillitis, which may have been an additional causal factor. The patient complained of sharp shooting pains throughout the body, he had lost twenty-five pounds in weight, there was great mental depression, and his sleep was much disturbed by dreams. Sensations were normal externally, as were also the reflexes and electric reactions. There was no muscular incoordination except in the mechanisms of speech. The eye ground was normal, except for a complete reversal of the red and green color fields, a condition which is supposed by many to belong to hysteria, although it is occasionally found in those having no other hysterical symptoms. There was a left sided intranasal pressure, the removal of which seemed not to influence the condition. The mutism continued for several months, in spite of everything that we could do. All the known methods for relief were employed, including suggestion in both the waking and hypnotic state, until one night at the Orthopædic Hospital he had a kind of nightmare or hysterical fit, during which he uttered several sentences with normal phonatory and articulatory precision, and he continued to talk with the resident after he had recovered from the attack. The following morning his speech was normal, and it has remained so for the several years during which I have had him under observation.

This was clearly a case of so called traumatic hysteria, and the hysterical symptoms which resisted all our efforts yielded to the emotional excitement of an explosive nervous attack.

An interesting feature of this man's recovery was noted by Doctor Mitchell in his report of the case; together with the return of the faculty of speech there was also found a complete absence of any change in the color fields. In other words, this particular symptom or sign of hysteria disappeared together with the mutism during the hysterical seizure.

My second case, exhibited in illustration of this paper, was referred to my clinic by Dr. Curtis C. Eves, and Doctor Rhein also examined her in the Neurological Department of the Polyclinic Hospital. I may say that we have all had difficulty in getting the facts in connection with the early history of this case, because the mother was ill at the time, and either does not have a clear understanding of it herself or is incapable of giving a satisfactory explanation. The mother's own intellectual faculties are not of the highest order, and both she and the father of the child are of a nervous type. Their symptoms, however, are vague, and in answering questions relative to the child's early history they act as if language existed merely for the purpose of concealing thought. This child

unquestionably inherits a neurotic temperament, if not a definite tendency toward hysteria, and as far as I have been able to ascertain, her home environment is of such a nature as to encourage and develop this tendency.

From a psychical standpoint, hysterical children are of two classes. One is characterized by those manifestations embodied in the word precociousness, while the other and a much smaller class evinces mental inaptitudes or backwardness. This child has always been somewhat dull mentally, but she is more so since her illness. She is thirteen years of age, and she has always been more or less subjectively minded and melancholy. About three years ago, she had four convulsive seizures which were preceded for several months by failing health with some loss of power in her limbs, presumably as a result of a severe fright from a threatened railroad accident. The convulsions continued intermittently over a period of four hours, and left her entirely helpless.

For about a year she was confined either to her bed or a rolling chair, where she took her food and medicines only under compulsion, and she would not or could not talk at all. Her physician regarded her as hopelessly ill and said he could do no more for her. Then the mother says that in desperation she got her out of bed and made her walk, from which time she gradually regained the use of her limbs, but the mutism continued, and I saw her first in January of last year.

I found her to be a rather meagrely developed child, both physically and mentally. She was nervous and excitable, but extremely reticent. She would make but little effort to answer questions, but she could write short words fairly well. She had a tendency, however, to transpose certain of the letters of the words. For "man" she wrote "nam" and for "Ida," her first name, "Iad."

Psychically, she seemed somewhat obtuse, although her disinclination or inability to answer questions upon examination makes the history of her mental condition unsatisfactory. A significant fact, however, is that whereas prior to her convulsive seizures in 1912 she had reached the fourth grade in school, she is now back in the second grade.

Neurologically, it was found that many of the usual phenomena of hysteria were absent. Aside from her speech mechanisms, she had no motor paralyses or incoordinations, and she had no muscular contractions or peripheral disturbances of sensation. On the other hand, the knee jerks were increased on both sides, but curiously enough there was on the right side a positive Babinski, which points to a previous organic lesion rather than to hysteria, and as Doctor Rhein has suggested, this Babinski reflex throws some doubt upon the hitherto supposed hysterical character of the convulsions and former paralyses. The mutism, however, was complete, and as Doctor Lloyd has well said, it must be hysterical because it cannot be anything else.

Ophthalmologically, it was found that the eyes were normal intraocularly and extraocularly, except for a high refractive error, but there was a contraction of the form fields and, as in my other case, a reversal of the color fields, the latter two conditions being somewhat characteristic of hysteria.

Laryngologically, I may say that there was no loss

of motion in the cords, but there was no adequate control of them for purposes of phonation. They would come into apposition immediately, to separate again when any attempt was made to use them in a purposeful way.

One of the tonsils had been removed, but the other one still remained unobstructive and deeply imbedded. In other respects, the nose and throat conditions were normal. The interrupted current had been applied on several occasions with negative results, and when she came to me she appeared to be convinced that she could not speak and that it was utterly useless to try.

The treatment in this case consisted first in an effort as some one has said to "scare back" the voice and thus to get even a slight phonatory sound upon which to build still further, but nothing seemed to scare or startle the patient, and when very strenuous efforts were made she resorted to tears. There was no phonation, however, in her crying or laughing or even in her coughing, and we were unable to elicit a single sound.

Then we tried to develop whispered speech, and after several weeks of training she was able to make herself understood in this way and to engage in conversation with her friends in a satisfactory manner, so that she and her mother were delighted with her progress.

It was apparent to us, however, that further attempts to help her to bring back her voice were futile so long as she remained in her home environment, and we were about to arrange to place her in the hospital for a course of treatment when some of her friends took her to a religious camp meeting, where she was induced to "pray back" her voice. The enthusiasm and excitement, I am told, were intense, and she was urged to pray long and loud. This happened to be the thing that seemed to be necessary to bring about a mobilization or aggregation of her psychical forces and enable her to speak with a laryngeal sound after many months of complete aphonia. It may be contended and probably is so contended, by those who practise this form of the healing art, that the cure was purely in answer to prayer, and we must at least concede, I think, that the exercise of faith on the part of the child was probably an important factor in this psychic change.

Unfortunately, however, her conversion has not cured her of all her ills, because even now she is at times extremely irritable and depressed and says that she is sorry that she did not die two years ago when she was so very ill.

Manifestly, the hysterical tendency or temperament still continues, and fresh outbursts of hysterical phenomena may be expected unless a complete change is made in her environment and manner of living, and unless some form of psychophysical training is adopted for the purpose of enabling her to get a better control of herself.

She is still following up the religious precepts which she learned at the camp meeting, and she has persisted ever since in conducting morning and evening prayers with her family. Only the other day she gave us an example of her devotional propensities by kneeling with me and my assistants in my office and praying for us and things in general. Her petitions while not clothed in the best of lan-

guage, were nevertheless fervent and to the point.

Since writing this report several weeks ago, and after having gone over the case neurologically with Doctor Rhein, who by the way discovered for me the Babinski reflex, which is so characteristic of an organic lesion of the central nervous system, I renewed my efforts to get a fuller history of the child's earlier illness. Incidentally, I found that she had been a patient at the Orthopædic Hospital, and upon application at this institution I learned that she had previously been taken to the outpatient department of the Episcopal Hospital, where a Wassermann reaction was found to be positive. Whereupon another Wassermann test was immediately made for me in the laboratory of my friend, Doctor Ludlum, and it also proved to be positive.

These pathological findings obviously suggest very interesting complications, and they naturally lead us to change our diagnosis so far as the original convulsive seizures and hemiplegia are concerned, but they can scarcely explain the mutism with its peculiar history and manner of cure.

The synchronous existence of functional nervous diseases with organic diseases of the brain is by no means uncommon, and as Doctor Burr has pointed out in a recent article on the subject, their concurrence in some instances may be purely accidental, while in others "either the organic disease is itself the exciting cause of hysterical symptoms in a congenitally predisposed person, or both the organic and the so called functional disorders arise from the same exciting cause." All this, however, is more or less speculative, I suppose, and we only know that in this particular instance, as well as in many others, the two forms of disease (functional and organic) do exist in one and the same individual.

That the mutism was hysterical I think there can be no doubt, and it may be well among the possibilities to suppose that the syphilis, whether congenital or acquired, may have been a causal factor in the development of this hysterical symptom in much the same way that any emotional shock, for example that resulting from trauma, may give rise to hysterical manifestations. In closing, I shall be content to give a brief summary, together with my conclusions.

SUMMARY AND CONCLUSIONS.

Hysterical mutism is a somewhat rare affection, but it occurs at all ages, in all races, in both sexes, and even in animals.

Hysterical mutism is usually of sudden origin and the result of some severe psychological or emotional shock.

Hysterical mutism is characterized by the complete absence of the psychical representations necessary for the production of speech.

Heredity is an etiological factor so far as it furnishes the neuropathic or psychopathic soil for the development of the affection.

The mutism generally occurs in conjunction with other hysterical phenomena, although it may be the only hysterical symptom.

Hysterical mutism may occur in conjunction with organic nervous diseases which themselves simulate hysteria, and it can be distinguished from them only by actual discovery of the pathological conditions giving rise to the particular affection.

Hysterical mutism differs from hysterical aphonia in that the former evinces a more extended disability of the mechanisms of speech, and it differs from aphemia or motor aphasia in that the mutism is absolute.

The treatment of hysterical mutism may be either brusque in character or gentle and persuasive. An effort should always be made to "scare back" the voice, and then by psychophysical training to re-establish correct methods of speech, but failing in this somewhat abrupt and severe treatment, milder educational measures should be used, such as are embodied in the terms suggestion, persuasion, and reeducation.

I myself can scarcely be regarded as one capable of speaking authoritatively upon the treatment of hysterical mutism inasmuch as neither of my two cases was entirely cured until extraneous influences were brought to bear upon them, one patient regaining his voice during an hysterical nervous attack, and the second during other extraordinary emotional excitement.

In both cases, however, the final successful issue was probably made possible by the psychophysical training which led up to it, and I am convinced that my failure to actually cure my patients was due to my lack of ability to arouse in them the psychical representations necessary for the production and externalization of the symbols of speech.

I may say that if physicians generally were better practised in the art of psychotherapy, there would be fewer so called miraculous cures reported outside the pale of the regular profession, and it is probable also that a wider and more accurate knowledge of hysteria as a disease would enable physicians to have a better understanding of the phenomena which appear in the more serious psychoses.

1627 WALNUT STREET.

THE TREATMENT OF MUSCULAR RHEUMATISM.*

BY WILLIAM FITCH CHENEY, M. D.,
San Francisco,

Clinical Professor of Medicine, Stanford University Medical School.

A desirable preliminary to any treatment is a knowledge of what we are going to treat; and in the case of so called muscular rheumatism this knowledge is not yet quite definite. In 1896, Lorenz wrote: "Diseases of the muscular system are rightly reckoned as one of the darkest chapters in human pathology"; and muscular rheumatism he calls "an old tradition," in which, however, we might as well continue to believe, so long as we can put nothing in its place except another name. Since the date of this expression of opinion, many other names have been proposed, but none appear to fit our knowledge any better. Today it seems generally admitted that there is no such thing as rheumatism; and there is much conflict of opinion as to whether muscles are ever involved by what we call by this name. So if the disease is neither muscular nor rheumatism, what are we to treat? Nevertheless, people continue to have painful attacks which they call muscular rheumatism and which fail to disappear with the simple assur-

*Read at a meeting of the American Therapeutic Society, San Francisco, Cal., June 25, 1906.

ance by their medical adviser that no such disease exists. Something has happened very definitely to disturb their happiness and usefulness, and from this they demand relief, no matter what we call it.

The whole trouble lies in the fact that this disease is rarely fatal; and opportunity for examination at autopsy is therefore seldom afforded. Whether the clinical picture we see so often is due to an inflammation of muscle tissues, a myositis, or whether there is any organic change in the muscle at all is consequently a much disputed point. The literature on the subject is scanty, except for case reports that throw no light on the true nature of the disease or its cause. These questions, of pathology and etiology, until the past decade have been but little discussed. Old conceptions have continued to prevail; and until recently as little has been known about this, one of the most common of ailments, as in the days of Hippocrates himself.

Adolf Schmidt (1), recognizing this chaotic state of affairs, analyzed, in 1910, the clinical facts as observed and reached the conclusion that the condition is really a neuralgia and not a myositis at all. He asserted, as the basis of all his statements, that the characteristic feature is the absence of any visible or palpable changes, either clinical or anatomical, in the muscles apparently involved; and called attention to the transitions that occur between myalgia and neuralgia, particularly between lumbago and sciatica. With this theory, he thinks, all the symptoms of ordinary muscular rheumatism become perfectly clear, much more readily than with the conception of a local inflammatory or exudative process in the muscles themselves, which so far (he wrote in 1910) have never been really demonstrated by any one. Schmidt realized the difficulties in the way of his theory; first as regards the existence of sensory nerve fibres in muscles; second, as to the site of a lesion that would injure these supposed sensory fibres only and not at the same time the motor fibres; and, third, as to what sort a lesion could be that produced such fleeting and variable symptoms as occur in muscular symptoms, leaving no traces behind. As regards the first point, it has been proved that sensory fibres are included in all motor nerve trunks, with end organs in muscles and tendons; but if the nerve trunk was involved, why should not paresis and atrophy of muscles follow more frequently? Schmidt's final conclusion was that the real process causing the symptoms is a neuritis of posterior nerve roots, not of peripheral nerve trunks; and that the real pathology of muscular rheumatism is therefore a radicular neuritis. This position he maintained in a second article (2) in 1914, after his theory had been attacked by Müller (3). Müller's own theory, published in 1912, was that the characteristic features of acute muscular rheumatism are, 1, hypertonus; 2, swelling; 3, local heat, and, 4, pain in the muscle involved; while in chronic cases there occur hypertonus, swelling, hardening of fibres, and tender knots at the insertion points. By hypertonus he meant increased irritability, which led to a persistence of contraction after the cessation of irritation. From this abnormal reaction resulted stasis of blood in the muscle tissue, which in the acute stage produced swelling and increased temperature of the entire muscle, in the chronic stage, circumscribed in-

ductions. The characteristic pain, he thought, was due less to the swelling than to the muscle hypertonus. To this theory Schmidt replied that Müller's teaching lacked anatomical and scientific basis; the lack of every anatomical change in the painful muscle being the characteristic feature.

The theory most popular with the English is that put forth by Luff (4) in opening a discussion on this subject before the British Medical Association in 1913. He contended that the symptom complex known as muscular rheumatism is due to a fibrositis, or inflammatory hyperplasia of white fibrous tissue in the aponeuroses and insertions of muscles, muscle sheaths, and fasciæ. The result is an exudation into, and proliferation of the connective tissue elements, leading to swelling and thickening. Movements of the affected muscles compress or stretch these inflamed fibrous tissues and so cause the pain. Luff believed that this theory would explain not only the common types of the disease, such as lumbago and stiff neck, but also the unusual forms in the occipital and pericranial aponeuroses, that cause the so called indurative headaches, with palpable nodules and patches in the fibrous tissues; or the painful heel due to chronic fibrositis of the plantar fascia; or the brachial neuralgia due to a subacromial bursitis.

The most recent explanation of the changes occurring in muscular rheumatism is that given by Rosenow (5, 6, 7), whose work is by this time widely known. Both in human muscles involved, pieces of which were removed for examination; and in animal muscles, affected after experimental infection through the peritoneum, he found the characteristic pathological condition to be a coagulation necrosis of muscular fibres, elongated lesions running parallel with the fibres, containing few leucocytes but large numbers of living cocci. The first event is a small hemorrhage; then the muscle fibres at this site lose their striation, stain poorly, become granular, and break up into fragments, with leucocytic infiltration and great numbers of organisms. These lesions, in animal experimentation, are most numerous in the more tendinous portions of muscles of the extremities, the flat muscles about the neck and shoulders, the intercostals and muscles of the spine, corresponding with the clinical types of muscular rheumatism most often observed.

This explanation offered by Rosenow of the pathology points directly to infection by streptococci as the cause of the disease. Before this time all sorts of theories had been proposed. The oldest is that which gave the name rheumatism; of some vague substance or humid matter in the body called "rheum." Echoes of this old ill defined tradition have come down through later times in the explanation that uric acid, or other so called "products of metabolism" were the underlying cause; or that a constitutional diathesis, whatever that means, was at the bottom of the trouble. With the more modern theories of toxins circulating in the blood and attacking fibrous tissues or muscular fibres or nerves, an approach was made to a more rational explanation; and it is not disproved that such toxins may often be factors, even though in some cases a true infection occurs as Rosenow described. Two other predisposing causes have long been admitted; namely, exposure to cold and muscular overstrain; both

of which act by making the tissues, nerve, fascia, or muscle, more susceptible to toxins. Rosenow makes it clear that muscle lesions are produced by streptococci of a less virulent strain than those concerned in arthritis and endocarditis; and that these show an ability to grow well at low temperatures, in fact better than at high temperatures; which would account for the part played by chilling of the body in causing the disease.

Finally it has now been clearly proved that whether muscular rheumatism is always infectious or whether sometimes it is toxic, there are certain well recognized foci in the body from which the organisms or the toxins come. These foci are commonly the tonsils, the gums, the teeth, the prostate gland or Fallopian tube; or the large intestine. In the case of the large bowel, it is conceivable that toxins originate there from abnormal chemical changes in digestion, and are absorbed thence into the blood; or that streptococci, grown in tonsils or diseased gums or carious teeth are habitually swallowed and then find their way through the intestinal wall into the blood stream and so to the muscles; or that true infectious processes in the intestinal mucous membrane due to streptococci, are the real source of supply. Until recently the evidence in favor of toxic or infectious origin for muscular rheumatism has been altogether inferential; and the part played by foci has likewise been demonstrated only by obvious relation of one to the other, painful muscular affections disappearing after discovery and removal of one of the conditions mentioned. But direct evidence has now been afforded by Rosenow, both by finding streptococci in the affected muscular tissues and by proving them to be of the same strain as those found in the foci.

Treatment of any disease means efforts to counteract it and to control its progress. Rational treatment must always proceed along one of two lines; either a removal of causes or a counteraction of effects. When neither causes or effects, neither etiology or pathology are known, therapeutics must necessarily be vague and uncertain. Hence it is not surprising that during the years of chaos regarding the origin and nature of muscular rheumatism, all sorts of suggestions were made for its relief. And yet it is remarkable that some of the remedies generally adopted on a purely empirical basis, because they gave relief, have really been proved by Rosenow's investigations to be the ones rationally indicated. The same was true of quinine in malaria, used for years before any one knew how it cured; or of mercury in syphilis, or of the salicylates in rheumatic fever. But the underlying problems are not yet altogether solved, and treatment is still largely empirically used because it cures, even though its action cannot be scientifically explained. The methods of treatment are numerous and are here brought together systematically, because on the one hand so little attention is given them in textbooks, while on the other so many people suffer from the affection and constantly seek relief.

ACUTE MUSCULAR RHEUMATISM.

The remedies of most avail are the following:

1. *Rest.* Nature usually enforces this method of movement of the attack, sufficient rest, and

movements that involve the parts concerned are instinctively shunned because of the pain they cause. Sometimes absolute rest of the whole body in bed is demanded, as in lumbago; sometimes rest of one portion, as in involvement of a deltoid. The various porous plasters so largely used without medical advice no doubt give relief mainly by mechanical support and fixation of the painful muscles. Support of the head by pillows in such a way that it cannot be moved suddenly; or of a limb by sandbags; or of the back by crisscross strapping with adhesive plaster, all have great value in procuring rest and relieving pain.

2. *Heat.* Whether cold causes the trouble or not, it certainly increases the pain when once it has come; while heat is always grateful and gives relief. It may be applied in various ways; by hot water bags, by hot poultices, or hot fomentations; by hot mud; by hot baths; by counter irritation with turpentine or camphorated oil or mustard; by friction with stimulating liniments, such as the old and well known combination of menthol, chloral, and camphor; or by ironing the painful part with a hot flat-iron, over a covering of flannel or paper next the skin. It seems probable that the virtues alleged for certain antiphlogistic pastes depend even more upon their retention of heat than upon their chemical constituents.

3. *Purgation.* It is not intended to discuss here why certain remedies do good, and it may be admitted that there is no scientific reason why purgation should aid; but the fact remains that it does. The writer believes with others who have written in times past that there is a close relation between abnormal intestinal chemistry and attacks of muscular rheumatism. Such attacks frequently follow indiscretions in diet, such as overindulgence in game or other meats or in pastries and sweets; though why this follows or what poisons or organisms thus find their way into the circulation, cannot be definitely stated. The basis for belief in this relation is not only the fact that the attacks follow closely the fault in diet; but also the relief afforded by thoroughly emptying the bowel. For this purpose some mercurial answers best; possibly because of an antiseptic effect in the intestine, possibly because it stimulates in some way the power of the liver to destroy poisons brought to it from the digestive tract. Blue mass and calomel act equally well, but either should be followed by a saline, preferably magnesium sulphate. One other drug particularly efficacious is colocynth. A purge consisting of at least five grains each of blue mass and compound extract of colocynth, if given early after symptoms present themselves and followed several hours later by Epsom salts, until the bowel is thoroughly emptied, will go farther toward relieving an attack of muscular rheumatism than any other internal remedy; and this is true, even though no previous indiscretion in diet can be traced as the probable cause.

4. *Salicylates.* It has been known ever since these remedies were introduced for the treatment of articular rheumatism, that they would give relief in muscular attacks; and this was one of the reasons for assuming the same name and a similar cause for one affection as for the other. Rosenow's work has shown that in many cases, if not in all, streptococcal

infection of muscle is the real cause; and salicylates, as internal antiseptics, are therefore as rational remedies for muscle rheumatism as for joint rheumatism. Whether they always work in this way, or whether as intestinal antiseptics or whether solely as analgesics, makes no material difference to the patient who is suffering, and eager for relief. They do mitigate the pain and they are trustworthy agents to use after the initial purgation. Just at present aspirin is the one most commonly prescribed; but sodium salicylate or salol or the oil of wintergreen may in an individual case prove more efficacious; or one of the newer synthetic products constantly being introduced.

5. *Opiates*. In severe cases a hypodermic injection of morphine may be required to give relief; but this is exceptional, and it should be thoroughly understood that ordinarily all opiates are out of place, because they check elimination by skin and bowel and because they have in general bad effects that outweigh the good. Externally, however, the old established lead and opium wash, applied hot over the affected muscles, is a most valuable aid in removing pain, combining the anesthetic effect of the lotion with the soothing effect of heat.

Under the influence of these various remedies the ordinary case of acute muscular rheumatism gradually subsides after a few days or weeks, and complete restoration of usefulness takes place in the part that was crippled. But instead of this happy outcome, a halt may be declared after a certain improvement has been effected, and the patient continues to have a constant interference with his muscular powers, more or less severe from time to time, persisting for weeks or months or years. This constitutes a different problem for treatment and calls for different methods of attack.

These are the cases notorious the world over as weather prophets, worse on cold and wet days, better in sunshine and warmth. The patients go about from one hot springs or one sanatorium to another, where they can get the benefit of mud baths, hot baths, hydrotherapeutic applications, massage, and electricity. There is a well established routine of therapeutics for such cases available in institutions devoted to their care, but not quite feasible for use in private practice. No doubt much good is accomplished by, 1, massage, in the hands of experienced and trained persons in this branch of physical therapeutics; but training in these methods is not part of the physician's curriculum. 2. Vibratory treatment is closely related to massage and seems to stimulate circulation through the diseased part; when properly applied by those who know how it plays an important part in cure. 3. Hydrotherapy by douches hot and cold, sprays, packs, and baths, is also a valuable aid in restoring the function of stiff and painful muscles, no matter whether they are so because of neuritis of posterior nerve roots, knots and indurations in the tendinous attachments, thickening of fibrous aponeuroses, or unabsorbed clots and inflammatory exudates in the muscle substance. 4. Electricity above all should be employed therapeutically by those alone who understand its use. By some the static wave current is praised as highly beneficial; by others, the ionization of remedies applied locally, preceding the application of electricity. But

the proper management of these methods is as much a matter for special study as the use of the x ray, and they should not be employed by the ordinary medical practitioner until he has made himself familiar with their use. In fact, the equipment and apparatus for treatment by electricity, by hydrotherapy, or by vibration, requires so much space, to say nothing of cost of installation and of special assistants, that it can be undertaken properly only in institutions devoted to such methods.

5. *Counterirritation* offers a modified means of accomplishing at home what the foregoing devices do at sanatoria. This counterirritation, however, is not so fashionable as it used to be some twenty or more years ago, and is not so commonly employed, perhaps because the cure seems to this generation to be worse than the disease. The various methods include what were called rubefacients, epispastics, and escharotics. The rubefacients constitute the first degree and are still more or less in use, such as the regular and repeated application of mustard, capsicum, or turpentine, to redden the skin over the site of the painful muscles. The epispastics constitute the second degree, of superficial blistering, by cantharides plaster or by repeated coats of a strong tincture of iodine, in both of which the laity still have strong faith. The third degree, escharotics, includes remedies that cauterize; such as the moxa, of which the Japanese are so fond as a therapeutic measure; and the thermocautery, heated to redness, and applied in streaks or gridiron fashion over the obstinate areas that refuse to respond to simpler means. In this same group of counterirritants for chronic muscular rheumatism should be included acupuncture for lumbago; and the seton for any form. Both of these resorts—the insertion of steel needles deep into the muscles of the back, and the passage of a tape through a fold of skin and fat after piercing the latter with a scalpel, were favorite methods with our fathers in medicine, but now have become even more obsolete than venesection. All these heroic methods have gone out of fashion, but it does not follow that they did no good.

At the present time our most popular and most promising theory in all of these chronic ailments known as muscular rheumatism is that of local infection. This means that somewhere in the body, in every such case, there is a source from which toxins or microorganisms themselves constantly enter the blood and continue to exert an influence upon various parts of the body, particularly upon muscle tissue and joints. This theory, put forward particularly by Billings, calls attention to tonsils, gums, carious roots of teeth, or sinuses about the face; prostate gland or Fallopian tubes; gallbladder, appendix, or large intestine; as possible sites of infection, which must be sought for and eliminated as a rational first step toward the cure of chronic muscular rheumatism as well as arthritic affections. There can be no doubt about the importance of this factor in etiology; or the value of its discovery and removal in therapeutics. Too many observations have already been made in the matter, by numerous men, to permit of skepticism. The removal of diseased tonsils; the cure of pyorrhea; the discovery, by ordinary exploration or by x ray films, of abscesses at teeth roots, and their eradication;

the surgical drainage of infected sinuses; the repeated stripping of prostate glands containing infected secretions; or the removal of diseased tubes, gall-bladders, or appendixes, all have been reported as resulting almost magically in the relief of persistent, painful, and incapacitating affections of muscles. As regards the intestinal tract, disinfection by overcoming stasis, by laxatives, by diet proper in quality and quantity, and particularly by the use of cultures of the Bulgarian bacillus, has likewise in certain cases proved highly effective in the treatment of chronic muscular rheumatism. All these methods are rational because they are based upon a proved etiology, and will probably be more and more the first thought, as time goes by, to the exclusion, or at least to the great diminution of the older methods described.

REFERENCES.

1. A. SCHMIDT: Das Problem der Muskel-Rheumatismus, *Med. Klinik*, xix, 1910.
2. IDEM: Noch Einmal das Problem des Muskel-Rheumatismus, *ibidem*, xvi, 1914.
3. A. MUELLER: Der Untersuchungsbeefund am erkrankten Muskel, *Zeitschr. f. Klin. Medizin*, lxxiv, 1912.
4. LUFF: Fibrositis and Muscular Rheumatism, *Brit. Med. Jour.*, 1913, p. 856.
5. ROSENOW: Etiology of Articular and Muscular Rheumatism, *Jour. A. M. A.*, April 19, 1913.
6. IDEM: Etiology of Acute Rheumatism: Articular and Muscular, *Jour. Infect. Dis.*, Jan., 1914.
7. IDEM: Lesions produced by Various Streptococci, *NEW YORK MEDICAL JOURNAL*, Feb. 7, 1914.

SHREVE BUILDING.

THE TREATMENT OF TUBERCULOUS ADENITIS BY ROENTGEN RAYS.*

BY RUSSELL H. BOGGS, M. D.,
Pittsburgh,

Röntgenologist, Allegheny General Hospital; Dermatologist and Röntgenologist, Pittsburgh, Columbia, and St. Francis Hospitals.

Cases of tuberculous adenitis formerly were referred for Röntgen treatment on account of operation leaving unsightly scars, but today this is not the chief reason. It is because operation is followed by frequent recurrence, as well as more danger of producing general tuberculosis. Besides, many believe the end results of radiotherapy are much better.

Tuberculous glands, on account of the extensive nature of the disease, render operation a serious matter. The diseased glands are of much wider distribution than the clinical signs indicate, and local lesions are often of such a character or so situated that they are difficult or even impossible to reach by any method other than radiotherapy. It is alleged that at least ninety per cent. of these cases can be permanently cured by radiation. There is scarcely a röntgenologist who has done much work who has not treated at least several hundred cases successfully, covering sufficient length of time to justify us in advising radiotherapy as a routine method of treatment.

Radiotherapy in its developments to date offers a number of problems, a solution of which means the greatest advance in the treatment of tuberculous adenitis. It is an established fact among competent and experienced workers in this field, that in some advanced cases astonishing results are being obtained. At present this is admitted, even among the ranks of the most conservative physicians. Reliable observers notice great differences in the percentage of successes and of failures. The reason for these clinical differences can be pointed out

when we study the different methods of treatment. It is generally conceded that real efficiency in these cases is obtained by the use of hard filtered rays, applied in the proper quality and quantity, which can only be determined by one who has had experience, and has adopted a suitable technic. Many are giving the same massive doses that they give in the treatment of malignant growths and expect to produce successful results in one or two treatments. The treatment of malignant disease is an entirely different proposition from that of tuberculous adenitis. In the treatment of the former the results are produced almost entirely by the local action of the radiation. Since the rays are not bactericidal, it has been suggested that, in the treatment of tuberculous adenitis, the results are produced by destroying the tissue of low resistance, thus rendering the soil barren. The rapidity of the results is most striking in the large glandular masses; and even when these are suppurating and about to break down, excellent results are obtained. It is interesting to note that many of these cases are just as permanently benefited as in the cases where the glands are only of small size. Strange as this may seem, it is true, and we are unable to account for it, unless it is due to the fact that there is in the large tumor more glandular tissue, which is easily affected by radiation. Hence, there must be a constitutional effect which is more pronounced when a large amount of tuberculous tissue is rayed.

These facts suggest that, in the destruction of tuberculous tissue, autogenous vaccines are set free, which are far superior to tuberculin. Crane pointed this out in an article, Specific Immunity and X Ray Therapeutics, in the *American Journal of Medical Science*, March, 1908, and called attention to the general systematic improvement of the patient when under Röntgen treatment. This probably accounts for a tuberculous process disappearing in one part of the body when a tuberculous mass is rayed in another part. In a few instances I have had the sputum examined and found it to contain tubercle bacilli, and after raying the cervical glands, within three months the bacilli had entirely disappeared, and the patient had gained from ten to fifteen pounds. This is extremely interesting, and more work will be done along this line. It has been noted that tuberculous glands in many children whose tonsils were enlarged, were improved after radiation to such an extent that it was not necessary to remove them. The reason I shall not attempt to explain. We might think that perhaps the removal of the tonsils relieves the infection and causes a disappearance of the glandular involvement, as it undoubtedly will in some cases, but my experience as well as that of many other röntgenologists is that, in many instances, the removal of the tonsils actually aggravates the tuberculous adenitis. Much may be learned on this point by cooperation of the laryngologist and the röntgenologist. Possibly when the removal of the tonsils causes a disappearance of glandular involvement, they are of the inflammatory type instead of the tuberculous.

When a chain of lymphatic glands is properly rayed, the glands undergo fibrous degeneration with almost entire obliteration without seriously influencing the surrounding tissue. If the glands are

* Read before the Pittsburgh Academy of Medicine, February 29, 1914.

diseased, the reaction of the epithelial cells is much quicker and more marked. Since diseased cells are less resistant to the rays than the normal, it can be readily seen that the same amount of radiation which destroys the diseased cells may seem to stimulate the surrounding healthy tissues. When chronic tuberculous glands with periadenitis are treated, they may disappear entirely or they may only become smaller and be reduced to fibrous nodules which do not entirely disappear. The result is that the glandular mass shrivels up, certain glands cease to be palpable, while others remain as small fibrous nodules, in most instances free from tuberculous foci. In some cases that I have treated, these fibrous nodules were removed and examined and no active process was found. I have with me a radiogram, which shows how nicely a large tuberculous mass in the cervical glands disappeared, leaving a few deposits like the calcareous glands so often seen in the lungs after active tuberculosis.

In the lungs it takes nature a long time to cause the glands to become calcified, while in the cervical glands the Röntgen rays will produce this change in a short time. It has been found that the Röntgen rays will convert the lymphatic vessels into fibrous cords. If the disease is local, this alone is sufficient to justify Röntgen treatment in order to lessen the danger of a general infection. In order to show the variety of opinions in regard to the treatment of tuberculous adenitis, let me quote a paragraph from Johnson's *Operative Surgery*, 1915, as follows:

The treatment accorded to a case of tuberculous glands at the present day depends largely on the specialty of the physician first consulted. There are the hygienic, the x ray, light therapy, vaccine, laryngological (that is, treatment directed to the portal of infection), and the surgical. The latter, moreover, comprises by no means a single method of treatment. One surgeon drains abscesses; another injects antiseptics; another excises glands unless there is an abscess; another excises both glands and abscess. Some hesitate to operate until sinuses are healed; while others largely disregard them. Differences of practice prevail as to the extent of excision necessary, that is, whether glands in the glandbearing fascia shall be removed or only the main glandular mass. While some operate as early as possible, others reserve surgery for the advanced cases. That the general practice of physicians is to procrastinate until suppuration impends is shown by the fact that we have few cases in private practice to operate in before the formation of an abscess.

Children and adults are at times treated differently, the treatment of the latter being more radical. A simultaneous lung tuberculosis also influences treatment.

Von Mutschenvacker offers conservative treatment of tuberculous adenitis, and states that he has operated in only nine per cent. of 1,344 cases. He recommends the x ray and compares Röntgen therapy favorably with surgery. He believes that the rays cause a disappearance of the adenoid tissue, leaving only the stroma.

Blaisch divides tuberculous adenitis into hyperplastic, purulent or cheesy, and ulcerated or fistulous. He states that after Röntgen therapy some of the nodes entirely disappear, but some remain small and hard. If these are removed and examined by microscope, there will be seen a central cheesy mass surrounded by connective tissue in which there are no miliary tubercles; he also noted a total disappearance of adenoid tissue. When the glands are suppurated the rays will cause an absorption of the pus, but he advises aspiration or incision

followed by radiotherapy. The ulcerated or fistulous he found to be the hardest to treat.

Most röntgenologists who have treated a large number of cases, I believe, agree with von Mutschenvacker and Blaisch that surgery should be reserved in most instances for the cases which have been first treated by the Röntgen rays and for the removal of fistulous tracts caused by a suppurated gland which has broken down after a few Röntgen treatments were given. By such a method very few cases will require removal. There seems to be a tendency to recommend such surgery only as is unavoidable. The papers of Stone, Dowd, and Miller are strikingly in contrast to this tendency.

In writing of this surgical treatment of tuberculous adenitis Mathews, in Johnson's *Surgery*, states: "There is a widespread notion that surgical treatment is inefficient, that glands recur even at the site of a previous operation, so that when operation is recommended it is to be looked upon as but the beginning of a series of operations."

Mathew's objections to surgery may be epitomized as follows: 1. Children at least get well without it. 2. We have no certain method of diagnosis in early cases. 3. We cannot remove all the infected glands. 4. Scars. 5. Recurrences.

Mathews continues: "I wish to advocate the earliest possible complete removal of an isolated glandular focus, both in children and adults, for the following reasons: The disease spreads from a point, it is local at first, and can be removed with slight scarring and without sacrificing important structures. Hygienic treatment is always important, but will be more successful after gland removal than when tuberculous glands are present."

De Costa has observed that "complete extirpation of the involved glands is practised when the disease is well localized." If it is not well localized he follows Attridge's plan and waits until it becomes so, treating the patient in the interval by open air life, nourishing food, medicine, tuberculin, and the x ray. If the Röntgen ray treatment did nothing more than to localize the disease, it would be indicated before operation.

There are a great many varieties of multiple glandular tumors which undoubtedly have been treated as tuberculous adenitis, among which are Hodgkin's disease, syphilis, sarcoma, etc. While the Röntgen rays are indicated in all of these glandular diseases, with the exception of syphilis, it is to be noted that Hodgkin's disease responds more quickly to radiation and is more prone to recur than tuberculosis. The enlargement can be made to disappear entirely in almost every case, but usually within a few months after the treatment there will be recurrence. Further radiation will often again cause the disease to disappear, but there comes a time when the disease will not respond to radiation. External tumors in many cases can be controlled for a long time until the patient succumbs to deep involvement. Striking results are noted in lymphosarcoma, and the disease often disappears under Röntgen treatment, and is usually slower to recur in comparison with Hodgkin's disease. The end results in these glandular tumors, however, are not to be compared with those of tuberculous adenitis. This is most likely due to the fact that in all other

glandular tumors the action is only local, while in tuberculous glands there is more than local action of the rays. I believe radiation is indicated in all enlargements of the cervical glands that have reached any size unless produced by an acute inflammatory process. In the earlier cases medical treatment should not be persistent and prolonged, as there is danger of suppuration followed by scarring and a general tuberculosis taking place.

Different authorities call attention to the fact that when medical treatment alone is adopted, from twenty to twenty-five per cent. of the patients ultimately acquire pulmonary tuberculosis. The medical measures can be continued in conjunction with the Röntgen rays. Enlarged glands due to an inflammatory process are frequently secondary to a septic condition elsewhere, and search should be made for the primary lesion. When this is found and treated, if the glands remain large and particularly if they show a tendency to suppurate, the Röntgen rays are indicated. If they are given promptly and properly, suppuration can usually be avoided. I do not favor opening a tuberculous mass as soon as it begins to soften, as many advocate. A few Röntgen exposures given first greatly facilitate repair of the parts, and the sinus which follows will not be so deep and will heal up more readily. Certainly nothing is slower in healing than a sinus leading into a gland which has been opened just as suppuration was beginning. It is a well known fact that we have no better treatment than the Röntgen rays for carbuncles, boils, or any of the localized pus infections. How readily and promptly is pustular acne cured by the Röntgen rays! Then why be in such haste to open a tuberculous gland before it begins to bulge? Under Röntgen treatment they are never painful.

In conclusion, radiotherapy stands in a different place than it did two years ago. The flexibility of the Coolidge tube makes it possible to give treatment more accurately, and by diminishing the tube trouble, so many exposures are not necessary. The same massive radiation is not indicated in the treatment of tuberculous adenitis as in the treatment of malignant disease. It is much better to lengthen the exposures, and not to attempt to cure the patient with one or two massive doses, because we want to produce a constitutional improvement as well as a disappearance of the enlarged glands. No matter how wonderful the result, the patient should have good hygienic surroundings and not attempt work which is too strenuous, for a time at least.

The Röntgen ray is the best method of treatment when the glands have become widely scattered and are broken down. Where there is pulmonary involvement, I believe the Röntgen ray, together with good hygienic treatment, is the only method to be considered. Early thorough operation cannot remove all tubercle bacilli which have invaded some of the smaller glands. When the Röntgen rays are employed early, suppuration seldom occurs. This treatment avoids sinus formation and disfigurement.

Prophylactic treatment is important, and has not received proper attention. Persons having unhealthy tonsils, adenoids, nasopharyngeal catarrh, bad teeth, etc., are predisposed to tuberculous adenitis. Until recently very little attention was paid

to the source of infection. An effort should always be made to locate the channels of infection, although a great many cases are cured without finding the primary focus. Surgery is valuable and necessary, but when adenitis is treated by the Röntgen rays, it can be limited to from five to ten per cent. of the cases.

In view of our imperfect instruments and the difficulties under which we have labored, it is remarkable that surgeons are able to report so few cases cured by operation after radiotherapy.

EMPIRE BUILDING.

CHOREA: ITS TREATMENT.

Value of Muscular Relaxation and Reeducation, in Addition to General Treatment; Based on the Study of Fifty Cases; with Detailed Report of One Case of Chorea Mollis,

BY MORRIS GROSSMAN, M. D.,

New York,

Adjunct Visiting Neurologist, Central and Neurological Hospital;
Chief of Neurological Clinic, Lebanon Hospital, O. P. D.

Of the history of chorea through the middle ages much has been written and its repetition is unnecessary. The infectious type of chorea, as a clinical entity, was first recognized and described by Sydenham. So accurate was his description that, with the exception of the mental phenomena, little has been added to the original description of the condition; though much has been written to substantiate the attitude that we are dealing with the manifestation of some infectious agent or toxin on the central nervous system.

That the specific infectious agent or toxin has as yet eluded our efforts for its discovery, is easily deduced from the testimony of the many organisms that have from time to time been associated with choreic manifestations clinically. That it is the result of the action of some toxic agent on the central nervous system is equally evident.

Pathology. Lesions, either gross or microscopic, have not been found in a sufficient number of cases to constitute a definite pathological basis. Minor vascular and perivascular changes have been found in a small number of cases, and have constituted the basis of the embolic theory. The absence, however, of extensive capillary emboli in the cerebral tissues, and a more careful study of bacterial infections, have led most observers to a position adverse to the embolic theory.

The other vascular changes, minute perivascular hemorrhages, perivascular leucocytic infiltration, hyaline changes in the vessel walls, which have been seen in isolated cases have been noted more frequently in other conditions that did not present choreic manifestations clinically and therefore cannot be regarded as constituting a definite basic pathology.

Etiology. To attempt to study all of the etiologic factors that are presented in chorea would involve great detail and much more space than is allotted to this paper; there are, however, a number of features that are so prominently and frequently associated with chorea, that special recognition must be given them.

Rheumatic manifestations. The more we study the statistics on this question, the greater diversity of opinions we find; many keen and careful observers, however, show a fair degree of uniformity in their figures. Osler, Thayer, Wollenberg, Starr, Mackenzie, Cowers, and many others who have investigated this question showed that between twenty and twenty-six per cent. of cases of chorea were associated with rheumatism. The statistics of Thayer are of special interest, as they show the relationship of endocardial involvement with rheumatic fever in his cases of chorea. In his series of cases 21.6 per cent. showed associated rheumatic fever, and 25.4 per cent. showed evidence of organic heart disease. In view of these figures, we should be justified in associating rheumatic fever with chorea in about twenty-five per cent. of the cases. Observations on the heart over periods up to five years showed a higher proportion of organic involvement; Osler fifty-one per cent., Fraser fifty-one per cent., Mackenzie sixty-six per cent.; the extreme importance of these facts is obvious when one comes to the consideration of the treatment in a given case.

Mental instability. In my investigations and studies in the treatment of functional tic, reported in the NEW YORK MEDICAL JOURNAL for August 14, 1915, I was forcibly impressed with the frequency with which a previous history of one or more attacks of chorea was obtained in these cases of tic. This frequent association of these two conditions led me to study more closely the temperament of the patients that came under observation at our clinic. In most of the patients, a history of nervousness in the parents or other members of the family was usually obtainable; the children possessed an excitable temperament, associated with a more or less marked degree of motor unrest. These children, when laboring under emotional stress, are restless and fidgety; their movements are quick and jerky; indeed, many of the less observant mothers could not state definitely when the choreic movements began. Many of these patients also showed a distinct mental instability, as evidenced by an inability to control the will, as well as lack of attention and mental concentration.

On such fertile soil, it takes but little intoxication of the nervous system, from a relatively mild source, rheumatic or other, to produce a well defined attack of chorea. In these children a decided emotion, such as a fright, or excessive mental strain, to which they are subjected at the beginning or end of the school term, may be the determining factor in the precipitation of an attack.

That a large percentage of those cases of chorea, lacking frank rheumatic manifestations, fall into this group is highly probable. In these cases, although the precipitating factor may be some infectious agent, the muscular phenomena are usually continued even after the infection has subsided; this muscular unrest forms the basis of the so called residual chorea and is also, with the mental instability that is usually present, a fertile source of subsequent functional tics. For we know that repeated stimulation of a nerve increases its excitability and lowers the threshold of response to that stimulus.

Why these patients tend toward the muscular

demonstrations as we see them in tic and chorea and not toward the graver muscular phenomena such as tetany, epilepsy, etc., has never been satisfactorily explained. However, with our increasing knowledge and study of the influence of the endocrine system on muscular reactions, such as the tetany following the removal of the parathyroids, the muscular tremor of hyperthyroidism, and the muscular unrest seen in the early stages of hyperpituitarism, more definite information may be forthcoming.

Mode of onset and symptoms. Spontaneous movements first make their appearance and disturb the patient's muscles, either when they are at rest, or when the children attempt to perform some purposive movement. The child is unable to sit still; wriggles, makes faces, drums on the table with its fingers, picks at its clothes, shuffles its feet, drops things on the floor and breaks them. The pathological nature of the motor disturbance soon becomes clear, as the disease develops. The child is in a condition of marked motor unrest; the play of features is then exceedingly lively and variable, and the greatest variety of emotions is expressed in the most exaggerated manner, in rapid succession and without reference to the particular mood that the child may be in at the time. The tongue and all of the muscles that take part in the act of speech may become affected by the disturbance—a characteristic change in speech is noticed; a few syllables or words are pronounced properly; suddenly the voice drops to barely a perceptible whisper or ceases altogether, while the child is trying to pronounce several words, and in its vain attempts to speak, it indulges in a number of more or less droll, fantastic, or even alarming gestures.

When the obstacle has been overcome, a few words are again pronounced correctly, or nearly correctly. The breathing is affected in much the same way, and often becomes sighing and interrupted. The child is unable to perform the slightest movements with the extremities, for the motor impulse gets off the track and reaches muscles which it was never intended to set into motion. At first the child retains the power of sitting, standing, and walking, but at the height of the disease these static functions are impossible on account of the instability of movements.

The gait is uncertain, and the child not only stumbles but even falls when it attempts to stand or take a few steps unsupported. Even in bed, the movements which accompany every spontaneous intentional muscular action become so marked in severe cases that the patients fling themselves about on the bed and often receive abrasions or even serious contusions. Preceding these motor phenomena, the disposition of the patients is usually affected; they are given to sudden changes of mood, are readily moved to laughter or tears. There is an utter want of concentration and a marked inability to attention or perform any mental work; the children are excitable and easily frightened.

The functional modification in the muscles consists of, 1, an involuntary but conscious twitching; 2, an inability to maintain steady contraction; 3, an apparent loss of power which is dependent on a lack of control; 4, chorea mollis, in which there is an actual loss of power, which approaches, but never

arrives at complete paralysis. The volume of the muscle, electric responses, and deep reflexes usually remain unaffected.

In these cases, there seems to be a distinct inability to use the will in performing voluntary movements. This paresis of the muscles is probably due to the simple exhaustion of the motor centres and may be analogous to the temporary exhaustion paresis, sometimes seen after an epileptic seizure.

The following is a detailed report of a case in point, which complicated a severe chorea gravidarum and consisted of a paraplegia of twelve months' duration, during which time the patient was unable to leave her bed. She recovered completely after fourteen reeducational treatments, along the lines which I shall describe under the discussion of treatment.

CASE. H. R., woman, aged twenty-one years, American, married. Family history: Had one sister who suffered with nervous trouble of one form or another continuously, otherwise unimportant. Past history: Measles at six years. First attack of chorea at seven; attack was quite severe and involved head, face, and all extremities. It lasted about five months and when it subsided, a marked muscular unrest remained, which on the slightest provocation, either mental or physical, would develop into a well defined psychical and muscular demonstration of chorea. This extremely undesirable and incapacitating condition of affairs continued up to the age of fifteen years.

Each year during this interval she exhibited from one to two distinct attacks of chorea which lasted for periods of from three to five months. During the intervals she would never be entirely free from muscular twitches or some evidence of muscular unrest. She was married at sixteen years and became pregnant within two months; this event promptly precipitated an attack of chorea. The attack was of moderate severity on its initiation, but gradually became more intense as her pregnancy advanced. Her husband, who did not approve of her pregnancy, left her at the sixth month—this added shock materially aggravated her condition. At term, after a difficult, instrumental confinement, her choreic manifestations began to improve, but the movements did not disappear entirely. This improvement lasted for about three months.

Present history: This condition, almost continuous with her past history since childhood, as outlined above, dated back to an attack of pneumonia, two and one half years ago. The pneumonia infection was associated with a very severe attack of chorea. So violent were her muscular and physical demonstrations of chorea, that restraint became necessary. After recovering from her pneumonia, the violence of her choreic manifestations persisted for a period of nine months, during which time she was kept in bed and received institutional care. The muscular unrest finally subsided, but left her with an apparently complete paraplegia involving all muscles below the pelvis. This condition persisted without improvement, until she came under my observation, about twelve months later.

Physical examination: Poorly nourished woman. Skin and mucous membranes pale. Lungs negative. Heart slightly hypertrophied; first sound regular, somewhat roughened, but no distinct murmur detectable; second sound slightly accentuated. Pupils equal, regular, reacted to light and accommodation. Cranial nerves negative. Mental status fairly good. Extremities, upper, showed good coordination, slightly impaired muscle power, no atrophy or sensory changes. Lower extremities showed an apparently complete flaccid paralysis below the pelvis. Patient was unable to move any of the muscles. Sensation for touch, pressure, pain, and temperature retained on both sides and was quite normal. Knee jerks present, equal on both sides, but slightly diminished in activity. Babinsky, Oppenheim, and Gordon phenomena absent. Muscles flabby and soft, but measurements showed but negligible differences on comparison. Electric reactions were unobtainable. Skin and abdominal reflexes were present and active. The patient was unable to perform any active movements whatever with her lower extremities.

This typical case of chorea mollis is of unusual interest. A review of the literature reveals few cases of so complete a picture. That the extreme neurotic temperament of the patient was partly responsible for its production, is highly probable. The prolonged severe drain on the motor centres was also, without doubt, a contributing factor.

Most of the cases that have been reported in the literature have ended by recovering muscular function, spontaneously, though rather slowly. In this case, there was no apparent tendency toward this happy termination in a period of twelve months. Just what the ultimate outcome would have been is problematical.

Diagnosis. The diagnosis of a fully developed chorea offers little difficulty. Occasionally a functional tic involving the face and extremities may at first be confusing; chorea and tic may have many etiological features in common; a neurotic family and antecedent history, a physical or mental shock preceding the onset, a history of a rheumatic infection, etc. The movements in chorea are more irregular, incoordinated, and less rapid, and as Still aptly puts it, "there is complete uncertainty where the next jerk will be, or when it will take place." The movements in tic are more regular, purposive, and are repeated at intervals in just the same manner; they are, as a rule, more rapid and always coordinated. Observation of the patient usually increases the movements of chorea, and diminishes those of tic.

By effort of will, the tic movements can usually be controlled for a limited time, while those of chorea cannot. The twitching of the tongue when protruded, as pointed out by Sachs, serves as an important differential point. The twitching of the hands, augmented each time the patient's attention is engaged by the mental concentration necessary to answer questions asked him, as described by Heiman, is also of extreme value; this sign was demonstrable in many of my cases.

TREATMENT.

1. *Hygienic.* Chorea at all times, even in the mildest form, is sufficiently serious to warrant careful attention and supervision. The patient should be confined to bed during the acute stages. The course of the disease is thereby shortened, and the danger of complications lessened. Anything that tends to produce emotional disturbance should be rigidly excluded. All mental stress or strain must be avoided. The diet should be bland, and meats, tea, and coffee should not be allowed. Hydrotherapy in the form of tepid douches or packs, is as a rule of value in soothing the patient. The bowels should be kept open with a mild saline.

2. *Medicinal.* Cases in which a rheumatic history is discernible should receive the benefit of a thorough course of salicylates. They should be closely watched for endocardial complications. In the nonrheumatic cases, arsenic, in Fowler's solution or some other form, is almost universally admitted to be a most valuable remedy. In cases of marked motor unrest, sedatives such as bromides or chloral are of value.

3. *Reeducational.* This is divided into breathing and relaxation, and reeducational exercises. Dur-

ing the acute stage, breathing and relaxation are alone used. Active exercises are, in this stage, not only contraindicated, but may result in harm to the patient. The abdominal type of breathing is used; the patient is asked to take a deep breath, using his diaphragm, restricting his thoracic movements, and at the height of inspiration to pause, then slowly and evenly expire, and again pause; this deep breathing soon tires the patient if persisted in, so after ten or twelve of these deep respirations have been taken, the depth of inspiration and the pauses are shortened until the patient is breathing, without effort, as in sleep.

To relax the muscles, passive movements in which the muscles are alternately lengthened and shortened are employed. The muscles of the forehead, cheek, and jaw are thus manipulated until wrinkling of the forehead, and blinking of the eyelids disappears and muscular spasm is eliminated. Next a shoulder is relaxed, then an arm; each in turn must be passively moved until all traces of muscular tension vanish and the part lies motionless and flaccid, and falls limply from any unsupported position. Then the leg on the same side should be taken. After a part is relaxed, those previously and that newly relaxed should be briefly dealt with again, in the order in which they were first relaxed.

This linking of parts previously, to parts newly relaxed, is helpful in bringing the whole to a satisfactory state of relaxation. During the passive movements, the operator should continually direct the patient's attention to the control of the involuntary twitches; gradually this requires less and less effort, and soon complete and perfect relaxation is possible.

Every emotion, every thought, is externalized in muscle tension, or depends on the intensity of the emotional state in some muscular action. The experiments of Vierordt and many others prove beyond doubt that changes in our stream of consciousness are partly externalized in muscular action.

Accompanying all states of increased mental tension and muscular constraint, increase of pulse rate and breathing is usually evident. James and Lang taught that an emotional state is consequent upon a physical state; that the physical state is the immediate source and precursor of the emotion. According to this theory, therefore, the emotional states, such as fear, develop because our heart quickens and we breathe rapidly and irregularly—and not that these visceral changes take place because we fear.

However, for our purpose, it is sufficient to recognize the constant association of emotional states with visceral (quickened heart and respiration rate) and muscular changes. Emotional changes without visceral changes do not occur, therefore, absence of visceral changes implies absence of emotion. To control visceral changes is to control the emotion; to minimize them is to minimize the emotion. Deep breathing slows the heart rate. So long as the breathing remains controlled and the heart slow, no considerable emotional state can exist.

That the muscular twitches in chorea are an index to the emotional state of the patient is highly probable, for we know that as the patient's emotion is disturbed, in just that proportion is there an in-

crease in his muscular phenomena. By using muscular relaxation, several important features of the disease are controlled; first, the checking of the emotional state of the patient, by means of the deep breathing, enforced by the reduction or removal of muscle tension; second, by decreasing muscular activity, thus minimizing the danger of paralytic phenomena, due to exhaustion of the motor centres; third, combating the fatigue, which must necessarily accompany excessive motor activity.

Movements should be begun after the patient has thoroughly mastered relaxation and his limbs can be freely moved passively in all directions without exciting either rigidity or spasm. Simple movements only should at first be used—flexion, extension, adduction, and abduction at the joints; the movements should be guided along the proper plane by the operator, until the incoordination has been corrected. The movements should then be done by the operator with the patient offering slight resistance; the patient next does the movement unguided, and finally the movements are performed against the resistance of the operator. The movements should be of the simplest character at first and gradually made more elaborate as the patient improves.

The movements should be executed slowly and steadily, and without jerks or flourishes; during every movement the patient counts rhythmically—the purpose of the counting is to educate him to move easily, uniformly, and at a regular tempo. I have adopted these exercises from my work on reeducating ataxic tabetics, by the method elaborated by Dr. William J. M. A. Maloney. Precision of movement can be acquired by using various toys and games. For the hands simple finger exercises, drawing, and writing are of value. The treatment of the lower extremities is given along the same lines as described above. The patient should not be allowed to stand or walk until all movements of the legs can be done with fair precision while lying down. It is necessary to emphasize that active exercises should not be attempted until all acute symptoms have disappeared, and the pulse, temperature, and respiration rate are normal. Guthrie has systematized a series of exercises, somewhat similar to those outlined above.

With these exercises we overcome first, the muscle weakness that is usually present to a greater or less degree; second, we correct the incoordination associated with chorea; third, we obviate the possibility of a subsequent residual chorea; fourth, by these systematic exercises, we increase the mental stability of the patient; increase the will power and concentration of mind, thereby minimizing the danger of a future tic or habit spasm.

This paper is based on the study and treatment of about fifty cases. Of these cases there were eight which showed definite endocardial involvement. About thirty of the cases would be classed as severe types of the disease—face, all extremities, and speech being involved. Among the milder types of cases endocarditis occurred in two; no inference could be drawn in regard to endocardial involvement, from the apparent severity of the clinical manifestations or the duration of the disease, as some of the most severe types of cases ended in recovery with the patient unscathed.

The average duration of symptoms before the patients came under observation was about three weeks. In most cases, after treatment had been begun, the muscular twitchings and other evidence of muscular unrest disappeared in from two to three weeks, thus giving the average duration of the muscular manifestations as about five weeks.

The degree of muscular weakness in each case seemed to be in proportion to the severity of the degree of muscular unrest.

CONCLUSIONS.

1. Relaxation and reeducation have a distinct value in the treatment of chorea.

2. The course is favorably modified and the danger of complication lessened; the duration of the disease is shortened by their use.

3. Residual chorea and other conditions of muscular unrest are obviated.

4. We reduce to a minimum the drain on the motor centres, due to prolonged and continuous muscular activity.

5. With this systematic exercise treatment, we increase the mental stability and will power of the patient, thereby diminishing the danger of subsequent tics and other functional neuroses, that flourish in such a soil.

I WEST EIGHTY-FIFTH STREET.

TETANUS: A SURGICAL COMPLICATION IN THE PRESENT WAR.*

By E. KILBOURNE TULLIDGE, M. D.,
Philadelphia,

Formerly Captain Surgeon, Austrian Army; Military Surgeon, French Red Cross.

Among the many complications met by the surgeon in the present European war, tetanus is probably the most dreaded. This is particularly true upon the Austro-Russian and Servian battle fronts, manifesting, as it does, symptoms that are difficult to treat and control under the hardships of these mountainous regions of the war theatre. Latent cases are often reported that may not manifest typical symptoms of toxemia until some time after the inoculation has taken place, as late as six months or more.

In eighty-seven cases that came under my care while on a surgical train, on regimental duty, and in charge of a Hungarian base hospital, the operations of the organism itself were usually restricted to the seat of inoculation, where, associated with other organisms, it occurred as a secondary infection, devitalizing the tissues and disseminating its toxins throughout the body. Twenty-two cases were examined to ascertain the bacteriological characteristics, and the following organisms were found; not, however, in every case: *Streptococcus* and *staphylococcus*, *Bacillus aerogenes capsulatus*, *Proteus vulgaris*, *Bacillus coli communis*, and the *pneumococcus*.

The most frequently associated organism seemed to be *Staphylococcus aureus*, while second place rested between the *streptococcus* and *Bacillus aerogenes capsulatus* or gas bacillus. This last organism being a saprophytic brother to the tetanus bacillus,

its association can be easily accounted for. Their associated spore-bearing characteristics and frequent involvement or occurrence in large, jagged, torn, complicated wounds are interesting phenomena for observation. The tetanus bacillus has been almost exhaustively studied, and I feel that to recite the past records and bring again to attention its already much studied characteristics and idiosyncrasies would be an insult to professional knowledge. However, the sporogenic and anaerobic faculties which it manifests are of great importance when large numbers of cases are of necessity handled and treated.

These spores will live over long periods of time, sometimes for years if not subjected to intense light or heat, which fact enables us to account for its frequent long incubation periods and latent symptomatic manifestations. The disease does not attack always the most serious wounds, but manifests itself usually in those with ugly, jagged, filthy edges, displaying marked contusion, with splintering fractures of the bones, frequently those of the lower extremities. With the organism will invariably be found in the wound foreign bodies of various description, viz., earth, particles of old campaign clothes, shrapnel casing, bullets flattened to resemble a mushroom in shape, sections of regimental badges, buttons, and other military accoutrements. Not only are foreign bodies present in large numbers of the wounds, but they are forced to remain there often over long periods of time, because of the inadequate facilities for transportation. Every physician knows or should know that time is an important factor, probably the most important, in the treatment of tetanus. Notwithstanding this knowledge, many unfortunates are forced to lie outside the lines unaided and unattended for hours, sometimes days and weeks, in the wet mud of manured fields, until their torn clothes and wounds are so soaked in a mixture of blood and dirt that it is often impossible to get the latter clean. Is it any wonder that tetanus should be so common among the soldiers, when it is known through what extremes of filth and dirt they are forced? The wonder is that more do not acquire the disease, that this little organism does not wipe out hundreds of thousands more.

The typical case of tetanus as presented on the Austro-Russian front manifests the following symptoms: Aches and pains in the muscles, with general lassitude, headache, and gradual stiffening of the muscles of the back of the neck, face, and jaw. The patient may complain of marked constipation and frequent desire to urinate, which later is lost; and a distended bladder, causing pain and discomfort, is significant of retention of urine. These prodromal symptoms may last with alternating intensity for some days, even weeks, and when they develop or exist along with a severe lacerated wound, tetanus may be expected in nearly every case. There is no doubt that the toxins of the bacilli ascend the motor nerve sheath and thus reach the spinal cord, there uniting with the nervous tissue to remain in a more or less fixed combination that resists the antitoxic serum. This ascension of the toxins along the motor nerve pathways from the seat of inoculation is apparently followed by a gradual ascending death of the nerve with the cessation of innervation, which results in convulsions and

*This is the second of a series of three communications on the European War, the first of which appeared in the New York Medical Journal for May, 1916, page 907. The third communication, on Fleck Typhus, will appear in an early issue.

death. The distorted contractures of the muscles and body resulting from, or accompanying the last stages of the disease—I say last stages, because I have yet to see a case of short duration with well pronounced and developed opisthotonos, emprosthotonos, orthotonos, or pleurothotonos, respond to antitoxic serum or other remedies and end in recovery—are so characteristic and pronounced that even a layman with the average mentality could recognize them.

The following table or chart, compounded from military medical statistics of Reservespital, Miskolcz, Hungary, to which I was attached, will give some idea of the character and number of wounds complicated by tetanus, and the results obtained in treatment.

TETANUS STATISTICS FROM RESERVESPI TAL, MISKOLCZ, HUNGARY.
REGIMENTSARZT E. KILBOURNE TULLIDGE, Amerikanischer.

	Number of cases treated 87.	Recoveries Recoveries				Total number of recoveries.	Total number of deaths.
		Serum received in first 24 hours.	from 100,000 units or over in 48 hours.	from 50,000 units or over in 48 hours.	Recoveries from less than 20,000 units in 48 hours.		
Complicated shrapnel wounds with great involvement of tissue.....	62	44	11	12	4	29	33
Bullet wounds (simple).....	6	5	2	2		4	2
Bayonet wounds (single).....	10	4	5	2	2	8	2
Bayonet wounds (double).....	9	2	2	2	1	5	4
Incubation period of 5 days or less.....	22	15	8	6	4	18	17
Incubation period of 10 days (about).....	35	12	1	1	5	12	7
Incubation period of 15 to 25 days.....	19	8	1	1	6	8	3
Incubation period of 30 days or over.....	17	30	15	13	10	38	39
Symptoms of trismus or lockjaw.....	77	36	28	12	14	7	1
Convulsions (slight or localized).....	36	6	2	3	1	0	1
Convulsions (severe).....	39	8	3	2	8	0	1
Prodromal symptoms only.....	10	39	3	2		45	30
Opisthot. Emprosthot. Pleurothot.....	44						

*Symptoms not well advanced or marked.

The reader will notice that shrapnel wounds are by far the most commonly involved, and that bayonet wounds are second in complication. As a matter of fact, more bayonet wounds are infected by tetanus symptoms in proportion to their occurrence than shrapnel or bullet wounds. This fact has been reported along practically the whole Austro-Russian front, where bayonet and hand to hand encounters have taken place. The bayonets used in many instances are not the new two edged knife bayonet of international acceptance and agreement, but the old four sided or bladed spike that tapers to a point and inflicts a most jagged, torn, and complicated wound, all of which become infected and take on a phlegmonous character. Several instances were brought to my attention where the blade of the bayonet had broken off after entering a bone, the pointed metal fragment remaining imbedded, piercing the nutrient canal: Femur three cases; humerus two cases; pubis, ischium and tibia each one case. Tetanus developed in six of these eight cases, from which there were no recoveries.

The incubation period of five days or less ran the worst course, and presented the greatest mortality. Those of longer incubation resulted in a greater percentage of recoveries in proportion to the length of time that elapsed between the infection of the wound and the symptomatic manifestations of the disease itself.

Trismus or lockjaw occurred in practically all of the cases, although different degrees of muscular contraction, if studied and watched, will aid to help an early diagnosis. Ten cases did not show char-

acteristic lockjaw, but displayed only signs of muscular pain and numbness with slight impairment of motion. These symptoms, when coupled and associated with the early symptoms, I have characterized in the chart as prodromal symptoms only.

The body contractures of opisthotonos, emprosthotonos, and pleurothotonos were usually fatal, only five cases displaying very light and mild contractures ended in recovery.

The treatment of tetanus has in the past year been discussed probably as often and as thoroughly as that of any other disease, and as in every condition for which numerous and varied theories in treatment have been advanced, no specific decision has been arrived at. The magnesium sulphate treatment, I am convinced, we may discard with impunity; a

few, however, I believe there are who still hope for the possibilities that may develop from its continued use. The fact remains, however, that few good results are reported, and these are not such as would startle the profession. However, there is one new development during the present European war regarding the treatment of tetanus that should be remembered as a lesson well taught. It is the value of not only antitetanic serum itself, but of the necessity of its administration in sufficiently large doses.

When I speak of giving antitetanic serum I mean not in picayune doses of 1,000 or 2,000 units, but in really beneficial doses of from 10,000 to 160,000 units if necessity demands. In the chart the results obtained from this method may be seen, in that more recoveries by far occurred and better results were obtained in cases receiving 50,000 units or over. Of course, I am not advocating the administration in all cases of large doses of antitetanic serum, because many cases need but a small amount of serum to help them combat the deadly toxins of this disease, and will progress and recover with small doses. The point that I wish to bring out is, however, that the physician and surgeon should not be afraid to increase his antitetanic units in a case where no favorable symptoms are obtained from smaller doses. I believe that in the minds of the profession at large there is no question as to the value and use of antitetanic serum in the treatment of tetanus; but I am thoroughly convinced that there are few who can agree upon the proper quantity and the methods in administering it.

Any one who studies the statistics can plainly see

that the larger the dose of antitetanic serum, the greater the number of recoveries recorded, and, curiously enough, in cases displaying a short incubation period and severe symptoms, large doses alone were conducive to good effects, while in cases exhibiting a longer, protracted period of incubation with milder symptoms, smaller doses produced the best results, with a larger percentage of recoveries.

Another feature that demands attention is the number of cases receiving antitetanic serum on the field or in the first twenty-four hours after the wound is received. Practically all, or a great majority of the cases presenting a good prognosis were thus treated, although many terminated favorably without this precautionary administration. Of the cases cited above, over two thirds manifested symptoms within ten days of the injury, and about three fourths occurred in large shattering shrapnel fracture wounds of the ankle, foot, leg, or thigh. In almost every case the jaw muscles displayed some involvement, and feeding through tubes became necessary, inserted either behind the molar teeth or through the nose. High temperatures were commonly recorded, and were a most difficult symptom to treat. Three patients exceeded 43.8° C., dying shortly after in great degrees of opisthotonic contractions.

The general treatment was systematically and thoroughly carried out with results which we dared not expect, inasmuch as past teachings have instilled into the profession the idea of a hopeless prognosis in this disease. However, I feel sure that the present war experiences, not only in tetanus and gas gangrene, but certainly in many other conditions previously considered hopeless, will establish better and clearer insight into many heretofore obscure phenomena. Large doses of antitetanic serum should be used, beginning with 5,000 units as a prophylactic dose, as soon as possible after the wound is received, and increasing by 2,000 units for every day intervening between the time of injury and the day the patient receives his first injection. When symptoms had developed, a routine system was carried out, consisting of a dark, quiet room, large doses of calomel, followed by magnesium sulphate the first day thoroughly to clean out the intestinal tract, after which high saline enemata were given every other day throughout the course of the disease. The serum was not spared, and if no response was obtained from early doses, larger ones were given, increasing the number of units in forty-eight hours until as much as 160,000 had been given in four of the cases, with the result of recovery in two. Chloral hydrate also in doses of five to ten grams, has, I believe, by this time become practically the universally recognized remedy to control convulsions and spasms. It should be administered cautiously, keeping the patient in a constant semiconscious condition until the temperature has fallen, and recovery is practically certain. I believe that chloral hydrate plays probably the largest factor in the prevention and treatment of tetanic convulsions, and that many of the patients who recovered owed their lives to the sedative and narcotic effects on the nervous system. Hyoscine hydrobromide, grain 1/100, pushed to its physiological effect, also proved of

great value as a substitute when chloral hydrate was not available.

Alexander has also obtained excellent results from the use of chloral, and has reported eight cases that ended in recovery after receiving as much as ten grams in a single dose each day, while two patients who received only five grams died.

Muller has found prolonged hot baths to give remarkable relief to many, and Rothfuchs reports decided benefit after the administration of salvarsan in six cases. Others allege great benefits from magnesium sulphate, and large injections of anti-streptococcic and staphylococcic serum; but after trying practically all the proposed remedies, I have pinned my faith to the antitetanic serum and chloral hydrate in large doses. I may say, in closing, that I agree with Jakobsthal that the greater prevalence of tetanus among the wounded now, in comparison to previous campaigns, may be due to the more conservative treatment and to the digging of, and fighting from trenches.

Many authors lay special stress upon the local treatment of the wound. Unfortunately I was so placed that early local treatment in cases which later developed tetanus could not be recorded; but of one interesting factor that may prove later of value in the further study of this most complicated disease I am sure, and that is that cases receiving immediate applications of tincture of iodine from their first aid packs while on the field, did not develop the severe symptoms manifested by many of the others. Whether this was merely a coincidence, or had an important bearing upon the treatment of tetanus wounds, I am unwilling to state, but I am inclined to look upon the latter as a possibility.

ANTIMENINGOCOCCIC SERUM IN THE JOINT MANIFESTATIONS OF GONORRHEA.*

BY FÉLIX MALLETERRE, M. D.,
Paris, France,

Former Extern, Paris Hospitals.

The starting point of the use of antimeningococcic serum in gonorrheal processes was the resemblance in many ways between the gonococcus and the meningococcus. The affinity between these organisms, cultural, morphological, and biological, is well known. Both are coffee bean shaped, intracellular diplococci, both are decolorized by Gram, and give rise to the same kind of cultures. In a report made to the Society of Biology in 1910, on the bacteriolytic action of antimeningococcic serum on the meningococcus, by Dopter, this authority concluded that this serum contains a lysin which is specific in relation to the meningococcus and that its action on similar organisms is due to the cobacteriolysins. However this may be, it was by these close relationships that Passavy and Chauvet were able for the first time in 1909 to apply antimeningococcic serotherapy to the treatment of gonorrheal rheumatism. Flexner's or Dopter's serum may be used indifferently, but in France the latter is more commonly employed and is what we have used.

*Written expressly for the NEW YORK MEDICAL JOURNAL.

The technic of the injection is simple, a Roux's syringe with a rather long and not too fine a needle being used. After covering the area of the injection with tincture of iodine, the serum is slowly injected. The site of the injection varies. It may be given in the muscle of the gluteal region, but in cases of monoarthritis the periarticular region should be selected. Injection directly into the joint has been tried and seems to be without danger, and the action of the serum appears to be rapid.

As to the dose, it seems that the first injection should amount to at least twenty or thirty c. c., the following doses being progressively decreased. The patient being sensitized by the serum, there is need to employ larger doses given less frequently in order to avoid anaphylactic accidents, to which I shall refer later on.

The injection usually has been followed in the cases under our observation by an increase of pain in the affected joints lasting sometimes through the following night and, after the next morning, disappearing almost completely.

It is to be noted that this reaction has been observed in injections of antigonococcal vaccines. A rise in temperature is far less common. On the other hand, serum accidents are frequent and occur in the form of edema and cutaneous eruptions. Personally, I have met with an urticaria in only one case, and in another a pruriginous eruption. These accidents are without gravity and even appear occasionally to have a happy influence on the gonococcal affection, ending in a real sudoral and urinary crisis. We ought to beware of these accidents, however, and it is better to avoid them by injecting large and repeated doses at the beginning of the treatment and then stop after the fourth or fifth injection. They have been known to occur, however, after the first injection.

In our cases we employed Dopter's serum, the primary dose varying to from ten to twenty c. c. The latter appeared preferable. In the majority of cases that I have observed the painful and inflammatory phenomena increased a few hours after the injection; but the next day they disappeared and the patients felt better. The pain has recurred on the following days in some cases, but gave way when another injection was given, this occurring several times. Spontaneous pain diminished first, then the swelling, and at last the pain on pressure. The number of injections averaged from four to five, except in the favorable cases, in which a cure was manifest after the second injection. In some cases there was a rise in temperature of from one to 1.5° C., of short duration. This treatment was employed to the exclusion of all others, which removes any uncertainty as to the results.

CASE I. L. C., aged twenty-two years, entered hospital November 5, 1912. Gonorrhea appeared five months ago. Still had morning drop. About September 26th, pain began in both heels, causing walking to be difficult and all work impossible. At present there was a distinct bilateral talalgia, with pain and swelling in both tibiotarsal joints. Pain particularly marked over tendo Achillis. The patient could not stand.

An injection of twenty c. c. of Dopter's serum was given November 7th, subcutaneously in the flank. The next day the pain was much less, particularly on the side of the in-

jection. A second injection of twenty c. c. was given on November 24th. The painful phenomena continued to improve; the swelling diminishing, the patient began to stand on his heels. November 27th, a third injection, thirty c. c. The following day, walking became easier and the patient took some steps with a cane. He then left the hospital.

It is of interest to note that this patient had a flat foot and that this, combined with his work obliging him to stand for a long time, might possibly have been some relationship to the arthritis.

CASE II. A. A., female, aged twenty-one years, complained of pain in the vertebrae and lumbar muscles, likewise in the sacroiliac joint for some weeks before coming under observation. Before entering the hospital she had been treated for lumbago unsuccessfully with aspirin and salicylates.

When she presented herself at the hospital she was bent and unable to straighten the spine. The lumbar region was painful on pressure, likewise the sacroiliac joint. Sharp pain was complained of even while the patient was at rest. There were distinct gonorrheal antecedents. White or yellowish green vaginal discharge soiling the linen; burning pain at micturition. The lumbar pain had been preceded by slight pain in the right knee. Permanganate vaginal irrigations were ordered and an injection of ten c. c. of Dopter's serum was given October 12, 1914, in the subcutaneous cellular tissue of the left buttock. No painful reaction. Temperature rose to 38° C. From the very next day the patient felt better, suffering much less, and the day following she thought that she could move a little. October 20th, a second injection of ten c. c. was given, without any reaction. This time the serum was injected into the painful region. The temperature reached only 37.5° C. Improvement continued; the patient could straighten the spine and took a few steps. October 26th, a third injection in the flank. The movements of flexion and straightening the spine were now easy and painless. The patient was discharged October 30th.

CASE III. N., aged twenty-eight years. Gonorrhea appeared one month ago. The patient still had a free discharge from urethra. On March 1, 1913, he experienced a very sharp pain in the left wrist. Three days later, the metatarsophalangeal joint of the right great toe became involved and the patient entered hospital. Examination of the radiocarpal joint showed an absence of fluid, but the periarticular tissue was infiltrated by a hard edema, the skin was red and hot, the synovial sac was of the flexor tendons thickened.

March 5th, first injection of twenty c. c. serum Dopter in the flank. After a few hours, the pain was distinctly less, but recurred the following night. Therefore, another injection of ten c. c. was given the next day. Again there was improvement for a few hours. March 8th, a third injection of ten c. c. This time the result was more than satisfactory. The pain vanished in a few days, likewise the swelling. Moving the joint provoked only a little discomfort, and the pain on pressure over the tendon sheaths only remained. As he was so greatly relieved, the patient left the hospital on March 12th.

CASE IV. A., female, aged seventeen years, entered hospital April 7, 1913, with an arthritis of the left wrist, which had appeared March 17th, preceded by fever and sweating. The pain was at first not spontaneous, occurring only when movements of the joint were made. The patient had had a gonococcal vaginitis since the month of February. First treated at home without result, she entered the hospital April 7th. Examination of the dorsal aspect of the hand and forearm revealed a tumefaction from the finger roots to the lower third of the forearm. The edema, limited to the dorsal aspect, was massive, soft, and rosy. The hand was in semiflexion. Palpation over the radiocarpal line was painful on both sides, likewise over the radial and ulnar sheaths. There was an elevation of temperature in the edematous region. No enlargement of the axillary lymph nodes.

The fixity and characters of the process, with a history of gonorrhea, caused us to make a diagnosis of gonorrheal arthritis. April 9th, first injection of ten c. c. of Dopter's serum. The next day, there was a slight amelioration; the edema seemed to have decreased. April 12th, second injection of twenty c. c. The edema continued to regress,

likewise the pain. April 19th, third injection of twenty c. c. The following day, the edema had disappeared. A pruriginous eruption, quite intense in character, appeared on the limbs. The pain, although greatly lessened, was still evident, so that on April 22d a plaster cast was applied to the wrist, with a dorsal window. April 27th, palpation through the window in the cast caused only a dull pain. The cast was removed and the joint, although still limited in movement, was sufficiently painless so that massage could be begun.

CASE V. H., aged eighteen years, gonorrhea at the beginning of September. Early in October, the patient was suddenly taken with pain in both knees, which soon became localized in the left. A hydrarthrosis of considerable size slowly developed. The patient entered the hospital October 8, 1913. The knee was enormous, in semiflexion, and very painful. October 10th, first injection of ten c. c. serum subcutaneously in the knee. Some days later, a serious urticaria began and lasted five days; it remained limited to the thigh on the side of the injection. Temperature 39° C. on following two days. No improvement. October 16th, second injection of ten c. c. in the buttock. Temperature 39.3° C. after injection; hydrarthrosis stationary. October 23d, third injection of ten c. c. in flank. Temperature 39.3° C. and then, as before, descent by lysis. This time the injection was painful. None of the symptoms improved; the leg became more flexed, so that it was straightened and placed on a splint, and the serum treatment was stopped.

In these five cases representing various types of gonococcal arthritis, improvement followed by recovery took place. Only one unsuccessful result is noted, that in the case of monoarthritis of the knee with hydrarthrosis. Here it might have been wiser to follow the teachings of the Anglo-American school, particularly of Cumston, or performed an arthrotomy as he strongly advises. As this writer has pointed out, antimeningococcal serum has little if any action on gonorrheal monoarthritis with a large fluid collection. This is also the opinion of Florand. In fact, no case of hydrarthrosis treated in the latter's service by this method has ever given any favorable results, and he advises the use of auto-serotherapy.

The real indications for antimeningococcal serotherapy are those generalized polyarticular forms, when several joints are involved at the same time, but with moderate local inflammatory phenomena, without a fluid collection, and accompanied by a febrile state.

In these cases, after the first injection, manifest improvement is noted and occasionally, after a slight recrudescence, the severe pain ceases the following day. I should add that, quite naturally, the recent acute forms are much more readily influenced than the chronic types. In the latter, the number of injections necessary are much greater and are useless if we are dealing with serious anatomical lesions of the capsule or articular cartilages. These lesions are irremediable and serotherapy will not prevent ankylosis. These are rare cases, and it is an easy matter to avoid the consequences by treating the gonococcal arthritis as soon as it presents itself. This application is both simple and easy and does not merit the reproach made to other serums and vaccines on account of their delicate preparation.

Lastly, this is an absolutely harmless treatment apart from some slight accidents, which may possibly be avoided by the administration of calcium chloride.

In a future paper, which is now in preparation, I shall record my experiences with Wright's method, namely, the antigenococcal vaccines.

ADDISON'S DISEASE OF SYPHILITIC ORIGIN.

Report of a Case,

By PHILLIP M. SCHAFFNER, M. D.,

New York,

AND TASKER HOWARD, M. D.,

New York.

(From the Polhemus Memorial Clinic.)

That syphilitic involvement of the suprarenal glands is of rare occurrence is shown by the scant reference to the subject in textbooks on syphilis. A search through twelve such works discloses the fact that nine make no mention of it whatever, two (Sacaze and Gordon) state that it may occur, and one (R. W. Taylor) reports two cases. Both of these terminated fatally, and on autopsy showed connective tissue overgrowth and gummatous infiltration.

Fordyce in his masterly review of the pathology of syphilis (*New York State Journal of Medicine*, November, 1915), states that amyloid degeneration is not uncommon, and that interstitial changes, as well as diffuse or focal gummatous inflammation, may occur. He presents a case of gumma of the suprarenal from a patient who had suffered the symptoms of Addison's disease, and also quotes Jacquet and Sezary, who reported the case of "a syphilitic patient with signs of Addison's disease which yielded to specific treatment. Two months later, the man died from cerebral hemorrhage. The suprarenals were found enlarged and fibroid and contained spirochaetae."

CASE. The patient whose history is here presented is a motorman, aged thirty-eight years, married, born in Finland. His parents lived to old age and he had three brothers and two sisters living and well. A brother died in infancy. There was little in his past history, except yellow fever twenty years ago, contracted in the West Indies, and an attack of gonorrhea at about the same period. One year ago, he had what was called an attack of grippé, characterized by sore throat, fever, and chills. He was in bed but little, but was at home for two weeks. Four years ago, he had a generalized skin eruption which itched. He did not know that he had had syphilis.

The present trouble began in September, 1914, with a loose cough, there being abundant expectoration, but no blood. A month later, he had a short period, lasting two days, of vomiting everything he ate. Since that time there had been no digestive disturbance, except an occasional attack of mild intestinal cramps, to which he has been subject for about four years. About December 1st he began to suffer from a sensation of numbness in his hands and feet. This had been his most constant and troublesome symptom. Shortly after this, he noticed that his skin was becoming darker. Up to the middle of January, 1915, he had lost twenty-three pounds in weight and had become very weak. He had had a few night sweats.

Examination, January 16, 1915, showed a moderately well nourished man. The most striking feature was a well marked general pigmentation, particularly noticeable on the forehead, neck, axilla, antecubital, inguinal and popliteal fossae, and the waist line. There were a number of small patches of brown staining on the inner surface of the cheeks. The pupils were equal and reacted to light. There were palpable glands along the edge of the trapezius in the neck, and in the axilla and groins. The lungs showed signs suggesting tuberculous infection of both apices, slight impairment of resonance, tendency to bronchovesicular breath sounds, and crepitant rales after coughing.

The heart was normal in outline, but the tone was poor, all sounds being weak. The blood pressure was 98 systolic and 80 diastolic.

The abdomen showed no tenderness or masses. The liver and spleen could not be felt. The knee jerks reacted about

normally. The temperature was 97.4° F., the pulse 104, the respirations 26.

The urine (February 1, 1915) showed a specific gravity of 1.012, and contained no albumin or sugar, but many small hyaline casts were seen microscopically. The hemoglobin was ninety per cent., the leucocytes 12,500, the erythrocytes 4,328,000. A differential count showed 83.66 polymorphonuclears, 6.33 per cent. large mononuclears, seven per cent. lymphocytes, 2.66 per cent. eosinophiles, 1.33 per cent. mast cells (300 counted). The sputum was mucopurulent and contained many pus cells and cocci, but no tubercle bacilli. A Wassermann taken early in January was double plus. A von Pirquet was mildly positive.

TREATMENT.

The patient was immediately placed upon antisyphilitic treatment, consisting of a course of four injections of salvarsan, beginning with 0.5 gram, and intramuscular injections of mercury salicylate, at first one half grain, working up to two grains given weekly. This was continued until September 1st, thirty injections being given. A Wassermann, taken October 18th, was negative.

The patient responded immediately to the specific treatment and improved steadily. He returned to work in the summer of 1915, and when examined in November his condition was as follows: He still notices a slight tingling in his hands and feet, particularly in damp weather. His general strength is good and he has no digestive disturbances. He does not cough, but raises more or less mucus, which seems to come from below the larynx. Four examinations of this have failed to demonstrate tubercle bacilli.

He has gained eighteen pounds in weight, and his wife states that his color is lighter than she has ever known it to be.

Examination: Temperature is 98° F., pulse 88, weight 189 pounds. Color not exceptional, but seems rather darker than his blond hair would lead one to expect. It is slightly darker on the face, on one small spot on the chest, and in the folds of the arms and legs. There are a few small spots of pigmentation on the inner side of the right cheek. The changes originally noted in the lungs still persist. The heart tone has improved, and the blood pressure is 138 systolic and 95 diastolic.

The blood picture a little later was as follows: Hemoglobin, eighty-eight per cent.; white cells, 7,200; red cells, 5,472,000; differential count, polymorphonuclear sixty-eight per cent., large mononuclear seven per cent., lymphocytes twenty-four per cent., mast cells one per cent. The urine was 1.023, no albumin, sugar, or casts.

Throughout the following winter he was given desiccated suprarenal gland in doses of one to three grains, three times a day. It will be noted that this was not used until the symptoms of Addison's disease had practically disappeared under antisyphilitic treatment. There was a slight further improvement in the tingling of the extremities. By February 17th, the pigmentation had disappeared over the axillæ, groins, and antecubital fossæ. His face and abdomen were slightly darker than the rest of his body, but, according to the patient's statement, were lighter than before he was sick. The spot on the chest was smaller and fading, and the mouth showed only a few streaks of pigment on the inner side of the right cheek.

The signs persist in his apices and, we believe,

represent a tuberculous process, in spite of his afebrile course and repeated failures to demonstrate the tubercle bacilli.

Obviously it is not supposed that the patient has been cured of his syphilis in this short period. He will be kept under observation, serologically and clinically, and given further specific treatment if necessary. The case clearly demonstrates, however, a syphilitic suprarenal lesion—syphilitic Addison's disease—vastly improved by antisyphilitic treatment.

849 PARK PLACE, BROOKLYN.

THE CURATELLE AND MODERN PSYCHIATRY.

A Critical Review, with Suggestions for Reform,
(Continued from page 980.)

By GEORGE W. JACOBY, M. D.,
New York.

When we say the person to be placed under curatelle must be incapable of transacting his affairs, we must understand "affairs" in its broadest sense and not by any means limit the word to transactions relating to property rights. The patient, for example, may be placed under curatelle because he is unable to transact his financial affairs properly, or because he is unable to manage his household, or because he cannot carry on his profession or trade. It is not sufficient, however, that he be unable, in consequence of disease, to carry on certain branches or parts of his affairs, while, on the other hand, he is not required to be equal to managing all affairs that devolve upon him; the question is, rather, whether he is incapable or incompetent in any particular which may be decisive for the totality of his personal relations or conditions.

With this explanation, the question which has been raised by certain authors, whether the fact that a citizen is incapable of legally exercising his right to suffrage, should be of any moment in the adjudication of his legal competency or incompetency, is fully answered. There can be no doubt that in such matters thousands of people who are thoroughly healthy mentally, are no better than children, but inasmuch as their social or economic existence is in no way threatened thereby, the question of their protection by means of a curatelle can never arise. On the other hand, it may well be worthy of consideration whether the jeopardizing of one's social position as such—that is, in contradistinction to one's economic or professional position—would not justify an application for a curatelle. It may suffice in this connection to refer to cases of congenital sexual perversion in which people otherwise highly talented are, notwithstanding marked success in public and business life, on account of their pathological perversion, constantly hovering upon the brink of a social abyss into which they at some unguarded moment may be precipitated.

This question becomes particularly complicated in practice through the fact, which we know by experience, that for these unfortunates in general there is only one means of salvation, which is the fortifying of their own self respect. On the other

hand, we know that even the most considerate procedure for the establishment of a curatelle carries with it, at any rate for a time, a marked encroachment upon one's self esteem. If the case is one of urgency, however, this should not deter us from taking the decisive protective step. Left to himself such a patient cannot evade the fate which awaits him, whereas with the institution of a curatelle there is the probability that the humiliation caused by the procedure will in time wear away and the patient, under a wisely determined treatment, will gradually become more self controlled and be able again to take up and carry his own burden in life, notwithstanding his pathological proclivities. Perhaps from a legal point of view the law might be so interpreted as to permit of the institution of a curatelle for such a person, on the ground that his uncontrollable impulses threaten to undermine the very foundation of his existence. The entire question of the relation of the mental condition to business competency can be placed in its proper light only by considering it from two points of view. On the one hand, a person may be competent to transact his affairs notwithstanding the existence of a pronounced psychosis and need therefore not be placed under curatelle, while, on the other hand, a person may be incompetent to transact his affairs, although he be not suffering from any form of actual insanity, and therefore must be placed under curatelle.

Here we are confronted with considerations similar to those which in criminal proceedings have led in certain cases to the acceptance of the idea of a restricted freedom of the will and restricted responsibility. Responsibility varies in accordance with a person's natural disposition, his recognition of right and wrong, and the power of self control which his training has given him. This holds true especially for states that occupy the borderline between health and disease. While in a manifestly insane person freedom of the will is entirely lacking, and in a psychically healthy individual the existence of complete freedom of the will and complete responsibility must be assumed to exist, the German law has more recently interposed a mediate stage of restricted responsibility for persons in whom, for instance, self control is wanting in consequence of neglected training, or in whom a moral defect renders self control inoperative, or in whom an inadequate intellectual development has made a recognition of the punishability of an action impossible.

In a similar way the acceptance of the idea of a limited responsibility may be of moment in deciding whether a curatelle should be instituted. This explains why, notwithstanding the existence of insanity, a petition for the appointment of a curator may be denied, and why, on the other hand, it may be granted even when outspoken psychosis does not exist.

Such purely legal questions as relate to the person entitled to make application for the appointment of a curatelle on account of insanity, the standing of the persons to be declared incompetent on account of insanity, and the position which the district attorney occupies in regard to the entire curatelle proceedings, are of no practical interest to the physician

and will not be considered here. A question which is of direct medical interest, however, is whether the law has not provided some *temporary means* for protecting an alleged incompetent during the period that his competency is being considered by the court. It may well be that, after an application for the appointment of a guardian has been made, but before a definite decision can be reached, the court becomes convinced of a danger in delay. This peril may exist if, for instance, the condition of the patient appears to have become suddenly much worse, but the actual means of proof are not at hand; or while the aggravation of the trouble may be evident, it may also be clear that this is of a transitory nature and is due to worry and excitement over the threatened proceedings; or again, the disease may have been recognized as such, very late, by the relatives instituting the proceedings, and they, therefore, have decided only at the last moment to bespeak the intervention of the court; or the patient may try to delay the proceedings by adducing counter proofs, possibly with the aid of all kinds of persons for all manner of reasons. Who can guarantee that under such circumstances this very period of legal non-restraint may not become deleterious for the patient and his relatives?

To some extent, it is true, the law provides effective protection against contingencies of this nature, as, for instance, in the case of a will made by a person before a decision has been rendered in guardianship proceedings pending against him. Such a will becomes invalid if the court's decision upon the application results in the institution of a guardianship.

In the main, however, the existing special provisions of the law relating to curatelle do not furnish adequate protection against the dangers of this unbridged interval. For that reason the law has found it necessary to provide an effective general means of protection for this critical period, which varies in form according to whether we are dealing with persons who have attained their majority or with minors still under parental authority. A person who has attained his majority and in whose interest curatelle proceedings have been instituted may be placed "under temporary guardianship" if the court considers that procedure necessary for the protection of his person or his property. On the other hand, minors who are under parental authority, but for whom no curatelle has been instituted as yet, may receive a guardian if the premises seem to warrant the ultimate institution of a guardianship in consequence of insanity. Thus we see that any possible dangers of the interval are well provided for, and that the patient, during the time between the application for the institution of a guardianship and the rendering of a decision, can be restricted in his rights both of property and personal control, and may, in case of necessity, be transferred to an institution for care and protection. The temporary guardianship comes to an end with the settlement of the curatelle proceeding—that is, with a withdrawal or legal denial of the application, or with the institution of the curatelle and the appointment of the guardian under the curatelle.

When the curatelle proceeding has been brought before the court, it is the duty of the tribunal to un-

dertake an investigation of the mental condition of the person for whom the curatelle is desired, basing its inquiry on the evidence and facts enumerated in the petition. First, however, the supposed incompetent must be given opportunity to adduce facts which he may consider of importance in opposition to the application. Witnesses or experts are subpoenaed and examined by the court and, in such a procedure, they are under the same obligation to appear and to testify as in all civil actions at law. Whatever the testimony, a decision cannot be given until the subject of the inquiry has appeared in person and has been examined *in the presence and with the aid of one or more experts*, even if coercive measures must be employed to bring about this examination.

An exception to the rule requiring personal interrogation can be made only if the examination is attended with unusual difficulty—if, for instance, the patient is maniacal or if his health is endangered, as might be the case if the examination was likely to excite and anger him unduly. But the law has determined as an absolute and unavoidable final requisite for the institution of a curatelle that the court hear one or more experts in regard to the mental state of the subject of the inquiry. This provision becomes effective only if the court, on considering the original facts, is willing that a guardian be appointed, but not in case the court decides to refuse such an appointment. As expert, the court may hear any psychiatrist, whether he has a government position or not.

In certain cases the experts, notwithstanding a careful examination of all the evidence, will not be able to give a conclusive opinion until after a prolonged observation of the subject of the inquiry. A painstaking observation in an asylum becomes necessary, not only for the purpose of determining whether the person is sane or insane, but also in order to be able to ascertain whether the form of insanity, if any exists, is acute and transitory or chronic and permanent, as well as to disclose any dissimulation of insanity that may be attempted in order to escape the threatened measure of guardianship. In such cases the court may—but only with the consent of the applicant for the curatelle—order the patient transferred for observation to some institution or asylum. Because such confinement will have a marked influence upon the future of the patient, it can be carried out only under certain further restrictions—above all, it can be undertaken only if it will not prejudice the state of health of the person in question. The imminence of this danger in the case of emotional, sensitive individuals cannot be disregarded.

That a transfer to an asylum can be effected only with the acquiescence of the applicant for the guardianship, has already been stated. It can easily be shown that this restriction has been made for very good reasons. Leaving aside entirely the fact that the proponent must under certain circumstances bear the costs of the entire procedure, which would then be materially increased by the expense of care in an institution, we may well imagine a case in which the applicant, perhaps the father, would fear the undesirable notoriety that might result from such a step and would therefore rather avoid it than

expose the person who is to be placed under guardianship or his family to social detriment. A consideration of that sort, of course, should merit no attention. Nor must we forget that in case of necessity, the district attorney may be the one to propose the establishment of a curatelle, and he, when confronted with a proposal for institutional observation, would consider only the true interest of the patient and not the exaggerated fear of social humiliation.

Finally, the decision for transfer to an institution must contain a statement of the length of time the internment should last, the longest permissible period of confinement for the purpose of observation being six weeks.

Before such internment can be decided upon, the relatives and others who are responsible for the care of the person to be interned, as well as the district attorney, are to be heard. When the decision for a transfer to an institution for the purpose of observation has been reached, a notice of the decree is to be served upon the person to be placed under guardianship and upon the legal representative in charge of his person, if such there be. The decision, however, is not final, for either the person to be placed under guardianship or his legal representative may, within two weeks, appeal to a higher court. The court, in the choice of an institution, is bound only by its own conception of what is proper, and may therefore designate either a public asylum or a private sanatorium. When the proceedings, which are not public, have reached a state at which in the opinion of the court sufficient testimony has been presented, the decision is given. In arriving at the decision, the court is required solely to rely on its own judicial convictions. It is the court's province to weigh the trustworthiness of the witnesses and to consider whether the expert opinions are conclusive. It is in no way bound by the suggestions of any medical authority, no matter how universally acknowledged or how renowned. Hence the court may reach a conclusion entirely at variance with all expert opinions.

The psychiatric expert, however, should concern himself solely with the medical aspect of the problem. The physician's task is an exclusively medical one, viz., that of rendering an opinion in regard to the subject's mental health. He is neither judge nor prosecutor. His interest should not be bound up with either party to the proceedings. He should be solely an exponent of scientific truths, regardless whether his expert opinion influences judge or jury one way or the other.

In a curatelle proceeding the degree of the medical expert's responsibility is no less than it is in an investigation regarding the sanity or insanity of a person who has committed a crime. While the latter, however, as a rule will endeavor to appear insane and will find public sympathy opposed to him, the opposite is true of a person against whom guardianship proceedings are pending. The fact that insanity, guardianships, and asylums are currently regarded in a manner that is prejudicial to the true interest of the person whose sanity is questioned, renders the task of the psychiatric expert difficult and perplexing. The public, and this includes the friends and family of the person to be placed under

curatelle, ordinarily will not believe that psychic disorder is a misfortune and not a disgrace, that insane asylums are hospitals and not prisons, and that a curatelle, possibly involving detention in a sanatorium, is essentially a protective measure that is really taken in the interest of the patient, his family, and the community in general. The friends or relatives are likely to oppose the establishment of a curatelle and to consider it a brutal demonstration of power, overlooking the danger of permitting the person against whom the proceedings have been instituted to remain in full possession of his legal rights of action. To give but a single illustration of this danger—he may be suffered to appear as a witness in court and make statements that he himself considers true, but which in reality are but the product of his sense deceptions. The less pronounced the existing psychic defect, and the less noticeable and recognizable it may be, the greater will be the prejudice of the public against any so called invasion of the patient's rights. The psychiatrist, however, must follow the lines which science has mapped out, whether his statements have any influence upon the public or not. While it is the duty of the court to examine and to give its most serious consideration to all the testimony adduced, expert opinion forms only a part of such testimony and consequently may be entirely ineffective.

The court, in reaching a decision, has only the alternatives, to refuse the guardianship or to grant it. If the guardianship is refused the decision is to be officially communicated to the proponent, the district attorney, and to the person for whom the curatelle has been sought. The right of appeal against the decision exists for the proponent and for the district attorney for a period of two weeks. In case of appeal, a decision is obtained from a higher court, and then the right of appeal to a still higher tribunal may be invoked.

If, on the other hand, the curatelle is decreed, notice of the decision need not be given to the person placed under guardianship, but must be served officially upon the proponent, upon the district attorney, and furthermore, if the sufferer is still under parental authority, upon the legal representative in charge of his person. Finally, the decision must be placed before the court of chancery.

As a direct result of this decision, the person placed under curatelle receives a guardian whose province it is to represent him legally and to care in all ways for his person and his property. The appointment of the guardian is made officially by the court of chancery. Henceforth the person placed under curatelle occupies in the eyes of the law, a position equivalent to that of a child under seven years of age. But does the decision instituting a guardianship settle the entire matter? Must the person who has been declared incompetent acquiesce in every way and consider the curatelle an inalterable fact? By no means. The decision may, before the lapse of one month, be opposed in the form of a suit brought according to ordinary process of law. It is not my province here to follow from one court to another the various appeals which are permissible and which protect the rights of the individual in every detail. Once the curatelle has been legally established, however, the family or the person responsible for the well being of the declared

incompetent, may in all leisure inaugurate and carry out the measures necessary for his care and treatment, as well as for a proper regulation of his affairs.

It is evident that the plans for the care of the person of the declared incompetent must be governed above all by the desire to effect a cure or an improvement of the patient's condition and, therefore, it is also clear that from beginning to end the expert advice of a specialist is indispensable. In this dissertation, dealing specifically with the question of curatelle, we cannot devote any space to a consideration of the proper sanitary or medical care of the insane.

But we must consider the question what to do, if after institution of the curatelle actual recovery, or at any rate a marked improvement takes place, or if one of the persons in authority alleges, justly or unjustly, that such improvement has taken place. A change in the legal status of the incompetent can occur only if the court sets aside the curatelle. The decision to annul a guardianship can be the result only of a formal application for its termination, and the applicant may be the restricted person himself, his legal representative, or the district attorney. The procedure for annulment corresponds in its details to that for the institution of the curatelle. The application will be granted only if the proof submitted convinces the court that the reason for the existence of the guardianship has disappeared—that is, that the mental condition of the declared incompetent has improved to such an extent that he is again capable of transacting his own affairs. A merely transitory change for the better does not suffice—the improvement must be such as in all probability will be permanent. Therefore, it is by no means possible for the originally successful applicant for the institution of a curatelle arbitrarily to have it annulled simply by filing the appropriate application, and any endeavor on his part to terminate it will be futile if he cannot furnish proof that the mental state of the patient has improved sufficiently to enable him to manage his affairs. In case either of the court's granting or refusal of the application for annulment, procedures become operative which correspond in every way to those which obtained after the application for the appointment of the guardian had been approved or denied.

2. *Curatelle on account of feeble-mindedness.* The foregoing designation for this form of curatelle, though officially used, is misleading, inasmuch as it by no means corresponds with the idea which it intends to convey. The premise for a curatelle on account of feeble-mindedness is not at all feeble-mindedness in its technical medical sense, this class of guardianship being governed essentially by considerations based on the requirements of practical life. Nowhere do we find the law specifically making this distinction, but it is an unavoidable deduction from a study of the entire system of the law of curatelle. This must already have become evident from what we have said regarding the curatelle on account of insanity, where we pointed out that a person who is unable as a result of insanity to manage his affairs can be placed under curatelle. In this instance the term "insanity" is used to embrace the entire array of mental afflictions, not excepting feeble-mindedness in its strict medical sense,

but without any consideration whatever for the manner of causation of the trouble or for any special form of mental defect. What alone is decisive in the eye of the law is the fact that the person suffering from a mental defect is unable properly to manage his affairs, and that at the same time, in order to afford adequate care and protection, it is necessary to place the incompetent upon a par with a child *less* than seven years of age. It may well happen, however, in accordance with the nature, intensity, and course of the disease, and the pecuniary, occupational, and other social condition of the patient, that sufficient care and protection will result through treating the patient as a minor *more* than seven years of age.

For the latter class of cases the curatelle on account of feeble-mindedness has been established, because in no event should a person's freedom of action be more restricted than the necessities of the particular case may require. In other words, whether a curatelle should be enforced on account of insanity or on account of feeble-mindedness depends not upon the nature and degree of the mental defect, but upon the question whether adequate protection is obtained through enforcing the legal status of a minor *more*, or one *less* than seven years of age.

Whether a curatelle on account of insanity, or one on account of feeble-mindedness, is indicated cannot always be determined until after the termination of the broad and thorough inquiry which can be conducted only by a legal body, with its unrestricted means of inquisition. The law, in always speaking of both forms of curatelle under one heading and referring to the incompetent as one who in consequence of *insanity or feeble-mindedness* is unable to manage his affairs, takes ample cognizance of this difficulty.

It may therefore well be that an application for a curatelle on account of insanity may result in a decision for a curatelle on account of feeble-mindedness only, and, *vice versa*, an application for a curatelle because of feeble-mindedness may result in a curatelle on account of insanity. It is not in the power of the applicant to alter this in any way, and for this reason he need not specifically demand the one or the other, but may in a general way ask for a curatelle "on account of insanity or feeble-mindedness."

The procedure for the establishment of a curatelle on account of feeble-mindedness and those for appeal and annulment are, with but slight differences, the same as those for insanity. Through the curatelle on account of feeble-mindedness, as we have said, the incompetent is placed upon the same plane as a minor of more than seven years of age. The curatelle on account of feeble-mindedness, like that on account of insanity, may be annulled when the cause for its existence no longer obtains; i. e., when the incompetent has so far improved as to be able again to manage his affairs. But what if a patient has been legally declared incompetent on account of feeble-mindedness, and subsequent events show the curatelle on account of feeble-mindedness to be insufficient to meet the object sought? Such may well be the case if conditions for one reason or another have been misunderstood, if a patient's

mental state has changed, or if his responsibilities have materially altered. Thus a patient having some simple occupation or social relation which he was perfectly able to master, may through inheritance, be forced into a higher and more complicated one. In such an instance nothing would preclude a curatelle on account of feeble-mindedness being changed, of course upon application, into a curatelle for insanity. Similarly, of course, the curatelle for insanity may be replaced by a curatelle on account of feeble-mindedness, if material conditions change or a lasting amelioration but not complete recovery takes place.

3. *Curatelle on account of improvidence.* "He may be placed under curatelle who in consequence of improvidence, places himself or his family in danger of want." The law in giving this definition, very wisely does not state what we are to understand by improvidence, but leaves this determination entirely to science and experience. These teach us that extravagance is a wasteful management of economic values; an offering of goods without a justifiable ethical or economic purpose. He who occasionally indulges in certain wasteful or extravagant acts is not, for that reason alone, a spendthrift. Nor does the law take into account single acts of that nature. Instead, it is concerned only with extravagance which is dependent upon a confirmed propensity, such as is looked upon in general as a vice. In the majority of cases where this propensity is noted, even the layman in medical matters will suspect disturbed mental equilibrium, while expert observation will almost without exception recognize the symptom to be one of a train that identifies the entire trouble as a form of mental disorder. Very often extravagance is a dominant trait of congenital feeble-mindedness. Consequently, if in the individual case it is possible to demonstrate the existence of a psychic disorder which prevents the patient from managing his affairs, it will be easy, either on the ground of insanity or of feeble-mindedness, to obtain a curatelle that will protect the incompetent and his family against the results of his extravagance. But if such protection is the sole object, a curatelle on the ground of insanity or feeble-mindedness is not essential; for according to the law, extravagance in itself, without relation to the underlying causes, is under certain premises a ground for curatelle.

Extravagance manifests itself in the most varied ways. Many unfortunate spendthrifts having no regard for values, figuratively hurl their money out of the window to satisfy their egotistic whims. One has an ambition to be the owner of a stable of full blooded race horses, another would shine as a book-lover or collector of antiques, and still another dissipates his fortune in the gratification of his sensual desires. In many cases, however, improvidence results from altruistic, not egotistic motives. A spendthrift thus inspired uses his money, not for himself but for others. He surrounds his family with inordinate luxuries, is extravagantly charitable and obliging; in all his gifts and "loans" he manifests a weakness of will that leads to excesses in which the gratification at the good he believes himself to be doing outweighs all self control and precludes all realization of his impending financial ruin.

(To be concluded.)

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

THE DIETETIC MANAGEMENT OF DIABETES MELLITUS.

By L. F. RUSCHHAUPT, B. Sc., M. D.,

Milwaukee,

Assistant Professor of Medicine, Medical Department, Marquette University.

Much has been written lately about diabetes mellitus, and unquestionably much that is valuable has been added to our knowledge of the rational treatment of this condition. Still, the correct treatment after all is the treatment which is correct from the dietetic standpoint. Whether it is the loss of sugar, the hyperglycemia, or the glycosuria, that is dangerous to the patient, whether the cases are mild, moderate, or decidedly severe, all require dietetic management. Dietetics in this condition is rational only when it is based on the caloric calculation of the diet. We wish to eliminate carbohydrates and substitute other foodstuffs in isodynamic ratio, but by no means should we give any kind of food in unlimited amount. The necessity of the use of energy values in our calculations should be apparent.

I feel confident that the failure of many practitioners to make use in diabetes of the method of feeding based on bodily energy requirements, is due to the fact, on the one hand, that they are not accustomed to the use of the decimal system of weights and measures, and on the other that they believe the method more complicated than it is. The first difficulty is one easily overcome and then the method is simple.

In proceeding with the dietetic management of the patient, it is necessary first to determine his weight in kgm. (one kgm. equals 2.2 pounds). This may be done directly, or if the patient is over or under weight, by measuring his height and consulting a suitable table. In estimating the energy requirement of the individual, the weight so obtained is multiplied by the bodily energy requirement, expressed in calories, per kilo of body weight, per diem. Ruebner has estimated that a man doing light work requires food yielding thirty-five calories of heat per kilo of weight a day, one doing moderate work forty calories, while one doing exhausting work needs forty-five to fifty calories to maintain body weight; in the cold seasons these figures may be augmented by five calories. Women in general have requirements equal from four fifths to five sixths those of men. Having a man, then, weighing seventy kilos and doing office work, he will need 2,450 calories of energy a day in foodstuffs.

It is further essential that we have a knowledge of the protein, carbohydrate, and fat content of the more ordinary foodstuffs. These are not numerous and consequently we shall not have many figures to keep in mind. They include bread, medium fat meat, milk, cream, butter, cheese, eggs, olive oil, and other fats.

The following table gives their composition:

	Protein, per cent.	Carbohydrates, per cent.	Fat, per cent.
Meats, medium fat.....	20	0	5
Bread.....	7	55	1
Milk.....	3.5	4.5	3
Cream.....	3.5	3.5	30
Cheese (ordinary).....	25	0	25
Butter.....	0	0	85
Eggs (one egg weighs about 50 grams).....	12	0	12
(olive oil or other vegetable and animal oil or fat).....	0	0	100

In addition to a knowledge of the composition of these foods, we should be familiar with substances which contain very little sugar producing carbohydrates, such as lettuce, spinach, cresses, celery, tomatoes, etc., and which help in making a diet more agreeable. Likewise those substances should be known which are rich in starch, dextrin, sugar, etc., and which are either to be restricted or avoided altogether. The dietetic rule should be, to cut down on the sugar producing carbohydrates (and if necessary in severe diabetes the proteins also), so that the patient becomes sugar free. We should not often remove all the carbohydrate from a diet for a diabetic, for this is absolutely unnecessary in the milder cases and usually unnecessary in the severer forms, where in fact such a procedure may be dangerous in the presence of an acidosis. If it is necessary to remove all the carbohydrates from a diet, it should be done only temporarily, until the tolerance has been raised, when they should be cautiously added.

To begin with, unless the case is apparently mild and only some restriction is necessary, it is advisable to write out a diet for a few days which still contains a fair amount of saccharifiable carbohydrates and study the sugar excretion for twenty-four hours. Then we may eliminate carbohydrates, i. e., starch, lactose, etc., until the patient is sugar free. We proceed best by writing in a column all the essentials of the diet with the quantities in grams, and the corresponding amounts, likewise in grams, of protein, carbohydrates, and fats, in separate columns. Then we add together the totals for the proteins and carbohydrates, which we multiply by 4.1, the number of calories given by one gram of either (they being isodynamic, weight for weight). The total number of grams of fats is multiplied by 9.2, the calorific effect of one gram of the fats. The sum total gives the caloric efficiency of the diet. If it is either too high or too low in calories, we subtract or add to the meat, butter, eggs, milk, or cream.¹

The following scheme will serve as an illustration. Supposing we have a man weighing sixty kilograms and doing light work, he will need each day 60 by 35 equals 2,100 calories of energy in the food. If he excretes five per cent. of sugar in the urine, which totalizes about 3,500 c. c., equal to 175 grams

¹It ought not to need mention that the patient must weigh and measure out his food or have this done for him. This is especially important in the beginning of the treatment. Later on he becomes so expert in estimating weights that it will be necessary only occasionally to do so, thereby maintaining his accuracy of judgment.

of sugar, we might prescribe, to begin with, the following diet:

	Quantity in grams a day.	Protein.	Fat.	Carbo- hydrates.
Medium fat meat.....	300	60	15	
Bread (wheat).....	100	7		55
Eggs.....	3	18	18	
Butter.....	40		34	
Cheese.....	100	15	15	
Milk.....	300 C. C.	10.5	9	13.5
(Cream.....	150 C. C.	5.25	45	5.25
Vegetables plus five per cent. fat or oil.....	200 grams		10	
		115.75	146	73.75

Adding the totals for the proteins and the carbohydrates together and multiplying by 4.1 calories, and multiplying the grams fat by 9.2 calories, the total number of calories is equal to 2,120.2, which is close to the required amount, so that it is not necessary to make a change for the energy effect. In the foregoing diet the man is receiving 73.75 grams of carbohydrate. If he is still excreting sixty grams of sugar on this, we should have to cut down on the sugar-containing and sugar-forming materials, i. e., bread and milk, but usually sixty grams of sugar need not be removed; a corresponding amount of meat and butter will have to be added. Thus if we cut down the bread to fifty grams, equal to 27.5 grams of sugar, in a few days we may have only a mild glycosuria left, which a withdrawal of another ten grams of bread and 100 grams of milk might remove entirely. After the patient has been aglycosuric for a few weeks, we may begin to increase the carbohydrates of his diet, for his tolerance will have been raised. Then we may add 100 grams of milk to his diet, which, if all is well, may be augmented, after three or four days, by ten to fifteen grams of bread, preferably at the same time withdrawing the 100 grams of milk for three or four days. Three to four days later still after this period, 100 grams of milk may be added, and three days later, again ten grams of bread, etc., until the limit of his tolerance has been reached. It is true, many cases will not be quite so amenable to dietetic treatment, but the foregoing is a good guide.

During all this time the urine should be examined for acetone and diacetic acid, and, in case acidosis is indicated by their presence, alkalis should be administered; or if the diacetic acid reaction becomes more intense, or the patient seems to be suffering from its effect, milk should be added for its carbohydrate content to the diet, in 100 to 150 c. c. amounts a day. If acidosis persists, at least seventy to eighty grams of carbohydrates should be left in the diet. Carbohydrates act as kindlers for the other foodstuffs, and their too rapid removal is often poorly borne. Even when we watch acidosis expectantly, if there are no untoward symptoms, the urine may become clear in one or two weeks, when the danger is over.

In conclusion, I wish to emphasize again that it is important to know the substances, poor in sugar-forming carbohydrates and energy value, which make a diet more agreeable and permit us to administer oils and fats. They are lettuce, spinach, cresses, and the leaves of other plants, likewise tomatoes, celery leaves, asparagus, mushrooms, cucumbers, etc. Oranges and most of the berries of the season have a beneficial effect on the digestion, and

on account of their low sugar content are also allowable in moderation. After the permissible amount of sugar of the diet has been decided upon, the diet may be varied in its noncarbohydrate constituents to suit the patient. For this, suitable tables must be consulted and the amounts of fat and proteins in various materials noted.

622 CASWELL BLOCK.

Pellagra Prevention: Spring Diet Determines Summer Symptoms.—A faulty or restricted diet at this season of the year is the chief factor in the production of pellagra. Measures to prevent the development of the disease should be instituted during the early spring months, according to a circular of information issued by the United States Public Health Service. While the manifestations of pellagra are in most cases not in evidence until June or July, the condition invariably dates from a faulty diet of earlier months. Therefore, if due precautions are exercised by individuals at the present time the havoc wrought by this scourge may be greatly lessened, if not entirely eliminated.

Danger signals.—The report further calls attention to certain danger signals which should be recognized by those who reside in pellagrous districts or those who have had previous attacks of the disease. Among such warning symptoms are extreme nervousness or change in the mental characteristics of the individual. Weakness or debility, a disinclination to undertake the ordinary daily tasks, and unexplained digestive symptoms may all be premonitory signs. These symptoms do not, of course, necessarily mean the development of pellagra, but taken in connection with the history of a one sided, monotonous diet, they serve as a definite warning of the possibilities of its onset.

Spring diet.—The diet recommended by the health service for the prevention of pellagra will not produce results if followed for a week or ten days only, but if used continuously and consistently under circumstances similar to its administration in the various institutions where the experimental tests have been performed, it will protect the individual against the development of the disease. Necessarily, a rigid unvaried diet is wholly undesirable and the menu recommended is only to indicate in a general way the character of the food to be prescribed. Frequently the element of poverty, inaccessibility to market supplies, or even personal idiosyncrasy, may require some modification of the diet table, so that strict adherence to its components may not in all respects be practicable. The object of the diet as submitted is to minimize the consumption of the carbohydrate foods and to increase the amount of fresh animal protein and of fresh legumes.

The breakfast, for example, should consist of oatmeal and cream, without sugar, with either ham or breakfast bacon and two eggs. Not more than two thin slices of whole wheat bread should be taken, preferably untoasted. Hot bread or biscuits are inadvisable. A glass of fresh milk is to accompany the breakfast and either oranges or grapefruit may

be the initial course. The dinner should consist of either pea or bean soup, prepared from dried peas or beans, with a meat stock. The meat may be beef, pork, ham, chicken, veal, or mutton, prepared in whatever manner is the most appetizing, preference being given to roasting or broiling rather than frying. Hamburger steak, meat hash, or fish may be substituted to afford variety. Care should be exercised that the meats are not overdone. Of vegetables, Irish potatoes, boiled in the jacket or baked, cabbage, turnip or mustard greens, collards, and lettuce, are to be recommended. For dessert, stewed, fresh, or dried fruit will prove sufficient. The dinner should be accompanied by not more than two thin slices of whole wheat bread and a glass of buttermilk. The supper should consist of pork and beans, or baked beans, properly seasoned, the usual amount of bread, and a glass of buttermilk. If preferred, eggs, scrambled or otherwise prepared, may be substituted for the more substantial ingredient of the meal.

Diet cheap and ample.—A diet such as the foregoing is not prohibitive as to cost, at least to but few of the residents of the country, affords a sufficient number of heat units, if taken in reasonable quantity, and will prevent effectually the development of a disease which alone caused 8,000 deaths in the United States during the past year.

Vitamine solution of the pellagra problem.—Prompted by Goldberger's observations on the relation of pellagra to the diet, Edward Jenner Wood (*Journal A. M. A.*, May 6, 1916) investigated the subject of the milling of corn with regard to the possible influence of this process on the causation of the disease. He cites the experience of Nightingale, who observed an outbreak of zeism in a prison when resort to the use of corn milled by steam was necessary owing to the shortage of the home ground whole grain. With a return to the latter diet the zeism disappeared almost miraculously. Wood found that the modern process of milling of corn by steam removed about thirty per cent. of the weight of the corn in the form of the outer fatty layers, while the homely local water milling removed little other than a few of the particles of the outer husk. The steam process also subjected the corn to the action of considerable heat. Experiments conducted on pigeons by feeding one or the other of these forms of milled corn exclusively were confirmatory of the clinical experiment forced upon Nightingale. The birds receiving the steam milled corn developed symptoms suggestive of pellagra, while those fed water milled corn remained normal and thrived remarkably. Further evidence of the role of steam milled corn was obtained by the observation that pellagra was absent in districts so remote from lines of travel as to have to use home ground corn, although the conditions were otherwise quite as favorable for the development of the disease as in the endemic areas. The evidence is strong for including pellagra among the deficiency diseases, and the deficiency can be definitely ascribed to the process of milling corn. The deterioration of corn also can be included, since it is the outer and germinal portion of the grain which is most subject to these processes.

HOT DISHES FOR SCHOOL CHILDREN.

In the belief that a hot dish at noon, if only a bowl of milk, soup or a cup of good cocoa, is highly important to school children, many schools throughout the country are either supplying a regular hot luncheon to the young people, or are providing a single hot dish with which the children coming from a distance can supplement the cold food in their lunch baskets. In most cases the children bring money with them and buy the dishes at cost price. Those in charge of the lunch room see that nothing hurtful to the children is for sale and direct them in their purchases so that they will not buy merely sweets or pastry.

To assist schools wishing to undertake this desirable activity, either through teachers or groups of cooperating mothers, *Farmers' Bulletin No. 712* (U. S. Department of Agriculture) suggests the following economical and easily prepared bills of fare:

1. Vegetable and milk soup, crackers, rolls, fruit, plain cake.
2. Meat and vegetable stew, bread and butter, sweet chocolate.
3. Boiled custard, lettuce sandwiches, fruit, cookies.
4. Dried codfish chowder, crackers, fruit, maple sugar sandwiches.
5. Bean soup, crackers, baked apple, sponge cake.

In addition the school can serve hot cocoa, cooked fruits, berries, and liquid or other foods which it is difficult to carry in baskets. Almost any school by the use of paper cups can make good milk available to children at noon. The school can also place on sale good simple cookies, zwieback, or crackers supplied from the outside.

Milk could easily be provided through arrangements with parents or nearby farmers and is particularly useful to children in warm weather when it is impracticable for them to bring bottles of milk in their baskets.

It is in the small country schools with only one teacher that the midday meal presents the most difficult problems; with such a teacher the active cooperation of parents is highly important. The simplest equipment includes a large kettle, measuring cup and spoons, paring knife, mixing spoon, dish pans, and towels. The pupils should be willing to bring plates, cups, bowls, and spoons from home. The boys and girls can easily make curtained shelves for the utensils. A fireless cooker, which permits the preparation of meat stews, meat and bean soups, and cereal mushes, can be made by the pupils as a class exercise.

In good weather the luncheon can be served out of doors, but at other times it may be necessary to serve it on the children's desks, which are first cleaned and covered with clean paper or paper towels. The building must be well ventilated and screened against flies. Safe water for drinking, washing hands, cooking, and washing dishes is essential, and any water that is at all doubtful should first be boiled.

HOW TO FEED THE FAMILY.

In response to several inquiries as the minimum cost of food for a family, the *Weekly Bulletin* of the Department of Health, City of New York, for May 13, 1916, published a list of articles of food sufficient for a family of five for one week. It may be of interest to our readers to know that this diet supplies about 9,500 calories and 430 grammes of protein a day. On the assumption that the family consists of two adults and three children, this allowance is ample:

1 pound butter	\$0.42
1 bag sugar (3½ pounds) .....	.24
1 pound rice .....	.08
1 pound dried peas .....	.09
1 pound beans .....	.09
1 pound farina .....	.06
1 pound oatmeal .....	.05
1 box cocoa (¼ pound) .....	.10
1 pound prunes .....	.15
1 pound onions .....	.04
6 pounds potatoes .....	.22
1 head of cabbage (medium size) .....	.05
1 pound cheese .....	.22
2 dozen eggs .....	.60
2 pounds meat daily at 20 cents	2.80
2 loaves of bread daily at 8 cents	1.12
2 quarts of milk daily at 7 cents .....	.98
Total	\$7.31

The list of foods here shown has been tested practically for about two years by the Social Service Department of the Beth Israel Hospital. In fact that is where the diet was originally devised. The nutritional results have been excellent, a fact which indicates, better than any theoretical study would do, that the diet combines all the food elements needed by the body.

If we could devise a plan for insuring such a diet or its equivalent to all the poor people in this city, we should materially reduce our death rate. In many instances of malnutrition encountered at the department's clinics the fault is due to ignorance of what constitutes a proper diet.

Diet in Renal Disease.—Felix Hirschfeld (*Berliner klinische Wochenschrift*, November 15, 1915) says that by means of a diet very low in protein marked improvement can be secured in renal disease, especially in cases of arteriosclerotic kidney. He advocates a diet which does not contain over forty grams of protein and only thirty grams of absorbable protein, together with about five grams of salt. Such a diet should include vegetables chiefly, such as potatoes, rice, green vegetables, cream, sugar, and large amounts of fruit in any form. Under such a diet the urinary output falls to less than a litre a day, the reaction becomes alkaline or amphoteric in most cases, and the albumin content declines rapidly, even disappearing in some cases. Should the urine remain slightly acid the administration of one or two grams daily of sodium bicarbonate or sodium citrate may be required. On such a régime the twenty-four hour urine will contain about five grams of nitrogen, five or six grams of sodium chloride, and only about twenty-five grams of non-volatile matter. The specific gravity will range from 1.011 to 1.014. The diet also will cause a fairly rapid

fall in the blood pressure. In a patient who has been on such a diet for some time, the administration of one meal rich in protein will usually produce marked diuresis in a few hours.

Diet in Dysentery.—George C. Low (*Practitioner*, May, 1916) says that diet must be carefully considered in the early stages of dysentery. Albumin water, barley water, or rice water should be used to start with; later, boiled or peptonized milk may be added; then chicken soup, malted milk, Benger's food, and peptonized milk are substituted gradually until the patient is able to take puddings, arrowroot, and cornflour. If thirst is excessive, water may be given in small quantities. During convalescence diet should be simple and nutritious, lightly boiled eggs, milk, and milk puddings, these being followed by pounded fish and chicken, until an ordinary light diet can be tolerated. Return to normal diet should be undertaken with great care, and alcohol is at no time to be allowed.

Saponin Barred from Food Products.—The addition of saponin to food mixtures which are sold for use in place of white of eggs is regarded by the Bureau of Chemistry of the Department of Agriculture as constituting adulteration within the meaning of the Food and Drugs Act. In *Service and Regulatory Announcements No. 17* it is stated that the practice is usually adopted for the purpose of concealing inferiority, therefore it comes within the definition of adulteration in the Food and Drugs Act. Saponin is used extensively in so called substitutes for white of egg for the purpose of producing foam and thus giving the articles a fictitious appearance of body and therefore of food value. Saponin is a substance that when dissolved in water foams like soap. It is extracted from the plants known as soapbark and soaproot, and a few other plants, by boiling them in water.

Scientific Feeding in Certain Nervous States.—Albert R. Satterlee (*Illinois Medical Journal*, May, 1916) lays stress on the necessity of careful supervision of the diet of the neurotic individual, who needs generous feeding with abundant fats. Neurasthenic patients frequently show an excess of calcium phosphate and carbonate in the urine, therefore they should be given food with high lime content. This diet includes milk, whole wheat foods, graham bread, and whole meal bread, eggs for the lecithin, and small amount of arsenic (0.0005 to 0.005 gram in each egg, according to Bertrand), peas, beans, and carrots. In hyperthyroidism oatmeal and liver must be avoided as being thyroid stimulants, while tea, coffee, and alcoholic drinks are excluded owing to their effect on the heart and sympathetic nervous system. In such cases foods containing much iodine must be restricted, such as French peas, beans, beets, radishes, and turnips, as well as oysters and such fish as cod and salmon. Beriberi is caused by the eating of polished rice which has had the pericarp containing the vitamins removed and it may be cured by feeding unpolished rice or fresh cow's milk which contain vitamins. Scurvy is due to deficient chemical elements and is cured by fresh meat and vegetables and in infants by feeding raw milk.

Contemporary Notes.

A New Ruling in the Harrison Law.—A circular letter recently mailed to physicians from the Collector of Internal Revenue reminds the physician that he may prescribe, administer, or dispense only for the immediate needs of a patient; and in the case of an addict or habitué, he may prescribe only in a legitimate effort to effect a cure. Prescriptions written for this purpose must show a decreasing dose and must bear the endorsement that they are written for an addict in an effort to effect a cure. Under no circumstances is a physician permitted to prescribe or dispense narcotic drugs to an addict for the purpose of permitting him to indulge his craving for the drug.

Undoubtedly the great bulk of the profession are heartily in sympathy with this law, avers the *Medical Sentinel* for April, and are and have been more than willing to meet its conditions, despite the petty annoyances it sometimes causes the physician. However, when the Treasury Department sees fit to read into the law the arbitrary interpretation, and issues a ruling that will restrict and limit the physician in his efforts to treat the addict, we believe that it will and should meet with strenuous objection.

One is tempted to inquire upon what grounds and by what authority the government bases its ruling that all prescriptions for addicts must show a decreasing dose. As a matter of fact, in many cases it is impossible to follow this ruling and handle the case to its best advantage, for while the gradual reduction of drug is an applicable method of treatment in many cases, in others it is not only impractical and inhuman, but may be even dangerous. This is a peril that is quite familiar to every physician who has come in contact with these cases. Recently in St. Louis a man and his wife died as a result of a lessening of their usual dose, and many other cases could be mentioned. This is especially true of cases in which a treatment is attempted outside of a proper institution. Patients who demand their usual quantity of drug until they can be taken to a sanitarium for treatment are to be denied their allotment and must suffer a reduction, even though it is decidedly disadvantageous to do so and even though they may be actually on their way to an institute for treatment.

There are other cases with physical ailments that may demand a course of treatment or an operation before the physician can safely institute treatment. In these cases the addict requires his full dose and often more until such time as the physician may deem advisable to begin treatment.

What is the attitude of this department toward thousands of these unfortunate derelicts, many of whom, probably the greater proportion are in the clutch of this vicious habit through no tendency or fault of their own, or those whose case is hopeless as far as a possibility of cure goes? No provision has been made for the proper institutional treatment of these unfortunates so that a gradual reduction may safely be attempted, and only those who can afford it are able to get the care and attention that their case warrants. Lessen the amount of opiate that these poor addicts depend upon and they are

subjected to a pain and horror beyond the conception of the average individual. Yet in this recent ruling this cruel, inhuman, and even dangerous conduct is imposed upon those of us who may attend these victims. That this is a cruel injustice to these unfortunates and decidedly unfair to the profession is very evident from any standpoint. These victims of a pernicious habit are entitled to all the care and consideration afforded to any other patient. In fact the attitude of those who have studied the problem is that they are suffering from a true disease.

Medical Fees and Workmen's Compensation

Acts.—What chance has the workman to get a fair deal when injured if he is compelled to accept any kind of medical and surgical services offered by an insurance company that secures its medical attendants because of price rather than competency? The *Journal of the Indiana State Medical Association* for March asks this question and another: How long will it be before employees rebel against such unfair treatment, and how long will it be before the employers of labor also will object to having their employees subjected to the mercenary whims of greedy and conscienceless insurance companies? If all reports are true, the Indiana Workmen's Compensation Act is a valuable thing for insurance companies, but a bad thing for every one else; and seemingly the insurance companies have the support of the industrial board which is supposed to settle differences. However, there is one way by which the competent and conscientious physicians of the State can, in the end, bring about a change for the better, and that is through refusal to accept the niggardly fees offered by insurance companies for services in cases that come under the Workmen's Compensation-Act.

Already many of the better class of physicians have refused to take care of such cases unless employers guarantee that the customary fees prevailing in the locality where the injury occurs will be paid for the services rendered. The difficulties that medical men are experiencing at the present time do not arise through any objection on the part of employees or employers to the payment of customary and therefore fair fees for medical and surgical services rendered, but to the action of insurance companies that are ever ready to dictate terms that are prejudicial to the interests of every one but themselves, and seemingly the insurance companies have the approval of the industrial board in any action taken. The present condition of affairs is one not conducive to very great respect for the Indiana Workmen's Compensation Act, which has been heralded as such a boon to workingmen, and reputed to be so eminently fair to all those affected. The medical profession certainly is being imposed on as a direct result of the act, and it is to be hoped that the lesson will have its effect in showing the necessity for organization in effecting such radical changes in either the act itself, or the interpretation of that portion of it which has to do with the regulation of medical fees. Medical men desire and are asking for only what is fair and just, and they object to the fixing of medical fees by the insurance company, which has no other interest in the matter than to secure as much as possible for the least expenditure of money.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal and The Medical News.

A Weekly Review of Medicine.

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
Copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, MAY 27, 1916.

THE REORGANIZATION OF THE ARMY MEDICAL DEPARTMENT.

The Senate and the House of Representatives have agreed upon an army reorganization bill, providing for an increase in the number of medical officers to a maximum of 1,225, or sufficient to furnish seven medical officers for each thousand of the enlisted strength of the regular army authorized under this measure. At present there are 503 medical officers on the active list, or about 4.9 medical officers for each thousand enlisted men. The proportion adopted in the several grades in the reorganization measure, is that provided in the army reorganization bill of 1908. Since that time, however, the army has been increased without a corresponding increase in the medical department.

In most of the European armies ten medical officers are provided for each thousand troops. The measure which has been adopted, therefore, falls short of providing the number of medical officers which European countries believe to be necessary, but this proportion is so much higher than that which has prevailed for the past ten years or more that we feel the army and the medical department are to be congratulated on the concession.

It is to be regretted that the medical reserve corps is to be wiped out after one year, the members being either transferred to an officers' reserve corps, which is created by the measure, or honorably dis-

charged. This corps now comprises a capable body of professional men, whose interest in military matters has been much stimulated by the receipt of commissions from the President.

The provisions for the training of reserve officers at universities do not seem to apply to the training of medical officers as well as of line officers, though it is possible that section 40 of the measure might be so construed as to provide for the training of medical officers at medical schools attached to universities. As we have already pointed out in these columns, it is most desirable that the younger members of the profession should have an opportunity to learn at least the elements of military medicine, so that they may be fitted to act as medical officers in case of emergency.

The bill also authorizes the appointment by the President of dental surgeons in the proportion of one for each thousand enlisted men. These dental surgeons are to have the rank, pay, and allowances of first lieutenants for the first eight years of their service, of captain for the next sixteen, and of major after that time. This recognition of dentistry is a desirable feature of the bill, as the importance of the work of dental surgeons, who now occupy a somewhat anomalous position in the service, has long been recognized by the medical department.

A corps of veterinary officers is also provided for, ranging in rank from second lieutenant to major. The veterinary corps, as well as the dental corps and a nurse's corps, which is also provided for, form a part of the medical department and come under the command of the surgeon general of the army, who, after the present incumbent, will have the rank of brigadier instead of major general as at present.

The increase in the medical department under the new bill would certainly warrant a major general and two brigadier generals at its head. The quartermaster's corps, with only 183 commissioned officers and 403 enlisted men, fares better in this than does the medical department, with 503 commissioned officers and 5,388 enlisted men. Except for this apparent injustice the medical department is treated somewhat better than had been expected.

THE VALUE OF SUFFICIENT SCHOOL LUNCHEONS.

In 1792, Benjamin Thomson, Count Rumford, American physician, chemist, and pioneer social economist, established in Munich the People's Soup Kitchens, which first showed how scientific methods could be applied most effectively to the preparation of food. One main purpose of these kitchens was to provide a warm meal at noon for school children. In Munich, in 1876, school luncheons thus provided

had become so thoroughly approved that the city passed a law requiring all school buildings to include a kitchen equipment and dining room. In 1909, half the cities in Germany reported school feeding.

In France, in 1849, a battalion of soldiers in Paris from a surplus in their military chest established a fund called the *Caisse des écoles*, or school fund. Later, in 1882, under the national compulsory school law, permanent school funds were required in every school district in France, and from the beginning a large portion of the income of these funds has been devoted to school restaurants or *cantines scolaires*. They are completely democratic; all classes of children, teachers, and school officials make use of them alike, the cost being borne by the public.

Victor Hugo started the school luncheon movement, in 1866, at his home in the island of Guernsey. The movement spread steadily, but no official notice was taken of it in Great Britain until the Boer War, in 1902, when Frederick Maurice, surgeon general, announced that out of every five men, only two could be admitted to the army because of lack of physical fitness. The Provisions of Meals Act was the first law growing out of a well founded fear of national deterioration. At present school feeding is under the direction of the medical department of the National Educational Board and the nutrition of each child is the basis of the annual report of his physical education. When England passed this act, Germany also became fearful of her own condition because forty-six per cent. of drafted conscripts were unable to pass the physical tests, owing largely to malnutrition among school children, and took active measures to extend the school feeding.

The school luncheon, begun by an American 125 years ago, has received national recognition and is subject to national legislation in many countries of Europe. Today in the United States, from a small beginning ten years ago, school luncheons in elementary schools are maintained in eighty-nine cities of twenty-eight States; six States have warm luncheons in rural schools. In New York, however, although school luncheons have been provided since November 23, 1898, until last year they were supported almost wholly by private means. During the present year the Board of Estimate appropriated \$26,500 for their extension. This meagre sum was supposed to meet the present needs of a million school children. During the past two years the New York Luncheon Committee, by supplementing the amount privately, has extended the work from nine schools in 1912, registering 11,783 children, to sixty-three schools in 1915, with a register of nearly 100,000 children. It has served over two million portions of food to school children at a cost for each child of two cents.

It is stated by those having this movement in charge that no medical society in New York State thus far has taken any part in this line of preventive medicine, although, out of 20,000,000 children in the public schools of the United States, 12,000,000 have physical defects serious enough to interfere with their schooling. The NEW YORK MEDICAL JOURNAL is convinced that as a measure of national preparedness local medical societies could render inestimable public service by promoting interest in the better nutrition of school children. The school luncheon is properly a matter of public provision, not of private charity. There are few elementary schools where classes in cooking could not have the best kind of practice in providing the daily school luncheon. Moreover, it is wasteful and opposed to common sense to allow concessionnaires to run lunch rooms in public schools for private profit. We suggest that physicians strengthen their influence by interesting themselves in the school luncheons of children under their professional care.

HEALTH STATISTICS.

If we needed proof of public indifference to the matter of health, we have but to consider the absence of, or carelessness regarding the recording of births and deaths and of the diseases which cause untimely demise. Crude and incomplete as these records are, they are invaluable in bringing before the indifferent, because uninformed public the character and extent of disease, and for showing, in a definite and impressive way, what has been accomplished in its eradication. Such statistics are the strongest fingers we may use for loosing the purse strings of those who can help in public health movements, and for judging the effectiveness of our measures for such accomplishment.

Since so little attention is paid to these gross records, or even to the reporting of cases of contagious disease, it may seem premature to consider the taking of statistics of health of a more intimate nature, and yet it is not too early at least to make such a suggestion. In fact, the health census now being taken of certain districts of New York city, indicates that in at least one community there is a movement to obtain more essential records of life and health.

It is the little things that count, in health as in other matters. It is not the big diseases—typhoid and tuberculosis and diphtheria—which cut the greatest figure in human misery and inefficiency. It is colds and sore throats, headaches, and "biliousness," and the everyday errors of living which lie back of all these commonplace conditions, that figure far more in life, that render people men-

tally morbid, for the time at least diminish their working capacity, make their friends and neighbors wish they had contracted some malady still more serious, and lead, finally, to premature death from the circulatory, respiratory, or other disorder which, in some of our States, gets itself inaccurately recorded with the age of the victim.

Statistics of such health matters would more truly deserve the term "vital," which, according to its origin, refers not to death but to life and conditions essential to life, and would influence life for the better more than we imagine. A man must be hit hard and between the eyes, to notice anything of consequence to which he has become accustomed. The sinking of a hundred boats, each having five people on board, makes little impression on the public mind; but the loss of one vessel with five hundred on board becomes a startling calamity. Statistics which show the actual loss of time in school and factory, the loss of money by doctor's bills and the like, from common illnesses or indiscretions, would help to drive into the individual cranium the value of health and its preservation.

With well schooled health departments, duly financed, the taking and study of health statistics is by no means an impossible matter, nor one for the distant future. It ought to be a part at least of the more general surveys of public health conditions which are being carried out in many communities. Just what these statistics should include and how they might be acquired can well be left to trained public health specialists.

THE QUESTION OF ARTERIOSCLEROSIS.

With regard to that hardening and degenerative condition of the arteries known as arteriosclerosis, while much is known, much still remains to be learned. It is, however, a matter of common knowledge that these conduits should possess physiological integrity. If such is not the case, it is a sign or rather a warning that the bodily powers are upon the wane and that old age is advancing with greater or less celerity. The now hackneyed saying that "a man is as old as his arteries," usually attributed to the late Sir James Paget, is true and shows that the seriousness of arteriosclerosis is fully appreciated by the wise men of the medical profession.

The question as to the causation of premature senility, that is, of arteriosclerosis, has been a mystery for ages and is still a problem unsolved. From the physiological and anatomical points of view, there is little that we do not know concerning the arteries, but when we enter the domain of pathology

we are baffled and the riddle of the arteries has yet to be unravelled.

One fact in connection with this subject stands out with sinister prominence, that the disease or condition is more frequent by far than was formerly the case. Many young men are old before their time, and it would seem that one of the causes to which may be ascribed this premature process, is the manner of life led nowadays, especially in modern cities. The candle is too often burned at both ends, and given an underlying tendency whereby the soil has been prepared and the seed sown, overindulgence, dissipation, and the acute strain of business will germinate the seed which will grow and flourish exceedingly. At any rate, it may be stated without fear of contradiction that nervous strain, dissipation, and acute disease will break down the physiological defences and render the organism peculiarly susceptible to the attacks of particular molecules.

Dr. Louis Faugères Bishop, in his valuable work on arteriosclerosis, has elaborated the theory of chemical intermediate causes that prepare the soil and provide the seed, and his theory is so ably presented as to carry conviction to the impartial reader. In his opinion, the key to the riddle of arteriosclerosis lies in a sensitization of individuals to particular proteins, or to be more specific, to split products of particular proteins. Undoubtedly, diet plays a very important role both in the causation and treatment of arteriosclerosis. A poisoning of the system, or what is known as autointoxication, and its effect upon the circulation is allowed by most authorities to be a cause of the degenerative process of the arteries. Autointoxication is brought about by intestinal putrefaction, and this in turn may be largely attributed to errors of diet and perhaps, particularly to the undue consumption of animal protein. Therefore, to some extent both prevention and treatment of arteriosclerosis are influenced by diet, but to what extent is not accurately known. Sir Clifford Allbutt, for instance, in his recent work on the diseases of the arteries, is inclined to minimize the importance of the consumption of meat as a cause. Yet it may be taken as proved, that the present mode of living and perhaps of eating and drinking in particular, is a factor of great import in the causation of premature old age. A spare diet and a more Spartan way of living than is generally practised by the super-civilized, self indulgent dwellers in cities might call a check and possibly a halt to arteriosclerosis. It may be, that the elixir of life so often referred to in ancient tomes, was a metaphorical means of expressing the necessity for the body not to be abused

by overindulgence of any kind. Perhaps the philosopher's stone was temperance. If the blood is impure and the arteries are degenerating, health is failing and old age is coming on. These untoward events can be largely prevented by our holding aloof from the artificial life of cities, by being moderate in all things, by reverting indeed to the more primitive life of our hardy ancestors.

A THEORY OF TRENCH FOOT.

At a meeting of the Académie des sciences on May 1st, V. Raymond and J. Parisot recalled their previous work on so called trench foot or frozen foot, the symptoms of which were those of a peripheral neuritis, and stated that they now believed the contributing causes to be solely cold and wet. According to *Presse médicale* for May 4, 1916, they concluded that the affection was a local one and they have isolated from the lesions a fungus, identified by Villemin, cultures of which inoculated into animals produced the typical lesions observed in man, viz., edema, phlyctenules, and black eschars. They decided, therefore, that frozen foot was not due to freezing, but was in reality a fungoid disease similar to Madura foot, for which they proposed the name "trench foot." The fungus which is found ordinarily in infected soil, straw, manure heaps, etc., is obviously brought into contact with the foot by the mud of the trenches. It penetrates into the tissues through excoriations or around the matrices of the nails. Probably every man in the trenches is a carrier. The local lowering of temperature due to the stagnant water permits the growth of the fungus, which thrives best at 25° to 30° C. or 77° to 86° F.

The treatment of this disease, therefore, as well as the prophylaxis, is based on cleanliness and disinfection of the feet with soap and alkaline solutions, best borated or camphorated. Results have been ideal; edema disappears in four days, the neuritic pain in a fortnight. The characteristic eschars are more resistant, but patience will cure them, and the writers have never had to proceed to amputation.

THE CONTROL OF MOSQUITOES.

It has been stated that where whirligig beetles (*Dineutes*) are present *Anopheles* larvæ fail to thrive because of the destruction of the larvæ by the beetles. The whirligigs are the small, dark, oval, flattened beetles which we see floating lightly on the surface of woodland pools and sluggish streams, usually congregated in considerable numbers, either resting quietly or performing graceful complex curves around each other, at times darting around and around and yet seemingly never colliding. Assistant Surgeon R. C. Derivaux, of the Public Health

Service, investigated the habits of these beetles to ascertain their probable influence in the destruction of *Anopheles* larvæ and the prevention of malaria. He found that when the beetles were placed in receptacles containing clear water in which there were *Anopheles* larvæ the hungry beetles devoured large numbers of the larvæ, but that when fragments of light débris were thrown on the water and allowed to float on the surface the beetles did not devour the larvæ, apparently having difficulty either in locating them or in securing them when located. The inference would be that in clear water without floating débris the whirligig beetles would be a factor in destroying mosquito larvæ.

The foregoing notes, which we transcribe from *Public Health Reports* for May 19th, are followed by a detailed study of *Dineutes* by Assistant Surgeon R. C. Derivaux.

News Items.

The Mitchell Memorial Building of the Philadelphia Orthopedic Hospital will be dedicated with appropriate ceremonies on Thursday afternoon, June 1st.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Thursday, June 1st, Philadelphia Obstetrical Society, Southeast Branch of the County Medical Society; Friday, June 2nd, Kensington Branch of the County Medical Society.

Opportunities at St. Mark's Hospital, New York.—There are vacancies for assistants and opportunity for good service and research work in the Urological Clinic for Men, Women, and Children, at St. Mark's Hospital. Apply to Mr. Ernst S. Lohr, superintendent, 177 Second Avenue.

Summer Camps of Instruction for Army Medical Officers Abandoned.—The Surgeon General of the United States Army announces that owing to the withdrawal of troops from their regular stations for duty on the Mexican border, the War Department has been compelled to abandon the camps of instruction for officers of the Medical Reserve Corps, that were to be held during the coming summer.

Fund for Research Work in Epilepsy at Johns Hopkins.—The will of Miss Jessie Gillender, formerly of New York, who died in Los Angeles recently, contains a bequest of \$100,000 to the medical school of Johns Hopkins University, for the establishment of the Epilepsy Medical Research Fund. The income of the fund is to be devoted to investigation into the cause, prevention, and cure of the disease.

Women's Medical Society of the State of New York.—At the tenth annual meeting of the society, held in Saratoga Springs, May 15th and 16th, the following officers were elected: President, Dr. Evelina P. Ballentine, of Rochester; first vice-president, Dr. Edith R. Hatch, of Buffalo; second vice-president, Dr. Grace N. Kimball, of Poughkeepsie; third vice-president, Dr. Beatrice M. Hinkle, of New York; secretary, Dr. Ethel Doty Brown, of New York; treasurer, Dr. Phoebe M. Van Voast, of New York.

Examination for Assistant Epidemiologist.—The United States Civil Service Commission announces an open competitive examination on June 6th, for assistant epidemiologist, for men only, in the Public Health Service, at salaries ranging from \$2,000 to \$2,500 per annum. The duties of this position will be to make epidemiological and sanitary surveys to determine the prevalence and causation of disease, to conduct laboratory studies in relation thereto, and to recommend measures to prevent and control outbreaks of disease. For further information regarding the examination, address the United States Civil Service Commission, Washington, D. C.

Examination for Clinical Director of the Government Hospital for the Insane.—The United States Civil Service Commission announces an examination on June 27th, open to men only, for the position of clinical director of the Government Hospital for the Insane, Washington, D. C. Applicants must be graduates of a medical school of recognized standing, and must have been in actual charge of a medical service in an institution for the care and treatment of the insane for at least five years, during the entire period of which time they must have received special training in psychiatry. For further information regarding this examination, address the Civil Service Commission, Washington, D. C.

Personal.—Dr. E. J. G. Beardsley has been appointed visiting physician to the tuberculosis department of the Philadelphia General Hospital.

Dr. Judson Daland, of Philadelphia, was unanimously elected president of the American Climatological and Clinical Society, at the annual meeting held in Washington, D. C., during the week of May 8th.

Dr. Christian R. Holmes, of Cincinnati, was elected president of the American Otolological Society, at the annual meeting held in Washington, D. C., during the week of May 8th.

Dr. Hugh Cabot, of Boston, is at the head of the third medical unit sent to France by Harvard University.

Miss Irene Hyland, dietitian at Bellevue Hospital for the past six years, has been granted indefinite leave of absence by the trustees and will sail Saturday, May 27th, for Europe, where she will serve as dietitian with the Harvard University Medical School unit in the British Army Hospital Service.

Alumni Association of the University of Buffalo.—The forty-first annual meeting of the Alumni Association of the Medical Department of the University of Buffalo will be held in Buffalo, Tuesday to Friday, May 30th to June 2d. This meeting also celebrates the seventieth anniversary of the founding of the medical department at the university. An interesting program has been arranged, consisting of clinics, lectures, demonstrations, class reunions, fraternity reunions, dinners, and other social functions. The three Harrington lectures on Anaphylaxis will be delivered by Professor Milton J. Rosenau, of Harvard University. The annual alumni oration will be delivered by Dr. Charles D. Aaron, of Detroit, on Chronic Intestinal Stasis from the Viewpoint of the Internist. The principal social event of the meeting will be the annual alumni dinner, which will be given in the banquet hall, Hotel Statler, on Thursday evening, June 1st. On Friday, June 2d, commencement exercises of all the departments of the university will be held.

Navy Medical Corps Examinations.—Among the various items of increase in national preparedness which it is hoped will be afforded by the present session of Congress is that authorizing an appropriate increase in the personnel of the military services. One item of interest to the medical profession of the country is that calling for an increase in the Medical Corps of the Navy from its present strength of 347 to approximately 500. The openings at present afforded young graduates in medicine for entering the Medical Corps of the Navy will be materially increased in prospects and rewards, therefore, if such an increase is provided.

An examination will be held on June 10th next, for appointment in the medical corps to vacancies already existing. A candidate for appointment must be between twenty-one and thirty years of age, a graduate of a reputable school of medicine, and must apply for permission to appear before an examining board. Duty in the Medical Corps of the Navy is one that affords plenty of rewards to the ambitious worker, as well as attractions of a varied nature in personal and professional work. Pay begins at the rate of \$2,000 per annum, with ample allowances, and promotion and increase in pay and allowances follow every few years.

For detailed information as regards the coming examination on June 10, 1916, applicants should address the Surgeon General, United States Navy, Navy Department, Washington, D. C.

A Low Death Rate in New York City.—During the week ending May 20th, 1,462 deaths were reported, which is equivalent to a rate of 13.65; the rate for the corresponding week of last year was 14.23. The mortality from acute contagious diseases was lower last week as was also the mortality from the following diseases: Diarrhea, cancer, heart disease, influenza, pneumonia, and diseases of the nervous system. The mortality of pulmonary tuberculosis, cerebrospinal meningitis, Bright's disease, and violence was higher.

Medical Society of the State of New York.—The 110th annual meeting of this society was held in Saratoga Springs, May 16th, 17th, and 18th, under the presidency of Dr. W. Stanton Gleason, of Newburgh. About 500 members were in attendance. Officers to serve for the ensuing year were elected as follows: President, Dr. Martin B. Tinker, of Ithaca; first vice-president, Dr. Henry L. Winter, of Cornwall; second vice-president, Dr. J. Richard Kevin, of Brooklyn; third vice-president, Dr. Montgomery E. Leary, of Rochester; secretary, Dr. Floyd M. Crandall, of New York; assistant secretary, Dr. Albert E. Sellenings, of New York; treasurer, Dr. Alexander Lambert, of New York; assistant treasurer, Dr. Harlow Brooks, of New York. Chairman of committees—Scientific work, Dr. Samuel Lloyd, of New York; public health, Dr. Joshua Van Cott, of Brooklyn; legislation, Dr. James F. Rooney, of Albany; medical research, Dr. Frank Van Fleet, of New York; economics, Dr. Samuel J. Kopetzky, of New York; prize essays, Dr. Albert Van der Veer, of Albany. Next year's meeting will probably be held in Syracuse.

Army Medical Corps Examinations.—The Surgeon General of the Army announces that preliminary examinations for the appointment of first lieutenants in the Army Medical Corps will be held on July 17, 1916, and August 14, 1916, at points to be hereafter designated. Full information concerning these examinations can be procured upon application to the Surgeon General, United States Army, Washington, D. C. The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training as an intern after graduation. In order to perfect all necessary arrangements for the examination, applications must be completed and in possession of the adjutant general, at least three weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There will be more than one hundred vacancies to be filled after July 1st, when the bill for the reorganization of the army becomes a law.

American Medical Editors' Association.—The annual meeting of this association will be held at the McAlpin Hotel, New York, on October 25th and 26th. A most interesting program is in course of preparation, and the local committee composed of the following members is an assurance of a successful convention: Dr. Thomas L. Stedman, chairman; Dr. R. H. Sayre, Dr. Brooks H. Wells, Dr. Frank C. Lewis, and Dr. Ira S. Wile.

The officers of the association for 1915 and 1916 are as follows: Dr. Edward C. Register, president; Dr. W. A. Jones, first vice-president; Dr. G. M. Piersol, second vice-president; Dr. J. McConall, Jr., secretary and treasurer. Executive committee: Dr. C. F. Taylor, Dr. John C. MacEvitt, Dr. A. S. Burdick, and Dr. Joseph MacDonald, Jr.

The meeting on October 25th and 26th will be devoted exclusively to problems of a strictly journalistic nature, which will be of importance and interest to every editor and publisher of a medical journal. Among the papers to be presented are the following: Editorial Control; The Editor's Prerogative in Editing Original Articles; Book Reviews in Medical Journals; Problems of the Subscription Department; The Relationship Between Medical Journals of the Day; The Uplift in Medical Journalism; The Influence of the Medical Press and Profession in Public Affairs; The Rights of an Author in the Disposition of His Contribution; etc.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Twenty-first Communication.

STRYCHNINE.

The action of strychnine on the circulatory apparatus is a subject of acrimonious debate between clinician and laboratory worker; even pharmacologists are not agreed on the subject, though the preponderance of opinion is that there is no direct effect on the heart. Many experiments by the writer with strychnine showed that there was produced a slight but fairly constant tendency toward slowing, indicative perhaps of a tonic effect on the vagus centre. The same series of experiments show a constant rise in blood pressure of about 8 mm. Hg., following doses of 1/20 to 1/30 of a grain, administered hypodermically. This augmentation may be ascribed to an irritation of the vasomotor centre whereby the vaso-constrictor action in the splanchnic area more than offsets the accompanying peripheral dilatation. In both cases, however, the seat of action is centric.

These laboratory findings have been held by some to render invalid the clinician's assertion that in some cases strychnine is a trustworthy heart stimulant. In view of the fact that very little scientific investigation has been made at the bedside by either disputant, and since there exist exceedingly scant data concerning the modifications of drug action by the toxins of disease, the subject may more wisely be considered still *sub judice*. A few months hence the writer plans to begin publication of an extensive investigation in applied pharmacology, the results of which may throw some light on an obscure phase of this subject. It may yet be shown that vagus toxemia may in some cases be counteracted by strychnine, with a resulting steadying of heart action. However, in the present state of our knowledge reliance may perhaps be more safely placed on caffeine as a known cardiac stimulant.

Single doses of strychnine, as large as 1/20 grain, have no appreciable effect on the rate of respiration, though the depth may be slightly augmented. Toxic doses induce spasm of the respiratory muscles, as of other muscles. From this it is difficult to see how strychnine has any presumptive utility in respiratory affections.

Strychnine is frequently recommended as a "bitters" for its assumed effect on the gastric secretion. The undeniable bitterness of strychnine frequently induces an abundant flow of saliva, and like all "bitters" effects by contrast a limited psychic secretion in the stomach; but its real value in deficient gastric secretion may easily be overestimated.

In cases of mild debility and lassitude strychnine may act as a "tonic" in the following manner: The heightened excitability of the cord results in a

greater stimulation of the muscles of the body, because of the more frequent motor impulses transmitted. The augmented metabolism involves more rapid oxidation per unit of time, with a consequent improvement, up to a certain point, of the quality of the muscle tissue. This increased tonicities invites and induces activity of a voluntary kind, oxidation is further increased, anabolism gains headway, mental lethargy diminishes, and the general condition of the patient shows a gratifying improvement.

The principal indication for strychnine is in non-inflammatory depression of the spinal cord, and in paralysis unaccompanied by lesions within the general nervous system,—plumbism, for example.

It is well to bear in mind that though the major part of strychnine is excreted by the kidneys within a few hours, yet elimination continues for several days; and continued usage is likely to increase, rather than to diminish susceptibility.

Wound Dressings.—Douglas H. Stewart, in the *American Journal of Obstetrics* for February, 1916, presents a clinical study of the best means of treating wounds and local infections in general. Experimentation with boils proved of great significance in this connection. Any antiseptic which will not arrest a boil is not worth trying in the depths of an infected wound. The possibility of a retardation of healing upon improper use of tincture of iodine is emphasized. If two cuts or incisions be made, and the one is painted with tincture of iodine, the other with boiled water, the iodine cut will be doing well if it heals in twice the time taken by the other. If one wishes to use iodine, one dram of the tincture to which one part in 1,000 of calomel has been added and an equal amount of glycerin should be diluted with one ounce of water. A skin wound may be filled with this mixture just before the subcutaneous stitch is fastened, the stitch next tied, and the surface then washed off with a saturated solution of sodium perborate; with this treatment the outlook for early primary union is excellent. In septic wounds, local application of bacterins acts well; but the method is expensive. Where a patient has an iodine idiosyncrasy, or if for any reason a wound does not do well under iodine, a one in 5,000 solution of silver nitrate may be substituted for it. The use of nonadherent wound dressings is recommended, not only because of the greater subjective comfort, but because unrestricted inspection is thereby rendered possible and healing fostered. Ligatures, drains, pads, etc., that have been properly prepared are nonadherent. Packages of gauze wipes of the usual size may be immersed in boiling fat at 340° F. or over for twenty minutes, laid on a sterile tray, unwrapped when the final wound cleansing with sodium perborate is begun, and then placed in any number over the closed and cleaned incision. The dressing does not adhere, is readily removed, and the wound dressed

with the iodine, calomel and glycerin solution on the third, fifth, seventh, ninth, and eleventh days. In the treatment of boils lemon juice and orange juice proved beneficial. Mineral acids, calcium sulphide, etc., were gradually supplanted by the old fashioned compound hypophosphite syrup with iron, which appeared to deserve the high repute it formerly held. At times lemon juice with sodium bicarbonate (or sodium citrate plus carbon dioxide) used locally arrested a boil after mercury bichloride had failed. Both boils and wounds seemed to resent cheese as a large factor in the diet, consumers of large amounts of it almost invariably progressing unfavorably when they left the hospital for home.

Standard Method of Testing Antiseptics for Wounds.—The various methods in vogue fail to yield satisfactory results, so far as the determination of the comparative efficiency of different antiseptics for use in wounds is concerned. They fail because they do not test the antiseptics under conditions analogous to those under which they will have to act when in use. To obviate this defect W. d'Este Emery (*Lancet*, April 15, 1916) has devised a method of using "reconstituted blood" for the tests. By this method the comparative potency can be determined quite readily for most of the common antiseptics. Using one hour as the period of exposure, phenol produced complete sterilization in a concentration of one in fifty and partial in one in sixty; corrosive sublimate in one in eighty and one in 100, respectively; biniodide of mercury in one in forty and one in sixty; lysol in one in 120 and one in 150, and malachite green in one in 200 and one in 250, respectively. Quite contrary to common belief both eusol and Dakin's solution were relatively ineffective since they did not completely sterilize the test culture blood mixtures even when used undiluted. The sterilizing value of iodine was also found to be very low. Malachite green would be the ideal antiseptic were it not for the fact that it is even more actively destructive to living cells than to bacteria.

Radium and Symptomatic Blood Pressure.—Douglas C. Moriarta (*Medical Record*, May 13, 1916) maintains that high blood pressure may be normal for existing conditions and should then not be interfered with, especially by drugs. Bishop's "few protein" diet and Kellogg's vegetable protein diet are of value, as are also the clearing of the intestinal tract and the production of elimination by salines and alkalies and mineral water baths, while tea, coffee, alcohol and tobacco are best omitted. The Saratoga waters, Moriarta believes, exert their greatest benefit from their radium content, their use almost invariably causing a drop of twenty to sixty mm. Hg. in four to six weeks. Radium causes stimulation of normal cells as well as correction of perverted cell action by influence on the enzymes. The writer has treated fifty-six cases in the past year with radium emanation combined with radioactive waters and regulated régime; he has devised a special room for radium inhalation treatments. The radioactive waters are given in doses of 25,000 to 100,000 Mache units a day, in divided doses after meals and at bedtime, while inhalations are given for two hours daily in the emanatorium

which shows 250 Mache units to the liter of air. In selected cases radium salts are given intravenously and repeated in two weeks.

Radium Therapeutics.—An editorial writer in the *American Journal of Electrotherapeutics and Radiology* for May, 1916, points out that radium therapeutics should be considered not only from the standpoint of tissue inhibition, but also from that of tissue stimulation. The less penetrating radiations expend their energy upon the tissues in the production of a stimulating action, developing heat and exerting other superficial activating effects at the surface and as far within as the rays will penetrate. They increase thereby the processes of metabolism and elimination, and induce hyperemia with its beneficial effects upon the tissues, beside reflexly affecting the spinal centres. The penetrating or gamma rays of radium, on the other hand, produce no thermic effect on the tissues, but exert an intense inhibitory action which, when applied for a considerable time, arrests all active local processes and destroys the tissues. Provided with filters to eliminate the alpha and beta rays, and buried in the midst of the tumor, radium is very effective in large round or giant celled sarcomas. For reaching remote malignant or tuberculous processes, however, the x rays are far superior.

Psychiatry and Gynecology.—Francis M. Barnes, Jr. (*Surgery, Gynecology and Obstetrics*, May, 1916) says that it has been shown that the observations which have been brought forward to support the belief that genital disease may act to cause insanity in women, or that the local treatment of such disease may act to cure such psychoses, have not taken into consideration certain important phases and accessory factors and are, therefore, subject to interpretations other than those which have been placed upon them. The ratio of male to female insane and the comparative frequency of gynecological disease in mentally normal and insane females does not bear out the contention that this etiological factor deserves the importance credited to it by some. The statistics show that there are actually fewer female insane than male and that among the former, gynecological diseases are, if anything, less frequent than among noninsane females. In the evaluation of the effect of the gynecological treatment on the cure or treatment of the mental disease, the greatest error has arisen because of the absence of adequate psychiatric estimation of the type of psychosis concerned. It is, therefore, not greatly surprising to learn that the vast majority of mental cures reported have occurred in psychoses, which the psychiatrist recognizes are more or less acute and self limited. In these cases recovery will take place, it may almost be said, in spite of treatment. Where operative indications exist, and it is now the consensus that they are the same in the insane as in the sane, the results obtained by operation should not be considered apart from the possible effect of measures such as are instituted during the period of postoperative care. Rest in bed, selected diet, and generally improved hygienic surroundings are means employed to cure mental disorders and these are just the measures which are often first

brought into action during the postoperative period. The operation itself is usually the smallest part of the treatment in many instances. What has been said of gynecological disease applies almost equally well to the process of menstruation. Although the menstrual period is accompanied normally by a certain group of phenomena referable in part to alterations of function of the nervous system, although these are sometimes exaggerated in so called "nervous women" it has not been shown that menstruation itself is the cause of a psychosis. Menstrual anomalies do occur in the insane, but it would seem that they owe their occurrence to the deranged function of the nervous system rather than that the latter depends upon the former.

Continuous Electric Light Treatment in Arthritis.—Simmonds and Moore, in the *Archives of Internal Medicine* for January, 1916, after referring to the fact that a patient with "rheumatic" pains and joints is often relieved by the use of incandescent bulbs with a metal reflector or by a general electric light bath, state that they have been able to demonstrate the beneficial effects in a direct, experimental way. Rabbits in which arthritis had been induced by intravenous injection of living hemolytic streptococci were in part treated by means of electric globes continuously suspended in their cages, and these recovered more rapidly than the controls not so treated. The development of arthritis was either prevented, or the condition rendered much milder, in animals treated with the continuous electric light than in the untreated controls. The changes in weight of the animals and the average febrile temperatures in the two groups of animals also attested the favorable influence of the treatment.

Typhus Fever and Louse Extermination.—Henry G. Beyer (*Military Surgeon*, May, 1916) describes the advantages of the naphthalene method of exterminating lice, the means by which typhus fever is transmitted. 1. It is cheaper than any other method, its cost for each person being five pfennigs (one and a quarter cent). 2. It does not interfere with the service efficiency of the men. 3. It requires neither special apparatus nor places. 4. It does not injure clothing. 5. It is absolutely non-injurious to the health of the men. Lastly, another of the aromatic substances has recently been used with great success and is therefore strongly recommended by Seel (*Deutsch. med. Woch.*, 49 Dec., 1915.) This substance consists of a mixture of cyclohexanon and cyclohexanol and is commonly known as lausofan. It may be used as a powder, but is best used in an alcoholic solution as a spray on clothes along the seams and on the hairy portions of the body on men. The spray is said to be more acceptable to the men than the powder. The method is briefly described as follows: The men take off their clothes; the hairy portions of the body are sprayed with the solution, while the same is being done to their clothes; after the spraying, the clothes are immediately put on again and the men are marched into a warm room or sent to bed. Here they remain for several hours. After this the men are made to take a bath and receive clean underclothes while their other clothes

are sprayed once more and allowed to lie, piled up for two hours. The process is said to be absolutely sure and trustworthy, in that it kills not only all the lice but also all their eggs. Eggs collected after such an exposure to lausofan, did not hatch out living lice after three weeks, which under normal conditions, occurs in a week's time.

Deep Radiation in Cancer.—Strikingly favorable results have been secured by Fritz Heimann (*Berliner klinische Woch.*, November 22, 1915) in the treatment of cervical and uterine carcinoma by the application of massive doses of filtered hard x rays. The doses ranged from fifty to one hundred units, filtered through several mm. of aluminum and applied with a focal distance of about twenty cm. Though a large proportion of cases responded favorably to this plan of treatment, there were some which were wholly refractory. Apparent cure of advanced carcinoma has resulted in a number of cases, but the author does not feel that the method is sufficiently certain yet to warrant delaying or avoiding operation in any operable case.

Toxic Effects of Ethylhydrocuprein on the Eye.—One of the chief disadvantages of this new synthetic is its toxic side action involving the eye. A case, showing this action, was studied by George H. Oliver (*British Med. Jour.*, April 22, 1916). The patient received a total of 120 grains of the drug in five grain doses at three hour intervals, with resulting blindness amounting to bare perception of light. Some time after cessation of the administration there was moderate temporary improvement, with subsequent permanent return to almost total blindness. The eye grounds showed extreme narrowing of the vessels and extensive degeneration of the ganglion cells of the retina. A further toxic action of ethylhydrocuprein has been seen in the rapid destruction of the cornea following the instillation into the eye of a one per cent. solution.

Treatment of Brain Injuries in Adults.—Under the usual methods of treatment the mortality from brain injuries is extremely high, but William Sharpe (*Journal A. M. A.*, May 13, 1916) shows that this can be reduced materially by appropriate treatment. The expectant plan should be adopted until severe shock subsides, since operation in the face of severe shock is likely to hasten death. If, after recovery from the initial symptoms, the patient develops evidences of increased intracranial pressure, the skull should be trephined immediately in the temporal region. The operation is not on the fracture, but solely for the relief of the dangerous and often fatal intracranial pressure. Where there are no symptoms of such pressure operation should never be undertaken, as the patient will usually recover spontaneously. The only exception to this statement is the case of depressed fractures, which always call for an elevation of the fragment to avoid the late results of continued irritation.

Umbilical Dyspepsia.—Symptoms of severe nervous dyspepsia are often associated with a defect in the closure of the abdominal wall at the umbilicus. The condition is always of congenital origin, but it may escape notice until symptoms are produced by its presence. Treatment is simple and ef-

fective, according to Charles D. Aaron (*Journal A. M. A.*, May 13, 1916), and consists primarily in the elimination of the irritation arising from the patent umbilicus. The abdomen in the region of the navel is carefully cleansed with soap and water and alcohol, and shaved if necessary. The edges of the opening are then to be brought together and held in apposition by strips of adhesive plaster directly over the umbilicus. These must be applied as tightly as possible. Scrupulous cleaning of the opening must precede the application. Relief is almost immediate, but the treatment should be continued for four to ten weeks. If there are vesicles and pustules beneath the adhesive after its removal the area should be painted once with tincture of iodine and the plaster may be left off for a few days if required. The use of an elastic abdominal support is a great aid in the treatment. If the condition is associated with hyperacidity small doses of alkalies should be given, and if there are symptoms of vagotonia, atropine should be administered. Bromides have also proved of service, especially in cases manifesting depression.

Intramine: A New Antisyphilitic Remedy.—

Harold Spence (*Lancet*, April 22, 1916) has employed this new remedy, recently introduced by McDonagh, in sixty-five cases of syphilis with benefit in the suitable ones. The remedy was found to be of great value in the later stages of secondary syphilis and its complications, in recurrent and tertiary lesions, and in some cases of nonsyphilitic chronic skin disease such as lupus. It seemed to be of some value also in the treatment of cerebrospinal syphilis. The drug should be injected deep into the muscles in the form of an oily suspension and the dose should be one or two grams, repeated, if needed, at intervals of a few days. The injection may cause some local pain, but this can often be prevented by the simultaneous use of quinine and urea hydrochloride. The best results from the use of this new preparation are to be secured by following its administration after an interval of a few days by one of the metallic preparations given intravenously.

Uses and Abuses of Normal Saline Solution.—

A. David Willmoth (*American Journal of Surgery*, May, 1916) says that in surgical practice salt solution attains its highest degree of usefulness in the treatment of hemorrhage, first to replenish the circulating medium, second by refilling the blood vessels and thereby permitting the mechanical acts of the circulation to proceed. Again, in shock where, by the addition of adrenaline one to 20,000 to one to 10,000 the effects are quickly obtained when the solution is administered by the intravenous method; the heart and bloodvessels are stimulated so that the blood which has accumulated in the large abdominal vessels is put into active circulation again. If urinary excretion is small and the kidneys are not diseased, saline solution furnishes a remedy which increases renal activity; the function of the skin is also markedly enhanced. Last, but by no means least, is its use in sepsis. The Fowler position, saline proctoclysis, the use of iodine and saline within the abdomen to convert the peritoneum from an absorbing into a secretory surface, will save many patients whose condition otherwise would be

hopeless. Its abuses are as follows: In no circumstances should saline solution be used in apoplexy, arteriosclerosis, pulmonary edema, dilated right heart, threatened sudden death and sudden collapse from chloroform or other narcosis, the last two conditions requiring more rapid measures. In the light of our present day knowledge, it should not be used in uremia. In conclusion Willmoth desires to say that no more than fifty grains of salt to the hundred pounds of body weight is required to kill a dog, and Lazarus Barlow has shown that if too large quantities are used a condition of hydremic plethora may be induced and the specific gravity of the blood reduced from 1,064 to 1,054. In an attempt upon the part of the kidneys and lymph channels to excrete promptly the excess of fluid, they "overshoot the mark" so that eventually the specific gravity reaches 1,067. (Short: *Newer Physiology in Surgical and General Practice*). If elimination cannot be carried on fast enough, some degree of dropsy may occur, and as the Greenbaums have shown, it takes on the form of edema of the lungs; especially is this likely to occur in nephritic patients. Not more than thirty to forty ounces should be used at any one time, and this should be followed by further injections if need be, to prevent reversal of effects.

Treatment of Peripheral Facial Paralysis.—

George A. Moleen (*Colorado Medicine*, April, 1916) recommends the following treatment for acute cases due to exposure to cold. When seen early a cantharidal blister should be applied over the mastoid, purgation secured by calomel in divided doses, and the administration of salicylates begun. The eye should be bathed and bandaged to keep it closed, or protected with a shield. Strychnine, in doses rapidly increased to one twentieth grain, or to tolerance, should be given after the fourth day, and massage and electrical stimulation of the paralyzed muscles begun to maintain their nutrition. The electrical stimulation should be just sufficient to secure contraction and the current used should not cause pain. The application of a caustic solution of iodine to the mastoid and the internal administration of iodides should be tried in advanced cases. Where recovery does not follow after sufficiently prolonged treatment, surgical measures, such as nerve suture, may have to be used to give some innervation.

Treatment of Pruritus.—In the continuation of his discussion of the treatment of the several forms of this affection P. G. Unna (*Berliner klinische Wochenschrift*, November 15, 1915) calls attention to the fact that the results of treatment directed to the correction of the underlying causes may be slow. In view of this it is often necessary to adopt measures for immediate temporary relief, for which purpose washes of citric or acetic acid, alcoholic solutions of phenol, salicylic acid, boric acid, thymol, or menthol, have been widely used. But all of these have been supplanted recently by the much more effective monochlorobenzene. This volatile liquid should be dissolved in alcohol to make a solution of from one to five per cent. and the solution applied by spraying or washing over the itching surface. Owing to its volatility it penetrates the skin with great rapidity and promptly anesthetizes the affected nerve end-

ings. The effect produced is, however, fairly lasting, not passing off in less than several hours or even an entire night. When the skin is very dry it is well to add about two per cent. of castor oil to the solution and make a shake mixture; or the following formula may be prescribed for local application:

R Magnesium carbonatis,	2.5 grams;
Monochlorobenzini,	5.0 grams;
Olei rapæ, q. s. ad.....	100.0 grams.
M. et fiat mistura.	

Sig.: Shake well and apply externally.

Treatment of Traumatic Fistulas.—Traumatic fistulas are produced and kept up by the presence of some foreign body in their depths, or by infection of the track with partial or intermittent closure of the external opening such as will interfere with proper drainage. Adolph Hoffmann (*Medizinische Klinik*, April 16, 1916), therefore, advocates the opening of the external orifice, removal of the foreign body (if still present), and the thorough cleaning away of all of the granulation tissue which lines the walls of the fistula by means of the sharp spoon. Further, all branches and pockets which communicate with the fistula should be freely opened. The wound should then be dressed after thorough tamponade of the cleaned track, and the dressing changed without removal of the tampon. After several days the tampon should be withdrawn slightly and the outer end cut off. This is to be repeated several times, thus securing healing from the base and producing complete obliteration of the fistulous track.

Treatment of Pyorrhea by Deep Injections of Mercury.—Barton Lisle Wright (*Medical Record*, May 6, 1916) advises the administration of one grain of mercuric succinimide every seventh day by the deep intramuscular method in men and three quarters to four fifths of a grain in women until pus has disappeared and the gums have regained their normal appearance. Local treatment embraces expression of pus from the pockets, removal of tartar, extraction of hopeless teeth and roots, and polishing of the tooth structure. To this may be added application to the gum margin of a mixture of equal parts of tincture of iodine, tincture of aconite and chloroform every second day. The longest time required to effect a cure was forty-one days, the shortest four days, with an average of seventeen days. The greatest number of injections required to cure the primary infection was seven, with an average of 2.9.

Treatment of Chronic Trigonitis.—H. W. E. Walther (*Medical Record*, May 13, 1916) writes that prophylactic treatment includes the correction of perivesical or pelvic disease, avoidance of irritant drugs or foods, alcoholic beverages, violent exercise causing exhaustion, exposure to cold or wet, and retention of urine. Absolute rest in bed is essential in severe cases and warm baths are helpful. The bowels should be kept active with mineral waters, while vesical pain is alleviated by giving a dram of potassium acetate with an equal quantity of tincture of hyoscyamus in water every four hours. Rectal suppositories of ten grains of anethin will give comfort at night, as will also hot sitz baths and a hot water bag to the pubic region. When pain is severe and obstinate it is necessary to employ morphine for

its relief. Hexamethylenamine in fifteen grain doses every three hours is the best urinary antiseptic and when it is used the alkalies must be stopped. If the urine is strongly acid, then acid sodium phosphate or sodium benzoate should be given in twenty to thirty grain doses. Irrigations are of little service, although they may be tried, using one to 10,000 silver nitrate with one to 8,000 potassium permanganate, or distention of the bladder with one per cent. boric acid solution may be practised. Instillations and topical applications of silver nitrate give the best results in 0.25 to two per cent. strengths after anesthetizing the bladder with alpin, novocaine, or eucaine. Direct applications of a five per cent. silver nitrate solution or of the lunar caustic stick may be made through the Kelly cystoscope. As a last resort suprapubic cystotomy may be necessary with drainage.

Treatment of Diabetes.—A greatly modified plan of starvation and elimination has given very promising results in the hands of John Hume (*Brit. Med. Jour.*, April 22, 1916). There was invariably marked relief of symptoms as early as three days after starting the treatment. At 5 p. m. a light meal is given, after which absolute fasting is continued for fourteen hours. A 7 p. m. a dose of castor oil is administered, and this is repeated the following morning at 9 a. m. Light diet is then restored in about two hours. The same routine is repeated on alternate nights, gradually lengthening the period of fasting and replacing the castor oil with a saline. By the end of two weeks the fasting can comfortably be borne for twenty-four hours two or three times weekly. During the earlier fasts the patient should be kept in bed. Even after sugar has completely disappeared from the urine the patient should continue with one fast each week; and if a small amount of sugar persists he should fast twice weekly. In addition to the fasting, the mouth and teeth should be put into a hygienic condition.

Treatment of Acute Poliomyelitis.—Although the administration of an immune serum to monkeys in the preparalytic stage of the disease has been shown to delay or prevent its development, the value of such a serum is limited in the treatment of poliomyelitis in man on account of the impossibility of making a diagnosis before the paralysis makes its appearance. Frederick E. Batten (*Lancet*, April 15, 1916) says that it has proved of value, however, in checking the progress of the disease in cases of the ascending variety. Twenty to thirty c. c. of blood should be obtained from a suitable healthy, immune donor, allowed to clot, and the serum separated by centrifugation. The patient is then subjected to lumbar puncture and about ten c. c. of spinal fluid is withdrawn to allow for the injection of a like amount of the immune serum. Following the injection the bed should be tilted so as to permit the gravitation of the fluid upward. The treatment can be repeated at intervals of three or four days until the advance of the disease has been checked. The only serious difficulty encountered in this treatment is the securing of suitable donors. The treatment should also be employed in cases showing meningeal symptoms, and, if possible, in cases in which a probable diagnosis can be made in the preparalytic stage.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT

November 22, 1915.

Primary Generalized Spindle Cell Sarcoma of the Lymph Glands, by P. von Baumgarten.—The case of a man fifty-eight years old is reported with the anatomical and histological findings resulting from the post mortem study of the tissues. The condition was scarcely distinguishable clinically from one of lymphatic leucemia except for the blood picture, which did not deviate far from the normal. There was involvement of all of the superficial lymph nodes in enlargement and the nodes in many regions showed decided fusion into large masses. In addition there were small nodes found beneath the skin. Some of the lymph nodes and the subcutaneous nodules, removed during life, revealed the presence of a spindle cell sarcoma. Post mortem, practically all of the lymph structures of the body were found to have been involved in a similar sarcomatous growth. The case is probably unique, and is of particular interest on account of the close resemblance it bore clinically to lymphatic leucemia.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

April 4, 1916.

Amebic Dysentery in France, by A. Orticoni and P. Ameuille.—Amebic dysentery is shown to have spread considerably in France since the beginning of the war. Within five months there were admitted into a single hospital twenty-eight cases of dysentery—seventeen bacillary and eleven amebic. Only three of these eleven patients had ever left France. In many instances the infection was evidently acquired merely by occupying trenches or encampments previously used by African troops. After the war, one may expect to meet with cases not only among military veterans but likewise in the civil population, into which the disease seems already to have begun to diffuse.

PARIS MÉDICAL.

April 1, 1916.

Parainguinal Hernia, by A. Mouchet and R. Gouverneur.—A corporal twenty-four years of age was admitted into hospital for a swelling above the left inguinal fold where seven years earlier he had been kicked by a horse. A small, painless tumefaction of the size of a small nut was the sole persisting evidence of the injury. Recently, upon falling into a trench, he had experienced intense pain in the entire left side, the inguinal swelling simultaneously growing larger and painful. The swelling was found to be of pigeon's egg size, gave an impulse on coughing, and was partially reducible. Incision revealed an omental hernia issuing through a broad buttonhole in the aponeurosis of the external oblique after having passed through the internal oblique and transversalis muscles. The course of the hernia was entirely independent of the inguinal canal. A successful "radical cure" was effected. In spite of the apparent role of traumatism in the production of this hernia, it is believed that there must have existed, even before the first injury, a congenital diverticulum burrowing into the tissues of the abdominal wall.

PRESSE MÉDICALE.

April 3, 1916.

Aphonic Pectoriloquy in the Early Diagnosis of Pneumothorax, by V. Mandru and J. Balanescu.—Normally aphonic pectoriloquy may be elicited at the level of the upper dorsal vertebrae, in the interscapular space and in the internal portion of the supraspinatus fossa. The finding of aphonic pectoriloquy in a well characterized pneumothorax is of no diagnostic significance, but in early cases showing no signs of the condition other than marked diminution of the vesicular murmur, the authors have found aphonic pectoriloquy in abnormal situations of considerable assistance. Exploratory puncture and radioscopy in three cases confirmed the presence of pneumothorax where this sign had been noted. It persisted until vesicular breathing had been completely restored as a result of treatment. In a case of marked diminution of vesicular murmur without aphonic pectoriloquy, puncture and radioscopy revealed, not pneumothorax, but adhesive pleurisy. In suspected pneumothorax cases, aphonic pectoriloquy should be sought in the posterolateral portion of the two lung bases, at a distance from the spinal column, in order to avoid confusion with the areas of normal aphonic pectoriloquy. The pathogenesis of the latter in pneumothorax is the same as in pleurisy, the changes taking place in the lung being, in some respects, similar in the two conditions. First there appear diminished vesicular murmur and aphonic pectoriloquy, next a localized and veiled amphoric murmur, and finally, when the accumulation of fluid or air has become large, a generalized amphoric murmur.

Mechanical Myodiagnosis, by J. A. Sicard and P. Cantaloube.—Direct mechanical excitation of a muscle with an appropriate percussion hammer evokes two sorts of reactions, viz., a localized or idiomuscular contractile reaction, and a complete or remote contractile reaction or muscular reflex action. The latter does not always correspond in its responses with the more generally studied tendinous, osseous, and cutaneous reflexes, and is of practical, diagnostic value. It is of earliest diagnostic significance in the case of the small muscles, these undergoing atrophy, upon injury to the corresponding nerve, more rapidly than the large muscles. The best points for striking the muscles to elicit muscular reflexes are much the same as the points attacked in electric exploration. The condition of the external popliteal nerve is determined by striking the extensor brevis digitorum at its attachment to the astragalus and calcaneum, causing extension of the second and third toes; of the internal popliteal nerve, by striking the interossei at the proximal end of the second and third intermetatarsal spaces, on the dorsal surface, causing flexion of the second and third toes; of the median nerve, by striking the short abductor and short flexor muscles of the thenar eminence; and of the ulnar nerve, by striking the hypothenar muscles, internally and posteriorly. In injuries to nerves a slow, vermicular contraction may occur upon direct muscular percussion, especially in the case of the hypothenar muscles. Absence of contractility is

evidence of a more marked nerve injury than that indicated by the reaction of degeneration. Rapid diminution of the muscle reflexes on the dorsum of the foot is of special prognostic import in injuries to the popliteal nerves, beginning sometimes in the third week, with abolition of the reflex in three months.

RIFORMA MEDICA.

April 10, 1910.

Immunizing Substances in the Serum of Animals Vaccinated Against Typhoid, by Francesco Lanzetta.—Experiments were carried out to compare the effect of antityphoid vaccination in rabbits and man. The conclusions arrived at were that the agglutinin in the rabbit was the same in quantity whether one or three injections were given; that the intravenous route produces more agglutinins than the subcutaneous; and that in vaccines prepared with germs killed by heat the quantity of agglutinin is in inverse proportion to the degree of heat used.

April 17, 1910.

The Immunizing Value of Castellani's Tetra-vaccine, by F. Porcelli Titone.—This vaccine contains the bacilli of typhoid, paratyphoid A and B, and cholera, and in the rabbit as in man it causes the production of agglutinins for each of these four organisms, and in similar amounts to those found in vaccination with the single types of bacilli. Consequently following inoculation with this tetravaccine the blood serum acquires considerable bactericidal power against the bacilli contained therein.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

May 13, 1910.

Diabetes of Maximum Severity, by H. Rawle Geyelin and Eugene F. Du Bois.—The case of a young man, nineteen years old, with diabetes of acute onset and extreme severity, is reported on account of the many specially interesting points observed in the course of an exhaustive study of his progress to recovery. During and following a fasting period there was an excessive loss of nitrogen ranging from twenty-five to thirty-eight grams, which are the highest figures ever reported for man. This indicated an excessive protein loss. Further, there was a total disability to burn sugar, including that which was derived from the protein molecule. The ratio of urinary dextrose to urinary nitrogen during the fast and for some time afterward was 3.6 to one, which was also the highest ever observed in man and which equalled that observed in phloridzinized dogs. Practically all of the fat which the patient metabolized was converted into beta oxybutyric acid with a resulting extreme grade of acidosis. There was a very low respiratory quotient, which rose as the sugar increased and the acidosis declined. During the height of his illness there was a slight increase in his basal heat production; this decreased with low diet and recovery. An initial fast was accompanied by an increased acidosis and an increase in symptoms, but a second fast following a period of low diet was followed by marked recovery and an ultimate improvement to such an extent that the patient could tolerate 160 grams of carbohydrate in a mixed diet yielding 3,000 calories.

Control of Diphtheria, by D. M. Lewis.—There may be fallacious conclusions drawn from the laboratory tests for diphtheria carriers, contacts, and convalescents, in the fact that these persons may harbor virulent bacilli and still yield negative cultures on two successive occasions. As the result of two years' experience the most satisfactory method of determining the need for isolation of those capable of transmitting the disease has proved to be through the direct inspection of their buccal, nasal, and nasopharyngeal cavities. Where these structures are entirely normal it is safe to discharge the patient, but where there is hyperemia, congestion, or discharge, the patient should remain isolated until the condition disappears, even though cultures are negative for diphtheria bacilli. For complete control of diphtheria in a community the inspection should be extended to include repeated observation of children of school age in families with no school absentees and the notification and inspection of new families moving into the community.

Sex Gland Implantation, by G. Frank Lydston.—Four additional successful cases are reported and the author's work is summarized to date. It has been shown that total or partial heteroimplantation of the sex glands is successful and practicable in man for the purposes of hormone therapy. Even anastomotic transplantation for generative purposes does not seem hopeless. The glands may be successfully transplanted from the healthy dead body at any time before decomposition has set in. Male glands may be transplanted into the female, and possibly with benefit. The site of implantation does not affect the physiological and therapeutic results, except that certain areas are more likely than others to yield successful transplantations. Among the beneficial results noted, there have been: Improvement in the circulation; retardation of senility; improvement in the early stages of arteriosclerosis; possibly senile dementia may be improved; postponement or alleviation of the climacteric; improvement in certain types of mental aberrations and certain psychopathies; and improvement in certain chronic skin diseases, such as psoriasis and ichthyosis. A positive indication for the transplantation of the sex glands is found in any mutilation of these structures in either sex. Lastly, conditions marked by malnutrition are likely to benefit from the transplantation.

Multiple Acute Gastric Ulcers after Use of Percy's "Cold Iron" for Carcinoma, by V. N. Leonard and A. B. Dayton.—The case of a woman is reported to show the occurrence of multiple acute gastric ulcers, similar to those known to follow extensive skin burns, as the result of the application of Percy's "cold iron" method of treatment for carcinoma of the uterus. The histological examination of the tissues removed at autopsy showed the failure of the method, since viable carcinoma tissue was still present four days after the thorough application of the treatment.

MEDICAL RECORD.

May 13, 1910.

Etiology of the Recent Epidemic of Pseudoinfluenza, by William Whitridge Williams and Ward Burdick.—The recent epidemic of pseudoinfluenza in Denver was estimated to have involved 50,000 cases and was accompanied by nephritis,

myocarditis, arthritis, bronchopneumonia, and otitis media, which markedly increased the death rate. Sputum and other discharges from the beginning of the epidemic showed a peculiar streptococcus, which in ordinary smears was a lanceolate diplococcus, Gram positive, with an indefinite capsulelike halo, thus closely resembling the pneumococcus. Chain formation took place in neutral broth and growth was more profuse in anaerobic tubes. Rabbits inoculated with this organism developed sudden high temperature with drowsiness and loss of appetite, and when killed forty-eight hours later, a selective inflammation of the trachea and bronchi was seen. This selective action was lost after four or five generations of subcultures. Complement fixation tests were positive with the blood serum of the pseudo-influenza patients. This is another instance of the influence of environment on pathogenic and cultural characteristics of microorganisms.

AMERICAN JOURNAL OF ORTHOPEDIC SURGERY

April, 1916

Further Application of the Intraarticular Silk Ligament in the Flail Joints of Poliomyelitis Paralysis, by Bernard Bartow.—The writer uses silk ligament in a flail hip joint in preference to arthrodesis. The silk is attached to the body of the ilium, inserted through tunnels previously made in the ilium and head of femur, and then fastened posteriorly to the capsule. He also uses this operation in genu recurvatum, inserting the silk posteriorly and in outward rotation of the thigh. In the latter case the operation is extraarticular, attaching the silk from the crest of the ilium to the great trochanter.

Arrested Development of the Carpus and Tarsus, by James K. Young.—The writer presents an interesting case, in a child ten years of age, which shows an x ray of the wrist with absence of the proximal ends of the second to the fifth metacarpal bones; of the distal epiphysis of the ulna and radius; and of all the carpal bones except the os magnum. The ankle presents the same lack of development of proximal ends of the second to fifth metatarsal bones, with partial development of the astragalus, calcaneus, cuboid, and middle cuneiform. The writer believes the case to be one of arrested development of the centres of ossification, which are laid down between the first and fourth years, and to be due to some acute infection.

Arthroplasty of the Internal Phalangeal Joints, by John Prentiss Lord.—In this operation the author removed the ends of both bones and then inserted free fat and fascia. The removal of bone was especially free in cases where no normal joint surface remained. He has obtained, by this operation, increase of function and decrease of deformity and of pain, if present.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

April, 1916

Tuberculosis of the Bones and Joints, by R. W. A. Salmond.—The site of origin in bones is usually near the epiphyseal cartilage, much less frequently in the periosteum or medullary canal. Primary bone disease is more common in children. In primary bone lesions the beginning is in the bone marrow,

never in the actual bony structure, near the epiphyseal line. The compact layer of the shaft may be broken and an abscess may form in the surrounding tissue. Usually, however, the periosteum does not give way, and the disease spreads in the interior of the shaft, especially toward the joint. While it is spreading toward the joint the latter may be the seat of a serous effusion. The negative shows increased translucency or rarefaction of the bony structure in nearly every case of active disease of some duration and is due to the absorption of lime salts. This is also seen when a bone has been functionally inactive as after a fracture or in constitutional conditions such as chronic alcoholism. A sequestrum appears as a lighter area on the negative, lying loose. The conditions which may be mistaken radiographically for tuberculosis are: Osteitis, epiphysitis, syphilis of bone, bone cyst, sarcoma, infective arthritis, synovitis, and hemarthrosis. Disease of the vertebrae is to be differentiated from injury, especially in the cervical region, typhoid spine, sarcoma, secondary malignant disease, and hysterical spine. Sacroiliac joint tuberculosis is to be differentiated from calcified patches in the iliac vessels which simulate sequestra, while hip joint disease is at times confounded with osteitis, epiphysitis, gummatous epiphysitis in infants, separated epiphysis, coxa vara, congenital dislocation, synovitis, rheumatoid arthritis, and syphilis of bone.

Properties of the Simpson Light, by Alastair MacGregor.—Simpson noted that the light produced by the electric combustion of certain ores had curative effects in cases of eczema, acne, asthma, and other affections, among his workmen who were exposed during their work to the light and fumes derived from this combustion. The Simpson light owes its special properties to those electrodes which are not composed of gas carbon, but of a mixture of certain metallic ores, the chief constituent being wolfram, a tungstate of iron and manganese. The length of the ultraviolet portion of the spectrum in the Simpson arc light is 19.5 cm., compared to ten cm. of the carbon arc light. The arc between the metal electrodes of the Simpson lamp is a much more powerful source of ultraviolet rays than the carbon arc—probably five to ten times as strong. Beside being rich in ultraviolet rays, it also contains rays of shorter wave length than those of the carbon arc. In applying the light therapeutically either the "open arc," "focussed arc," or the "medium focussed arc" may be used. The first is suitable for larger areas, the two latter for smaller areas, when more intense treatment is indicated. In using the lamp therapeutically a reaction is obtained in five or six hours. It varies from a slight tingling lasting from one to five hours to considerable irritation and erythema which may last from five to forty-eight hours. It has been used in cases that have resisted other forms of treatment, and with good results. Among the diseases treated were rodent ulcer, lupus, syphilis and venereal lesions, eczema, simple infected ulcers and wounds, healing wounds, tuberculous joints and glands, and exophthalmic goitre. The vapor has been used in the treatment of asthma, nasal catarrh and sinusitis, vasomotor rhinitis, and pulmonary tuberculosis.

Proceedings of Societies.

SOUTHERN MEDICAL ASSOCIATION.

*Ninth Annual Meeting, Held at Dallas, Texas,
November 8, 9, 10 and 11, 1915.*

The President, Dr. OSCAR DEAMING, of Shreveport, Louisiana, in the Chair.

(Concluded from page 1005.)

Health Conservation through Life Insurance Companies.—Dr. J. L. DAVIS, of Waco, Texas, stated that of all the business propositions before the world today, the best was to save human life. The life insurance companies had long ago realized this and had set themselves to the task of prolonging life. This they were doing by teaching their policy holders how to care for themselves and to give attention to little matters of health. The life insurance companies of the United States had taken the lead in matters of sanitation and right living. They had been advocating proper living and demanded it of their policy holders. There were 2,000,000 life insurance policy holders in the United States. Tuberculosis was recognized by insurance companies as exceedingly infectious and for a number of years they had made careful inquiries into the lives of applicants for insurance along this line. They had gone so far as to find if the applicant had been associating with tuberculous people. Typhoid fever was the arch enemy of insurance companies. The next of the deadly enemies was alcohol, and the greatest temperance lectures of the age could be taken from the dry records of almost any life insurance company.

The Allen Fasting Treatment in Diabetes.—Dr. ISAAC IVAN LEMANN, of New Orleans, said it was the belief of Allen that they had been wrong in trying to maintain or increase the weight of diabetic patients where glycosuria persisted, for such attempts simply kept the body at a size beyond the capacity of the pancreas to provide sufficient internal secretion. His short experience with Allen's method, embracing now five cases, had served to free him of the fear of precipitating a severe acidosis by the sudden starvation, and, secondly, it had convinced him in one severe case of its great possibilities. The other four cases were mild. Two of them he had tried in vain to bring about aglycosuria by gradual reduction of carbohydrate intake, then of protein intake, and finally in one of them by the interposition of green days. These two patients became aglycosuric in twenty-four to forty-eight hours of starvation respectively. The other two mild cases required twenty-four to seventy-two hours' starvation respectively. In none of these four did acetone appear in the urine. None of the patients had any serious complaint. Not only was the disappearance of the glycosuria brought about more promptly and with less trouble both to the patient and to him than by the former technic, but it was possible to build up for each of these patients a livable diet and still maintain them aglycosuric. In the two patients whose points of tolerance he had tried to determine by the older method, he found the new tolerance quite satisfactory and far in excess of what it had been in the past. In fact, his brief experience with

the method had been sufficiently satisfactory and enlightening to encourage him to proceed.

Pyelitis in Infancy and Early Childhood.—Dr. L. R. DEBURY, of New Orleans, stated that the majority of cases of pyelitis occurred under three years, most of them under two. In from ninety to ninety-six per cent. females were affected. It was highly probable that much of the trouble in the adult female kidney might have origin in the infections of the kidney during infancy and childhood. Pyelitis might be primary or secondary to a cystitis. The treatment of pyelitis might be included under four heads: 1. Drugs. 2. Irrigation of the pelvis by direct method. 3. Irrigation of the pelvis by indirect method. 4. Vaccines.

Many drugs had been advocated in pyelitis, among them hexamethylenamine, potassium citrate, methylene blue, creosote, and salol. Of these the first and second were the most frequently used. Hexamethylenamine was best given early and in large doses, two to three grains, every three or four hours, to a child from one to two years of age. It was given for the antiseptic property of the formaldehyde liberated in the urine. The direct method of irrigating the pelvis of the kidney had been shown in the adult to be the most efficient means of combating pyelitis, and its results were excellent. By far the most trustworthy method of treatment in pyelitis in the small patient was by irrigation of the pelvis of the kidney by indirect method. By this was meant the giving of large quantities of liquids. It was well to dilute their food so that they might be always hungry, and in order to satisfy their hunger they must take large quantities of fluids to receive a sufficient quantity of nutriment.

Vaccines were sometimes of benefit and should be autogenous. Their effect was not uniform, but in some instances had been of advantage. They should be given in doses beginning with 50,000,000 and increasing rapidly to 200,000,000 or even 250,000,000. The interval varied from three to five days, depending upon the reaction of the patient and the recovery from the reaction. In the resistant cases and the chronic ones the autogenous vaccine was especially indicated. Should the vaccine not produce immunity after from three to five vaccinations, as shown by the bactericidal property of the blood, it should be discontinued.

The Dietetic Treatment of Bronchial Asthma.—Dr. ALLAN EUSTIS, of New Orleans, stated that a review of 178 cases justified the following conclusions: 1. Most cases were due to absorption of proteolytic toxins. 2. These toxins might be absorbed from a suppurating accessory sinus in the nose or from the intestinal canal. 3. Treatment of intestinal toxemia was as important as any drainage of focal infections. 4. An alveolar abscess might be the focus from which the toxin was absorbed. 5. In the dietetic management of asthmatics, animal proteins, with the exception of buttermilk, should be eliminated from the dietary as much as possible.

Influence of Potassium Iodide on Luetic Reaction.—Dr. RANDOLPH LYONS, of New Orleans, drew the following conclusions: 1. The experiments performed fully confirmed the observations of Sherrick upon the influence of potassium iodide on the

luerin reaction. 2. That iodine was the essential factor in producing the positive reaction in a non-luerin individual was demonstrated by the fact that hydriodic acid, thyroid extract, and possibly hyperthyroidism produced a similar effect. 3. When a luerin test was made it was essential that no iodine in any form be taken internally. Furthermore, it was important to know that iodine should have been ingested for an interval of at least three weeks previous to the performance of the test. 4. Torpid or later reactions occurring after an interval of two weeks were usually due to the ingestion of potassium iodide. The reaction might be influenced after an interval of two months by the subsequent administration of potassium iodide (Sherrick). Anomalous reactions might generally be attributed to potassium iodide. 5. Activation of the luerin test with mixed treatment vitiated it. 6. Clinical differentiation between the two, luerin reaction and iodine reaction, could not be made with any degree of certainty. When a positive test developed very rapidly, an iodine reaction might be expected. 7. The extreme prevalence of the use of iodine in some form (potassium iodide) would necessitate a critical review of the published reports of positive reactions in order to eliminate the iodine reactions. This would undoubtedly lower the percentage of positive results.

Uniformity in the Wassermann Reaction.—Dr. COURTNEY W. SHROPSHIRE and Dr. CHARLES WATKINSON, of Birmingham, Alabama, from their experience and from their study of the literature, had come to the following conclusions: 1. The results obtained with the Wassermann reaction and its modifications were subject to wide variation. 2. This variation was due to modification in technic and to faulty technic. 3. Members of the medical profession, judging by the reports taken from the literature, requested some representative medical organization to take up the work of standardization and place the reaction on a firm base with definite units of strength and volume, and standard readings to be used by all serologists.

Artificial Pneumothorax.—Dr. JOHN J. LLOYD, of Catawba Sanatorium, Virginia, drew the following conclusions: 1. The selection of cases should be carefully made if success was to be expected and the operation saved from disrepute. 2. In spite of careful examination, including x ray in some cases, they were unable to discover an extensively adherent pleura in a large percentage of cases prior to attempting compression. 3. In the early part of the treatment all patients should be treated as bed patients. 4. In order to accomplish the greatest benefit, the lung must be kept completely compressed for a long period of time—how long they were not yet in a position to determine. 5. The immediate dangers were relatively slight and might be avoided by proper technic. The remote dangers were chiefly due to embarrassment of the better lung and might often be anticipated and prevented. 6. Artificial pneumothorax offered a chance for great improvement in a class of cases hitherto regarded as doubtful.

Focal Infections.—Dr. W. C. MAYES, Dr. W. WILSON, and Dr. C. F. WILSON, of Memphis, Texas, from their limited experience, drew the following conclusions: 1. Many diseases the etiology

of which had been obscure were undoubtedly due to metastasis or absorption of toxins from a primary focal infection. 2. They did not believe that they had done their whole duty to a patient by simply treating the results of a metastatic infection or the symptoms of toxic absorption. 3. It was absolutely essential to remove the primary focus when possible or at least overcome the infection in the same in order to conserve the best body economy. 4. In the diseases due to focal infection, if a cure was not effected by the removal of a diseased focus, or if further metastasis occurred, the focus removed was not the causative or only causative focus, and a further search should be made with view to its removal or cure. 5. If the focus could not be removed, or the infection in the same controlled, for anatomical reasons, often the removal of a diseased tonsil, draining an apical dental abscess, or accessory nasal sinuses allowed the body economy so to recuperate that a cure would occur in the original offending focus. 6. An innocent appearing tonsil might be the focus, and search for the offending focus was not complete without exhausting every aid of the laboratory, x ray, and their personal diagnostic ability.

Influence of the Injection of Blood on Anemia and Infections in Children.—Dr. J. SPENCER DAVIS, of Dallas, Texas, said that in the injection of whole blood they had the therapeutic means of increasing the white blood corpuscles; that in many cases a crisis in the disease could be brought on, and that the destruction of bacteria in the body was hastened. He had found it of great value in the acute infectious diseases of children, such as scarlet fever. Like all other therapeutic measures, it sometimes failed where it was most needed, and its value was dependent upon the ability of the individual to respond to the injection. He had never seen bad results follow the injection, although at the site of the injection he had the same series of color changes which occurred in an ordinary bruise.

Scurvy versus Rheumatism.—Dr. DANDRIDGE P. WEST, of New Orleans, stated that the prognosis of scurvy depended upon early recognition of the disease, severity of the symptoms, and the complications. Death in untreated cases resulted usually from hemorrhage, exhaustion, or bronchopneumonia. In recognized cases the treatment was highly satisfactory, and none was more easily instituted. It might be covered briefly by the rule: Discontinue all previous foods, especially if they had been patented, boiled, or sterilized, give fresh milk, fruit juices, and if the digestion would stand it, puree of potato or green vegetables. In all suspected cases the effect of the treatment, the therapeutic test, was of the greatest value, inasmuch as the results showed in forty-eight hours, and no harm, as a rule, could be done by waiting so long. If in doubt, when the baby was unduly irritable on being handled, and showed perhaps local manifestations of joint pain, they should preclude first the idea of rheumatism, change the diet to raw milk, and give orange juice.

Bronchial Gland Tuberculosis.—Dr. MARY E. LAPHAM, of Highlands, North Carolina, said that in a very healthy hill district, where there had not been a dearth of tuberculosis in ten years, Hillen-

berg found that from twenty-five to fifty per cent. of the children gave positive reactions to tuberculin. A large percentage of school children gave these same positive reactions and in the majority of cases no tuberculous foci were found. It was thought that the residence of tubercle bacilli in the bronchial glands accounted for these reactions and for the absence of demonstrable foci of infection. The presence of tubercle bacilli did not necessarily mean the development of tuberculous processes. It had been shown by autopsies that the bronchial glands were oftenest infected, but that there were times when the tissues were simply swarming with tubercle bacilli, and yet there was not the slightest trace of structural change, even under the microscope. From birth to puberty bronchial gland tuberculosis might dominate the clinical picture, but after puberty they must admit tuberculosis. Given sufficient time, the tuberculous processes in the bronchial glands of children might extend into the lungs and create the pulmonary tuberculosis of adults. A thorough comprehension of the tuberculous processes in the glands of children, with all their possibilities of danger from adults, taught them the importance of discovery and arrest at the very start. The tuberculosis expert knew full well that healthy school children were in far greater danger from the unsuspected extension of tuberculous processes than the sick ones were, because bad health stimulated examinations and good health prevented them.

Common Sense and the Fever Thermometer versus the Stethoscope and the Microscope in the Diagnosis of Early Pulmonary Tuberculosis.—Dr. S. E. THOMPSON, of Carlsbad, Texas, in his paper endeavored to prove the following points: 1. They were finding only a very small proportion of incipient tuberculosis patients. 2. This was due largely to faulty teaching. 3. As a result of this faulty teaching they could not rely on the stethoscope. 4. The microscope would not make a sufficiently early diagnosis. 5. In using common sense and the fever thermometer they could find a large number of early cases. Their attitude toward tuberculosis should be one of eternal suspicion. The white plague was everywhere. It was the most common, the most frequent of all diseases. The finding of their early cases was the general practitioner's burden, and if he depended less upon the stethoscope and microscope and relied more on competence and the fever thermometer, he would find a much higher percentage of his early cases, and thousands of lives would be saved annually.

Rest and Exercise in Tuberculosis.—Dr. THOMPSON FRAZER, of Asheville, North Carolina, in his paper summarized briefly the chief points: 1. A thorough knowledge of the principles of rest and exercise must underlie the treatment of tuberculosis. 2. Neither exercise nor rest was to be prescribed off-hand, but so long as there were symptoms pointing to an overworked body, rest was indicated, the character and amount to be carefully prescribed, and that with improvement exercise slowly increased provided the safest means of regaining health and strength. 3. Exercise must be very gradually increased, as a single act of overexertion might delay the recovery for months or years, or even make it

impossible to attain. 4. The transitional period referred to should be continued under careful medical supervision until the patient was able to stand without harm more than he would be called upon to stand when he took up active work.

If these points were duly considered, and, if instead of vaguely advising rest or exercise, they limited the amount and character of each so as to return their patients to a condition in which they would be able successfully to cope with their changed environment, in the future they would hear less and less of relapses and should be able to accomplish what should be their chief aim—an economic cure.

Recognition and Treatment of Occult Tuberculosis.—Dr. SYLVIO VON RUCK, of Asheville, North Carolina, said that in many cases the diagnosis of an obscure clinical condition depended upon what happened to enter the physician's mind as possibly standing in relation. If it was kept in mind that tuberculous infection was practically universal, that the majority of persons possessed a fair resistance, which, however, might be broken down, temporarily or permanently, by many factors; that tuberculous disease might be latent in the sense that it presented no symptoms at all, or that the symptoms might be atypical, and that the obscure cause of certain clinical manifestations might be a specific toxemia, it became evident that the idea of such a toxemia having a tuberculous origin was not far fetched. It was characteristic of many conditions, and this would aid in the appreciation of their true nature, that they resisted the modes of treatment which were ordinarily effective, as was pointed out in the case of pseudochlorosis by Trousseau, and as was insisted upon by many authors in the case of tuberculous rheumatism, in which the salicylates were useless. In cases, therefore, in which the usual remedies remained without effect, it would be proper to keep the possibility of a tuberculous intoxication in mind, and at least to make a tuberculin test, subcutaneous, or still better, made with the vaccine, because this preparation would at the same time exert its therapeutic effect. In accordance with the old truism, that the cures of diseases demonstrated their nature, it was in this manner that an obscure clinical condition could be established, and that simultaneously a curative remedy was introduced which would exert its beneficial action in cases in which a tuberculous intoxication or an occult tuberculous process stood in relation to the clinical symptoms.

WESTERN SURGICAL ASSOCIATION.

Twenty-fifth Annual Meeting, Held at Des Moines, Iowa, December 17 and 18, 1915.

The President, Dr. JOSEPH RILUS EASTMAN, of Indianapolis, in the Chair.

Ascending Renal Infection.—Dr. DANIEL N. FISCHDIEHL and Dr. JACOB V. KAHN, of Chicago, had just completed a series of twenty-seven experiments on dogs and rabbits which demonstrated that infection traveled from the bladder to the kidneys and perinephritic tissue by way of the lymphatics in

the wall of the ureter and not along its mucosa. Their observations, so far as they could ascertain, were the first to show that the lymphatic capillaries of the periureteral sheath, both in laboratory animals and in the human being, played a most important part in ascending infection. Proceeding a step further, the constant finding of evidences of infection in the immediate vicinity of the rich network of bloodvessels, to which Sampson had called attention, surrounding the ureter, made it seem plausible that infection could travel to the kidney from the female genitalia and other abdominal viscera which lay in close relation to the ureter.

They had attempted to imitate the environment as found in the human being by injecting an emulsion made by mixing the scrapings of agar slant cultures of the organisms commonly found in urinary infections with sterile salt solution. After thorough cleansing of the genitalia, preferably in male animals, a No. 4 or 5 French ureteral catheter, such as was employed for x ray work, and could be boiled, was inserted into the bladder, some of the urine taken for cultures, and then an emulsion of bacteria injected. All injury to the bladder and ureters was thus avoided and the conditions under which the organism migrated upward resembled those found clinically as closely as was possible in animal experiments. Paraffin sections were taken from a number of places in the bladder and kidney and were studied serially. In order to trace the infection upward, along the ureter, every portion of the latter was cut longitudinally as well as serially, so that no areas were omitted. In five rabbits and eight dogs *Bacillus coli* was injected into the bladder. In three rabbits and four dogs *Staphylococcus aureus*, and in three rabbits and three dogs *Proteus vulgaris* was used. In one rabbit an emulsion made by mixed acute gonorrheal pus with salt solution was injected. Summarizing results, they found that the inflammatory infiltrations followed in a most accurate manner the course of the lymphatics, as determined by the work of Kumita and Bauereisen.

In the early stages of infection the infiltration was found in the submucous layer of the bladder, and was especially dense around the smaller vessels in this layer. Their work showed that the connecting link between the lymphatics of the ureter and those within the kidney was along the lymphatics of the subareolar tissue which surrounded the bloodvessels as they entered the kidney tissue. They followed the organ itself, the course of the intertubular, periglomerular, and perivascular lymphatics. In six of their experiments they obtained from the renal pelvis pure cultures of the same organism which they had injected into the bladder. In none of the animals was a positive culture obtained from the heart's blood, so that hematogenous infection could be excluded.

The Use of Epinephrine and Transfusion in Treatment of Shock.—Dr. J. F. CORBETT, of Minneapolis, limited the use of epinephrine and transfusion to cases of postoperative and traumatic shock where an extreme picture was presented of pallid mucous membranes, low blood pressure, unconsciousness when anesthetic was discontinued, and threatened failure of respiration. In these cases the

administration of epinephrine, carefully guarded by blood pressure determinations and continued for several hours, was recommended. The use of the epinephrine should be so guarded as never to raise the blood pressure to over ninety or 100 mm. Hg. It was advised that this treatment should be used only in cases where there had been loss of blood volume, either as a result of shock and hemorrhage or in pure shock resulting from transudation into the tissues without hemorrhage. After the vessel tone had been established transfusion should be done. This recommendation was based on a long series of animal experiments and on the results of three clinical cases.

Advantage of Separate Suture of the Mucous Membrane in Gastric Surgery.—Dr. RICHARD A. BARR, of Nashville, Tennessee, stated that the mucous and submucous coats of the stomach formed a very tough and substantial structure. It was easy to divide the peritoneum and the muscle down to the submucosa and to separate them from it without cutting through. In the region of the pylorus a submuscular resection of the submucous and mucous coats might be made with less technical difficulty than was encountered in doing a pylorotomy, and in many cases served much the same purpose. In pylorotomy and partial gastrectomy division down to the submucosa and suture of this structure and the mucosa before dividing them, prevented soiling, gave satisfactory control of hemorrhage, and the completed suture line was much less rigid and less thick than that obtained by the usual method. The dissection of a flap of overlying peritoneum and muscle from ulcers lying on the anterior wall, with cauterization of the ulcer, suture of the submucosa with infolding, and replacement of the flap was already an established procedure.

How to Locate Foreign Bodies in the Chest and the Method of Their Removal.—Dr. EMIL G. BECK, of Chicago, reported seven cases in which he removed foreign bodies from the chest cavity, first locating them by means of stereoscopic roentgenograms, with the assistance of wire localizers. These little localizers were placed on the skin within the suspected vicinity of the foreign body, and the stereoscope would almost invariably locate to a certainty the foreign body and help to estimate its depth within the chest cavity. The seven cases reported were the following: 1. Rubber catheter in lung abscess, with bismuth injection. 2. Bullet in chest. 3. Glass headed pin within the lung four years. 4. Two buckshot within the chest ten years. 5. Pin tack within the lung, with lung abscesses five years. 6. Lung abscess with two rubber tubes healed in cavity and discovered two years later. 7. Wooden probe two years within an empyema. In these cases the foreign bodies were located and removed through an external operation. The speaker demonstrated the case of lung abscess in which a pin tack had been removed, showing a new procedure in operation on lung abscesses, by implanting a flap of skin five inches long into the lung abscess cavity, thus keeping it open to permit the cauterization with actual cautery of the bronchi which led into the compartments of this abscess cavity. In this case several bronchial openings could be plainly seen to open into

the cavity. This procedure could be done by indirect illumination with a head mirror, or through a resectoscope with direct light.

Foreign Bodies in the Urinary Bladder.—Dr. E. STARR JUDD, of Rochester, Minnesota, stated that his paper embraced a report of seven cases of foreign bodies found in the urinary bladder, exclusive of pieces of broken catheter or surgical instruments. This series included three hairpins, a 22 calibre rifle bullet, a piece of chewing gum, a fragment of bone, a part of a jackknife blade. Bodies lodged in the bladder were prone to incrustation from salt deposits, though some materials, such as this piece of bone, seemed to be immune. The stone with the foreign body as a nucleus was usually of considerable size before the patient's symptoms compelled him to seek the aid of a physician. Pain and burning on micturition, pus and sometimes blood, frequency or retention, and marked urgency, were frequently the symptoms. Attention was called to the fact that foreign objects found in the bladder had usually gained entrance through the urethra, though in two cases reported by him, namely, the bone and the jackknife blade, this could not have occurred. There was no question that these foreign bodies got into the bladder through the side wall, producing few if any symptoms during the time they were passing in, though careful examination of the inner lining of the bladder at the time of the operation did not reveal scars or permanent injury to the bladder wall.

Experimental Data Opposed to the So Called Exhaustion Hypothesis of Shock.—Dr. MAJOR G. SEELIG, and Dr. DON R. JOSEPH, of St. Louis, contributed a joint paper dealing with the fundamental problem of vasoconstrictor activity in shock. They called attention to the fact that the doctrine of exhaustion of the vasomotor centre in shock prevailed in the minds of many surgeons. This hypothesis was without sufficient warrant. Seelig, in collaboration with Joseph, studied vasomotor activity as manifested in the bloodvessels of the ears of albino rabbits. In rabbits, it was possible by suitable nerve and ganglion section, to remove the vessels of the ear, and by studying the vessels of this ear as control vessels, the investigators were able to show that good vasomotor tone was maintained even in the late stages of shock.

(To be continued.)

Letters to the Editors.

A CORRECTION.

WOODHAVEN, L. I., May 16, 1916.

To the Editors,

Will you kindly give publicity to the following statement?

In publishing my recent paper, *Surprises for the Diagnostician Revealed by the Pathologist*, in the *NEW YORK MEDICAL JOURNAL* for May 13, 1916, Dr. Herbert C. Clark, pathologist of the Canal Zone, was not given credit for the work done at and after necropsy on the cases cited. The omission of Doctor Clark's name seems to have occurred first in editing the original manuscript for the Semiannual Report of the Medical Association of the Canal Zone.

A notice to this effect would help greatly to relieve the embarrassment I feel as the result of the omission.

WALTER G. BAETZ, M.D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Transactions of the American Climatological and Clinical Association. For the Year 1915. Volume XXXI. Philadelphia: Printed by the Association, 1915. Pp. xxxi-210.

This volume of transactions is on the lines ordinarily followed by such publications. It contains the usual list of officers and members, constitution and by laws, and obituary notices. Then come the president's address and the fourteen papers read at the last annual meeting. In some cases these papers are followed by more or less discussion. The papers are: Effect of changes in atmospheric conditions upon the upper respiratory tract; the personal equation in the treatment of tuberculosis; lung involvement secondary to suppurative abdominal disease; the acute infections in diabetes mellitus; report of a case of coccidioid granuloma, and report of four unusual aneurysms; case of pulmonary and glandular aspergillosis; diagnosis and treatment of cardiac syphilis; some of the anatomopathological problems in tuberculosis; relation of the spleen to tuberculosis and fat solvents; the adjustments of pressures in induced pneumothorax, with especial regard to the mobility of the mediastinum as indicated by the manometer; observations on the blood pressure in cases of dysthyroidism; heliotherapy in Colorado; and the choice of a climate in cases of Bright's disease and nephritis.

Digest of Comments on the Pharmacopœia of the United States of America and on the National Formulary. For the Calendar Year Ending December 31, 1914. By MARTIN I. WILBERT. Hygienic Laboratory-Bulletin No. 105. Treasury Department. United States Public Health Service. Washington: Government Printing Office, 1916. Pp. 516.

This latest volume of the digest covers the calendar year 1914 and is again a monument to the industry of its author. Brief abstracts of the more important papers and general brief summaries of the trend of changing ideas are given together with an extensive bibliography under each heading. Under the caption General Comments are included references to the discussion of the legal status of the pharmacopœia, its development, and its scope. Standards for nonpharmacopœial preparations are reviewed and include new and nonofficial remedies, biological products, disinfectants, etc. Many analytical data and clinical tests are commented upon, and there is a wealth of references to general comments which have been made on the various preparations. A section is devoted to discussions of international standards and to the more important foreign pharmacopœias. Merely as a book of reference the work is most useful, but the able editing done by its author makes it a valuable and convenient volume for any one who would acquaint himself with the recent lines of thought in therapeutic matters. It is to be regretted that, like the pharmacopœia, this volume will remain quite unknown to the vast majority of practising physicians, although from it they might glean much information of great practical service.

Post Mortem Methods. By J. MARTIN BEATTIE, M.A., M.D., Professor of Bacteriology, University of Liverpool, Formerly Joseph Hunter Professor of Pathology, University of Sheffield. Cambridge Public Health Series. Under the Editorship of G. S. GRAHAM-SMITH, M.D., University Lecturer in Hygiene and Secretary to the Sub-Syndicate for Tropical Medicine, and J. E. PURVIS, M.A., University Lecturer in Chemistry and Physics in Their Application to Hygiene and Preventive Medicine, and Secretary to the State Medicine Syndicate. Cambridge: At the University Press; New York: G. P. Putnam's Sons, 1915. Pp. viii-231. (Price, \$3.25.)

One of the chief reasons why better scientific work is not done in this country is the lack of post mortem examinations. If the profession can be encouraged in any way so that more autopsy work is done, it will be of marked advantage. This small volume gives in a thorough and

logical manner the necessary steps in performing necropsies and calls attention to the main features. The chapter on the examination of special cases should be of particular value to those whose experience has been limited. Taking it altogether, the book can be recommended highly.

Bakteriologisches Taschenbuch. Die wichtigsten technischen Vorschriften zur bakteriologischen Laboratoriumsarbeit. Von Dr. RUDOLF ABEL, Geheimem Ober-Medizinalrat, o. ö. Prof. der Hygiene an der Universität Jena. Neunzehnte Auflage. Würzburg: Verlag von Curt Kabitzsch, 1916. Pp. vi-140.

For a laboratory reference book in small and compact form, this little volume can be recommended. It contains a large amount of important information put in a very clear manner. Incidentally, it deserves praise on account of its excellent index, something that so many German publications lack. The fact that this is the nineteenth edition shows the true worth of the publication.

Interclinical Notes.

The *Prescriber* for May, 1916, reports the following conversation: "Pa." said the doctor's little son, who was learning elementary chemistry, "does precipitation mean the same thing as settling?" "It does in chemistry, my son; but in practice you'll find that many persons in settling don't show any precipitation."

An astonishing story is Enoch Soames, by Max Beer-bohm, in the *Century* for May; it is a masterpiece by a master writer of short stories. The Leatherwood God, by another master, W. D. Howells, is in its second instalment. Mary Heaton Vorse has *The Judgment* of the Thorntons, a tragedy without a death. H. Addington Bruce has an excellent essay on the Mind of the Child. The pictures are very fine, the beautiful frontispiece being a reproduction of a painting by Anna Whelan Betts, *Easter in Paris*. The cover, by Will Bradley, we believe to be Louis XVI in style; it is most fetching in any case. Those who have been familiar with the *Century* for many years will read with interest and emotion the tributes to Alexander Wilson Drake, for forty-three years the art director.

* * *

The arcana of medicine are being drawn upon freely in recent literature for sensational effects; the *Survey* for May 6th, beside the story about honeymoon appendicitis—which was written by Edith Houghton Hooker—has Just Flickerings of Life, by Winthrop D. Lane, a gruesome tale indeed of how an end may be put to newborn babies in Baltimore. "Murder . . . and slow and cowardly at that," was the report of a commission appointed to investigate the matter. There is keen editorial comment in this issue on the dinosaur which was paraded as a burlesque on preparedness, but which turned out to be a huge boomerang. The illustrations are handsome and striking, mostly from drawings, thank heaven, the eternal photograph being now accorded a well earned rest.

* * *

Editorially the *Outlook* for May 3d tells of a speech made by a policeman, Sergeant Ferré, to a mothers' association on the upper west side, in which he stated that the ambition of the New York police under Commissioner Woods was to get rid of their reputation as ogres. They were not tyrants. They were, most of them, fathers of children that they thought a lot of! They were going to see the day, if their efforts could bring it about, when the kid would think of the cop first if he wanted a friend. They knew what that would mean for law and order, for solving the question of play space for the children! Why, let them take the kids and the cops, and let them work together, and the percentage of juvenile delinquency would be cut in half—yes, to a third. Ten kids could find play space where one found it today.

* * *

Current Opinion for May takes up the organization of the campaign against the weeds that cause hay fever; attacking the problem of cancer by examination of living

cells on glass; sex factors in Mendelian heredity; the effort to abolish the Fahrenheit thermometer; a French scientist's plans for a community of apes with brains approaching man's; and how the new physical science has emerged from the ruins of the old. Beside this medical matter, we have the condensed and well written history of the past month, biographies of Sir Sam Hughes and of Villa and Marshal von Haeseler, music and drama—including a scene from *Justice*—religion and ethics, literature and art, and the business world; a fascinating number.

* * *

Commenting editorially on the fact that 683 workers a day are hurt in New York State, *Commerce and Finance* for May 3d says that the figures of the commission might be used by a military person satirically inclined to illustrate the frightful hazards of peace. New York State has a population about one tenth that of the United States. If the industrial accidents of other States are as many that would mean 2,250,000 persons hurt each year at their labor in this country. If we add to that number the persons run over, killed, or injured in wrecks, explosions, and various other happenings, not to mention the murders, hangings and electrocutions, the total no doubt would exceed 3,000,000.

Meetings of Local Medical Societies.

MONDAY, May 29th.—Poughkeepsie Academy of Medicine.

THURSDAY, June 1st.—Brooklyn Surgical Society; Practitioners' Club, Buffalo (annual); Geneva Medical Society; Glens Falls Medical and Surgical Society.

FRIDAY, June 2nd.—Manhattan Dermatological Society; Corning Medical Association.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 17, 1916:

Ashford, F. A., Passed Assistant Surgeon. Redetailed for duty in the medical examination of arriving aliens at Montreal, Canada, effective May 15, 1916. **Bean, W. S., Jr.**, Assistant Surgeon. Granted one day's leave of absence, May 3, 1916. **Clark, T.**, Surgeon. Directed to return to Washington, D. C., from Indianapolis, Ind., by way of Little Rock, Ark., for inspection of studies of school hygiene. **Cox, O. H.**, Assistant Surgeon. Directed to report to the commanding officer, Coast Guard Cutter *Apache*, Baltimore, Md., for duty in the physical examination of Coast Guard men. **Creel, R. H.**, Surgeon. Relieved at New Orleans, La., and ordered to proceed to Washington, D. C.; detailed as assistant surgeon general in charge of the division of foreign and insular quarantine, effective May 15, 1916. **Francis, Edward**, Surgeon. Directed to proceed to certain points in the State of Florida, for the purpose of collecting materials and data relating to studies of filariasis. **Frank, L. C.**, Sanitary Engineer. Directed to proceed to Detroit, Mich., and other cities on Lake Erie, for inquiry into the possibility of operating experimental sewage steam sterilizers in vessels on the Great Lakes. **Freeman, A. W.**, Epidemiologist. Directed to proceed to certain points on the Ohio River watershed, and in the Eastern States north of the Potomac River, in connection with the investigations of stream pollution. **Galloway, T. C.**, Assistant Surgeon. Granted two days' additional leave of absence, from April 30, 1916. **Goldberger, Joseph**, Surgeon. Directed to visit point in the Northern States, and also to proceed to Toronto, Canada, for observation of sporadic cases of pellagra. **Hoskins, J. K.**, Sanitary Engineer. Directed to proceed to certain points on the Ohio River watershed, and in the Eastern States north of the Potomac River, in connection with the investigations of stream pollution. **Kempf, G. A.**, Assistant Surgeon.

Ordered to report at Washington, D. C., for duty in the compilation of data collected in the studies of school hygiene in Frederick County, Md. **Kerr, J. W.**, Assistant Surgeon General. Directed to represent the Service in the house of delegates of the American Medical Association, at Detroit, Mich., June 12 to 16, 1916; en route, to stop at Cincinnati, Ohio, to attend the meeting of the Association of Medical Milk Commissions, June 9 and 10, 1916. **Knox, Howard A.**, Assistant Surgeon. Granted two months and ten days' leave of absence, from June 1, 1916; resignation of his commission accepted by the President, to take effect August 10, 1916. **Krulich, Emil**, Passed Assistant Surgeon. Ordered to proceed to Port Townsend, Washington, for the examination of an officer to determine color sense. **Lloyd, B. J.**, Surgeon. Directed to proceed to Vancouver, B. C., for reexamination of certain aliens. **Long, John D.**, Surgeon. Granted one month's leave of absence, from May 15, 1916. **Nydegger, J. A.**, Surgeon. Granted five days' leave of absence on account of sickness, from May 15, 1916. **Preble, Paul**, Passed Assistant Surgeon. Directed to proceed to certain points on the Ohio River watershed, and in the Eastern States north of the Potomac River, in connection with the investigation of stream pollution. **Ramus, Carl**, Surgeon. Redetailed for duty at the Immigration Station, Ellis Island, effective May 27, 1916. **Reichard, John D.**, Assistant Surgeon. Relieved from duty at Baltimore, Md., and ordered to report to the commanding officer, United States Coast Guard Cutter *Itasca*, at New London, Conn., May 19, 1916; appointed and commissioned as an assistant surgeon, from date of oath, May 8, 1916. **Slaughter, W. H.**, Assistant Surgeon. Directed to deliver an address at the Public Health Day exercises at Sommerville, Ga., May 19, 1916. **Stiles, C. W.**, Professor. Detailed to deliver an address, May 24, 1916, at Lynchburg, Va., in connection with Baby Week. **Sweet, E. A.**, Passed Assistant Surgeon. Directed to proceed to Baltimore, Md., for special temporary duty in connection with the Safety First Train. **Tarbett, R. E.**, Sanitary Engineer. Directed to proceed to certain points on the Ohio River watershed, and in the Eastern States north of the Potomac River, in connection with the investigations of stream pollution. **Thompson, B. R.**, Passed Assistant Surgeon. Directed to proceed to certain points on the Ohio River watershed, and in the Eastern States north of the Potomac River, in connection with investigations of stream pollution.

Boards Convened.

Board of commissioned medical officers convened at the bureau, May 31, 1916, to examine candidates for appointment as assistant surgeon. Detail for the board: Assistant Surgeon General W. C. Rucker, chairman; Surgeon A. M. Stimson, member; Passed Assistant Surgeon J. R. Hurley, recorder.

Assistant Surgeons T. E. Hughes and L. L. Williams detailed for duty on Coast Guard Retiring Board, at Norfolk, Va., May 18, 1916.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending May 20, 1916:

Blair, Harry C., First Lieutenant, Medical Reserve Corps. Relieved from duty in the Southern Department, effective August 20, 1916, and will then proceed to his home; leave of absence for two months and twenty-six days granted, effective upon his arrival at his home; relieved from active duty in the Medical Reserve Corps, effective upon the expiration of leave of absence. **DeLoffre, Samuel M.**, Captain, Medical Corps. Granted four months' leave of absence on surgeon's certificate of disability. **Dowdle, Edward**, First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Ontario, New York, and will then proceed to his home and upon arrival will stand relieved from active duty in the Medical Reserve Corps. **Greenleaf, Henry S.**, Major, Medical Corps. Granted leave of absence for one month, with permission to visit Japan, effective upon his relief from duty in the Philippine

Islands. **Jones, Augustus B.**, First Lieutenant, Medical Corps. Relieved from duty at Jefferson Barracks, effective July 10, 1916, and will proceed to Fort Davis, Alaska, and report to the commanding officer of that post for duty. **Lyster, Theodore**, Major, Medical Corps. Granted four months' leave of absence, with permission to visit South America, effective on or about June 1, 1916. **McDonald, Robert C.**, Captain, Medical Corps. Directed to proceed to Fort Sam Houston, Texas, and report in person to the commanding general, Southern Department, for assignment to temporary station.

The following named officers of the Medical Reserve Corps have been ordered to active duty on account of an existing emergency, effective June 6, 1916: First Lieutenant Ben H. Metcalf, First Lieutenant William H. Seemann, First Lieutenant Stevens T. Harris, First Lieutenant John F. Denton, First Lieutenant J. Samuel White, First Lieutenant John M. Armstrong, and First Lieutenant Herbert C. Lieser.

Births, Marriages, and Deaths.

Born.

McLean.—In West Somerville, Mass., on Saturday, April 15th, to Dr. and Mrs. John A. McLean, a son.

Married.

Bolduc-McNally.—In Fall River, Mass., on Thursday, May 11th, Dr. Alfred G. Bolduc, of Attleboro, Mass., and Miss Agnes G. McNally. **Cooper-McFadden.**—In Peoria, Ill., on Saturday, May 6th, Dr. Hugh Cooper and Miss Florence McFadden.

Died.

Arter.—In Greensburg, Pa., on Thursday, May 11th, Dr. Daniel A. Arter, aged eighty-seven years. **Bucknam.**—In Warren, Ill., on Thursday, May 4th, Dr. Alvan F. Bucknam, aged seventy-nine years. **Donsife.**—In Frederick, Md., on Wednesday, May 10th, Dr. H. L. Donsife, of Woodsboro, Ind., aged seventy-three years. **Duff.**—In Hollidaysburg, Pa., on Friday, May 5th, Dr. Edward M. Duff, aged fifty years. **Dwight.**—In Philadelphia, on Monday, May 8th, Dr. Marcus B. Dwight, aged sixty-four years. **Everitt.**—In Jersey City, N. J., on Tuesday, May 16th, Dr. John R. Everitt, aged seventy years. **Fenton.**—In Detroit, Mich., on Sunday, May 7th, Dr. Franklin T. Fenton, aged fifty-four years. **Fox.**—In Cincinnati, Ohio, on Sunday, May 7th, Dr. Edward A. Fox, aged thirty-five years. **Horibeck.**—In Summerville, S. C., on Thursday, May 4th, Dr. Henry Horibeck, of Columbia, S. C., aged forty-three years. **Jones.**—In Cleveland, Ohio, on Friday, May 5th, Dr. John D. Jones, aged seventy-eight years. **Knight.**—In Providence, R. I., on Monday, May 8th, Dr. Edward B. Knight, aged seventy-one years. **McCarty.**—In Spottsville, Ky., on Tuesday, May 9th, Dr. Thomas McCartney, aged seventy-two years. **McMichael.**—In Minneapolis, Minn., on Friday, May 12th, Dr. Oliver H. McMichael, of Vernon Center, Minn., aged seventy-one years. **Martin.**—In Chicago, Ill., on Monday, May 8th, Dr. Manfred R. Martin, of Weldon, Ill., aged thirty-seven years. **Power.**—In Cle Elum, Wash., on Saturday, May 6th, Dr. Isaac N. Power, aged sixty-four years. **Powers.**—In Boston, Mass., on Saturday, May 13th, Dr. A. Howard Powers, aged sixty-one years. **Reed.**—In Jefferson, Wis., on Tuesday, May 10th, Dr. William W. Reed, aged ninety-one years. **Rose.**—In Crawfordsville, Ind., on Monday, May 8th, Dr. Vincent Rose, aged eighty years. **Simon.**—In Cloverport, Ky., on Sunday, May 7th, Dr. A. A. Simon, aged fifty-eight years. **Stafford.**—In Alameda, Cal., on Sunday, May 7th, Dr. Auren Alfred Stafford. **Vance.**—In Bement, Ill., on Wednesday, May 10th, Dr. N. Noble Vance, aged seventy-one years. **Weller.**—In Richmond, Ind., on Wednesday, May 10th, Dr. James E. Weller, aged forty-one years. **Wickman.**—In Newark, N. J., on Saturday, May 13th, Dr. Albert Wickman, aged forty-nine years. **Wing.**—In Los Angeles, Cal., on Tuesday, May 9th, Dr. Elbert Wing, aged sixty years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 23.

NEW YORK, SATURDAY, JUNE 3, 1916.

WHOLE No. 1957.

Original Communications.

THE DEFINITE MANAGEMENT OF PNEUMONIA.*

BY SOLOMON SOLIS-COHEN, M. D.,
Philadelphia,

Professor of Clinical Medicine, Jefferson Medical College.

Disease is the struggle for health. In death, there is no struggle. The infections are characterized by a battle between the infected organism and microscopic living enemies more deadly than the wild beasts or savage neighbors with whom our cave dwelling or tree nesting progenitors fought for their lives. Among the most terrible of these are the pneumococci tribes, especially when allied with malignant streptococci and the microbes of influenza.

We have long been accustomed to use the terminology of war, both in describing the struggle of the organism with its enemies and in discussing the measures by which the physician, as its ally, may help it to win that struggle. In the present discussion, emphasis will be laid upon an important distinction made by soldiers, and which has, through recent events, become quite familiar to all—that, namely, between *strategy* and *tactics*.

By *strategy* we mean a comprehensive plan, embracing large purposes, which are to be adhered to irrespective of minor happenings, fortunate or unfortunate. By *tactics* we mean the measures adopted to carry out this plan.

Strategy is definite, fixed. Tactics must be elastic, susceptible of modification, perhaps upon the instant, in order to meet unexpected conditions. Moreover, tactical measures necessarily vary, not only in accordance with the particular conditions present at any time or place, but also with the means at hand for their execution.

The distinction between therapeutic strategy and therapeutic tactics, between general plan and special measures, important in every case, becomes all important in the treatment of pneumonia.

The *definite treatment* of pneumonia, so termed to distinguish it from the vagueness of expectant management upon the one hand, and the certainty of specific therapeutics on the other, involves both strategy and tactics. Expectant treatment is all tactics; there is no strategy, save that of waiting upon Nature. In modern specific therapeutics—the use of serums and bacterins—strategy and tactics merge in one; the strategy of Nature is adopted, but its tactics are better and more promptly executed.

*An address delivered before the New York Association of Physicians, January 27, 1916.

This is, beyond question, the ideal treatment, but unfortunately it is not yet generally available for pneumonia.

In the definite plan our strategy is an imitation, but not a reproduction, of Nature's; we try to "better the example." Our tactics are those of art, not only until we can obtain the means for carrying out Nature's tactics, but even then for the purposes of supplementation and reinforcement.

These tactics are more familiar than their strategic basis. They are sometimes employed without definite plan and their coordination is then not efficiently accomplished. Moreover, the method is at times named from one feature of its tactics, and thus misnamed; whether by attaching to it the name of an individual or that of a therapeutic agent.

As to names of individuals, I have no special concern. This is not a bibliographic study, nor do I care much about questions of priority. But I wish to use the term *definite treatment* instead of my own or any other name, and to iterate and reiterate this term until all possibility of mistake disappears, in order to guard against the more important error involved in giving to this plan of treatment the name of a drug or of a measure of nursing tactics. It is not—at least as I advocate it—"quinine treatment," nor "bacterin treatment," nor "fresh air treatment," nor "oxygen treatment," nor "cocaine" nor "pituitrin" treatment, but the utilization of all these and still other tactical measures as needed—not in haphazard fashion, but through their incorporation into a definite, strategic plan. Thus its measures embrace, when needed, all that is good in the expectant plan, or available in the way of specific treatment; but with certain definite additions managed in a definite way.

That our conception of pneumonia and its treatment has been greatly modified, and will ere long be still further modified by the results of painstaking researches in the bacteriological and biological laboratories, and especially by the splendid work of Cole and his associates, scarcely needs to be said.

Clinicians and students of morbid anatomy had long realized that the term "pneumonia" covers a group of infections rather than a single nosological entity. Even if we exclude the multifarious groups of the bronchopneumonias and confine our attention to lung fever—that is to say, croupous or lobar pneumonia—it would be easy to cite numerous significant passages from the published writings and unpublished lectures of English speaking physicians alone, especially those of a relatively recent day, as your Flint and our Philadelphia DaCosta. Not alone has the great variety in the clinical symptoms,

in the virulence, in the infectiousness, and in other more or less well marked traits, exhibited by individual cases, been recognized—as in the almost classic division into the sthenic and the asthenic types—but also the variations presented by great groups of cases, observed most clearly in different climates, localities, years, seasons, but sometimes observed in the same place and at the same time.

The vague distinctions of clinical speculation have now been lifted to the plane of etiological classification by the division of the pneumococci into the well known four or, more recently, five groups. As yet, however, we have no certain means of discriminating our cases etiologically, except by the agglutination test, and this is not generally available.

It is much to be desired that etiological, symptomatic, and anatomical data should be so correlated as to bring out clinical indications giving at least a probable clue to the identity of the pathogenic agent in an individual case. Only through some such means can specific treatment, even when perfected, become generally applicable. At present, even recognition of *Pneumococcus mucosus* by morphological or cultural characteristics, is of little practical value so far as treatment is concerned; for it is just against *Pneumococcus mucosus* that as yet no efficacious bacterin or serum treatment has been found.

On the other hand, the apparent mildness of the initial symptoms does not always indicate that we are dealing with a Group IV infection that need give us no anxiety; for these cases may suddenly and rapidly develop severe symptoms, terminating even in death. Careful observation and analysis are necessary for this work.

But while we are waiting for our friends at the Rockefeller Institute and elsewhere to push their investigations and discoveries and devices—not only to the point of giving us a specific treatment, antitoxic or bactericidal, or both, which shall be readily accessible, but also to give us indications for its use which may be recognized by practical bedside methods—we cannot afford to rest quiet under the present frightful mortality. We should at least make an effort to develop our hygienic and pharmacological resources to the highest possible point.

This has been the attempt made in the gradual elaboration of a definite treatment. Some of its features are old. Some are newer. Their grouping is believed to be original—but I am not much concerned about priority, and time forbids excursions into historic or bibliographical research.

In this method, certain drugs and other agents are used according to a definite plan, for definite objects. Let me repeat: The use of one or more of the same or like drugs in an expectant or a purely empirical manner, does not constitute the definite treatment. On the other hand, the definite treatment may incorporate into its tactics whatever is found to be useful in armed expectancy or any other method.

The present big gun of the definite tactics is quinine, in massive doses, somewhat as advocated by Jürgensen, and recently revived by Galbraith. Long experience of the prompt and effective action in malaria, of quinine and urea hydrochloride (quinine-carbamide-hydrochloride) injected into the muscles, led me to the adoption of that preparation and that method. Fig. 3 and Fig. 6 are charts

of cases in which the drug was given encapsulated, by mouth.

This is, however, a detail, unimportant in strategy, and not essential even in tactics. Any other salt of quinine and any other method of administration may be adopted, either because it is better, or for whim's sake, or for convenience, or from necessity. When certain optochin, synthetic products, as ethylhydrocuprein, and hydroquinine (methyl hydrocuprein) become available, they may prove to be equal or preferable to the quinine and urea salt. It may well be that the intravenous route will be found better than the intramuscular. For this the urea compound is not altogether eligible. I say "may"—not "will." As to both these points, for the present, I reserve judgment—and use the carbamide.

What is a tactical essential, however, is a correct and sufficient dose—namely, *enough and no more*. This may be anywhere from ten grains to 250 grains (0.6 to fifteen grams) or more, in the course of the case; the larger quantity, of course, being spread out over several days.

For reasons to be stated later, quinine and its congeners are believed to be chemical antidotes or antitoxics to the pneumonia poison. In some cases a single dose is sufficient to insure recovery. (Fig. 2.) In many cases no other drug is necessary. In the severer cases, however, quinine must be supplemented by cocaine, adrenaline, pituitrin, or other effective pressure-raising agent; often by musk or camphor as a prompt cardiac or cardiovascular stimulant, or by digitalis as a heart sustaining agent. There is some reason also to believe that digitalis has another valuable property in pneumonia, to which attention will be called more at length later—namely a certain antitoxic value.

Saline infusion, under the skin or by the rectum, alkaline-saline (chloride containing) beverages, water, external heat, and less frequently the administration of alcohol and the inhalation of oxygen, also find place. Iodine and creosote are likewise of more or less important, more or less frequent, tactical use for definite indications. A careful disinfectant toilet of the upper air passages, nose as well as throat, is useful in all cases, imperative in many. Spraying or swabbing or both may be employed, according to special indications and convenience of application. Among special agents that may be chosen for the purpose are solutions of essential oils in phenolated liquid petrolatum, alkaline detergent washes, solutions of various peroxides (or of sodium perborate which acts like a peroxide) argyrol and solution of iodine, potassium iodide and phenol in glycerin.

The good effect is well kept up by continuous inhalation of creosote, or ethyl iodide, or both (with perhaps the addition of chloroform and eucalyptol or terebene), by means of the Yeo (perforated zinc mask) respirator. One chart shown is that of a woman aged sixty years, with chronic pulmonary tuberculosis (recurrent type) of thirty years' standing, who recovered from influenza pneumonia in 1915, and to whom the respirator gave both subjective comfort and objective help.

An adequate supply of fresh air, preferably in an open space, such as a roof or a porch, but with all necessary precautions to prevent chilling of the sur-

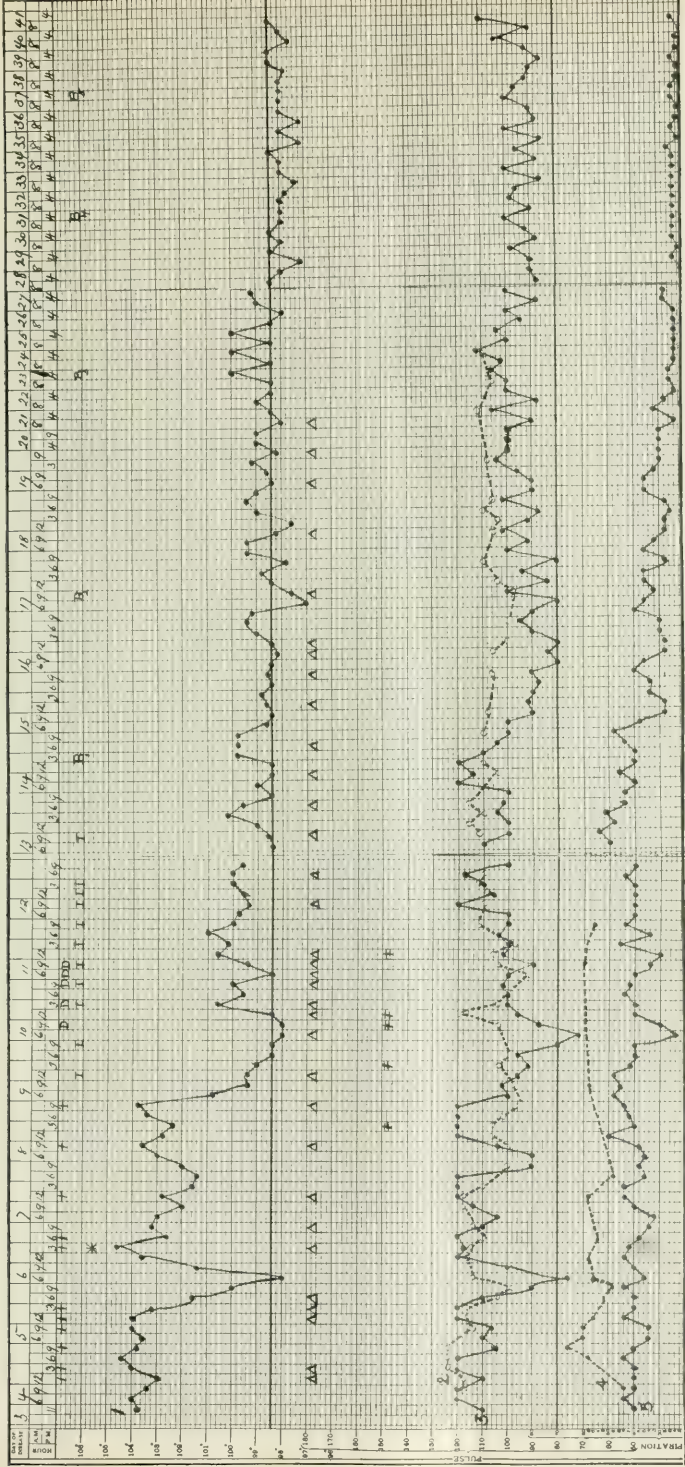


FIG. 1. Case summary. Louis K., aged fifteen years. Severe case. Began lower left base and extended rapidly upward day by day, till almost the whole of the left lung was consolidated. Pneumococcus in blood and sputum. After decline of temperature, sixth day, recrudescence accompanied with an increased cough and expectoration. On eighth day, high temperature, 40°C, and rigors. Both lungs unresolved (physical signs confirmed by roentgenogram). Bacterium (presumably *S. typhimurium*) isolated from sputum. Resolution began sixteenth or seventeenth day (auscultation) and was complete thirty-eighth day (roentgenogram). Blood pressure—systolic (2-4) and diastolic (4-1) in diastolic lines. Read diastolic figures in larger numerals on outer line. δ —Respiration curve. (Observe effect of bacterium on curve (temperature) and curve δ (bacterium)).

face of the body, due attention to nourishment and to the evacuations, and all the other details of good nursing, including watchfulness, almost "go without saying."

As to bacterial products, bacterins are used in unduly prolonged cases and in cases of delayed resolution after symptomatic recovery. Serums when available, can readily be incorporated into the general plan.

The why and wherefore, the how and when of each of these, and of still other occasional pharmacal and nonpharmacal expedients, will be set forth in an appropriate connection. But this preliminary outline or bird's eye view will perhaps enable the tactical details to be followed more understandingly, and also do away with the false impression that the use of quinine or of any other drug is advocated either as an exclusive or a specific method. In the present state of pharmacy and pharmacology, quinine happens to be the agent most available and most easily handled for fulfilling a certain definite therapeutic indication present in nearly every case of pneumonia; but any other agent that will fulfill this indication equally well, or better, may be substituted without altering the definite character of the therapeutic plan or impairing the efficacy of its application.¹

I have no massive or wonderful statistics to offer. This for two reasons, apart from an imperfection of records, which I greatly regret, but cannot now remedy. First, because statistics at the present day would be of little value without the separation of cases into the modern etiological groups; and this, not alone as regards the particular type of pneumococcus present, but also with respect to complicating organisms, streptococcus, influenza bacillus, Micrococcus catarrhalis, etc., and the clinical or anatomical evidence of mixed infection. Secondly, because in complex therapeutic questions, I have little faith in merely statistical evidence. It is far from worthless, but it is also far from convincing, either positively or negatively, unless the cases marshalled run into the thousands, and are fairly comparable as to some definite feature under discussion, as in Brand's report upon the cold bath in typhoid.

My own cases are in the hundreds only; they are not separated as to the type of pathogenic organism, and I have not yet been able to fulfil my wish of analyzing them as to the personality and environment of the patients, their age, sex, constitutional

vigor, social condition, previous disease, habits, etc., the duration and stage of the morbid process when the patient first came under observation, and the many other factors so important in the individual case; so necessary to take into consideration tactically, and yet so difficult to tabulate. Moreover, one factor of greatest influence in this treatment is watchfulness. The amount and the kind of care that the patient receives from his attendants

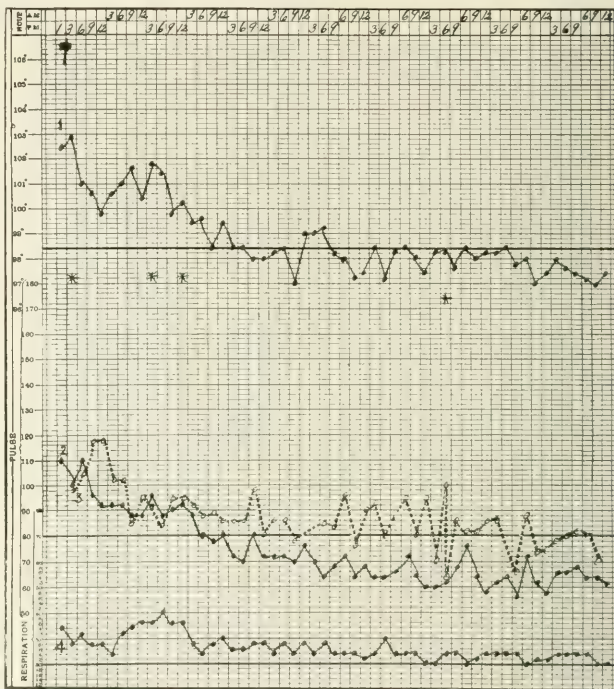


FIG. 2.—Case summary. Benjamin Y., aged forty-five years, moderate severity. Admitted fourth day. Left base. Involvement of right base coincident with rise of temperature fifth day. Chills. Cyanosis. Herpes. Leucocytes 15,700 (polys. 75 per cent.). After quinine (15 grains) 10:00. ? = quinine and urea hydrochloride 15 grains (one injection). * = cocaine hydrochloride one-half grain (four injections). Defervescence complete seventh day. Resolution normal. No complication. Systolic blood pressure indicated by dotted line (x).

(whether relatives or professional nurses, trained or untrained) and from his physicians (whether attending or consulting, or hospital interns) cannot be expressed statistically; and yet it frequently determines the result.

My own conclusions, therefore, are based not upon statistics, but upon the careful study of a fairly large number of individual cases. Some terminated fatally; the vastly greater number, happily, in recovery. Some were severe, some mild. Some ran an uncomplicated, almost book-typical course; some developed complications, trivial or severe. In some the recovery was unexpected and amazing; in some the death a deep disappointment, occurring when recovery seemed in sight. In some, the treatment was carried out as well as I could wish. In others, there

¹ Recently Doctor Hensley, of Brooklyn, has called my attention to the value of a mixture of plaster and salicylic acid, which I have not yet had opportunity to investigate as it seems to deserve.

were many flaws, as when a hospital was too crowded for the insufficient nursing corps, or when patients seen in consultation could neither be removed to hospital nor properly cared for in the environment of their habitations—one could scarcely say "homes."

Imperfect and incomplete records, however, show that somewhat more than 300 patients have thus been treated during twelve years. Included among

pathological conditions as "hepatic cirrhosis, chronic myocarditis, syphilitic aortitis, arteriosclerosis, and diffuse nephritis." To go over the whole mass of papers at this time in order to weed out such instances seemed a useless expenditure of time, in view of the necessity for a new grouping. I give, therefore an approximate rather than an exact estimate of mortality, but I believe it to be a conservative presentment somewhat overstating the proportion of deaths. Including the Philadelphia Hospital—all of whose patients are not of the unfortunate types referred to—the mortality appears to be less than twenty-eight per cent. Excluding the Philadelphia Hospital, but including Jefferson Hospital, together with private and consultation cases, the mortality is less than sixteen per cent. Exclusion of alcoholic cases, of those seen after the third day, and of patients of fifty years or over, would apparently give a mortality rate of much less than ten per cent. This, however, would not only greatly reduce the aggregate number of cases, but would likewise exclude a number of the most remarkable recoveries; as will appear from many of the charts (Fig. 6).

I lay no stress, nevertheless, upon any of these figures. They might be much better or much worse without effect upon my own judgment, and therefore without being urged as worthy to affect the judgment of others. Very recently I have begun to keep a new record, which I trust will be better guarded against accident, and in which the attempt will be made to have the pathogenic coccus in each case identified. This may be, in time, of some demonstrative value. No conclusion, however, can be drawn from it as yet, since it contains but three cases, all of Group I, and all recoveries. It may serve to show, however, that quinine does not kill.

That which does influence my opinion, however, and that from which I do venture to draw definite and positive conclusions, is the progress of individual patients, closely observed. I had thought of reciting a number of case histories in order to transfer that influence from my mind to the minds of my readers. But how

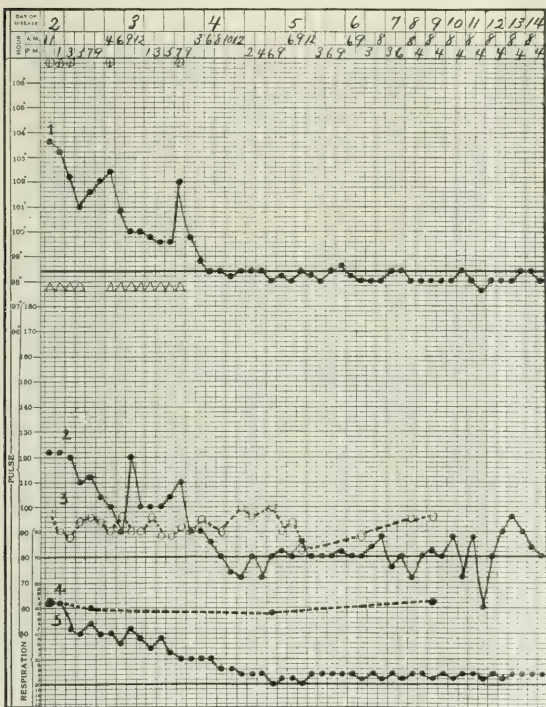


FIG. 3.—Case summary. (Jefferson Hospital.) Acute lobar pneumonia. Toxicemia moderately severe. B. P., boy, twelve years, admitted second day. Chill. Flushed cheek. No cyanosis, no delirium. Rapid feeble pulse, heart sounds weak, no dilatation. Pneumococcus No. 1 in sputum and blood. Staphylococci and streptococci in sputum. Leucocytosis moderate (14,000 increased fourth day to 18,000). Right middle and lower lobes involved. Fifty grains quinine hydrochloride by mouth in thirty-five hours. First thirty grains in six hours. Rapid lysis, complete on fourth day. Recovery. No complication or sequel. Dotted lines show blood pressures, 3, systolic, 4, diastolic.

these are numerous derelicts of poverty or vice, many of them aged in years as well as arteries, who were brought to the Philadelphia General Hospital, often after days of exposure and neglect. Some of them were transferred in delirium from the "drunk ward." The recoveries among these, however, are nearly as many as the deaths. I found also, in looking over some transcripts of Philadelphia Hospital cases, that the totals included a number of deaths in patients who had not received quinine, and should not therefore be counted in the record. Some of these were "drunks" transferred almost in *articulo mortis*. Others were in the hospital less than twenty-four hours. Some, even of those who were treated with quinine, presented such a congeries of

impossible that is! What catalogue of symptoms and physical signs, what chronicle of morbid events, what record of treatment can convey the impression that the physician of experience gathers from the facial expression, the attitude, the voice of his patient? From those characters of the pulse and respiration that cannot be expressed in numerals or charted in curves? From qualities of the breath sounds and of the sounds of the heart, that cannot be described in our technical formulas? Yes, from the "totality" of the phenomena presented by the sick man, and incapable of representation by words or diagrams.

Such recitals, then, must be omitted. They would only be wearisome and could have no greater prac-

tical value than the statement that a certain case was clinically severe or mild, or that in another case, such and such were the dangers and such and such the apparent results of the tactics adopted to avert or overcome them. In either event the reporter's word must be taken—and whatever may be the value of that word and of the trained observation and power of prognostical judgment for which it stands,

But first, a word as to the rationale, that is to say, the strategy, of that treatment.

The old clinical term, lung fever, is, from the therapeutic viewpoint, better than the anatomical designation, croupous pneumonia, that displaced it. Whether we consider the relatively mild cocci of Group IV, the highly virulent ones of Group III, or either of the other groups, the malady which results from their invasion plus the resistance of the animal body—for in every form of disease, these two sets of phenomena, the offensive and the defensive, are commingled—that malady is a systemic disturbance and not merely a local affection. It is an infective fever—by which I mean a general intoxication—with a more or less definite local lesion. The intoxication is the principal factor; the lesion secondary. In fact I am beginning to doubt the therapeutic value of the distinction we have been accustomed to make between lobar and lobular pneumonia—that is, in cases of pneumococcus infection, and possibly also in Friedländer bacillus infections. I refer of course to primary infections only.

The tissue changes are, indeed, not negligible. From the pulmonary nidus, infection and intoxication are spread. There is always some degree of mechanical interference, not only with respiration, but also with circulation; and in a certain—or rather uncertain—proportion of cases, thrombism, embolism, suppurations great or small, concentrated or diffuse, may become the cause of suffering, of danger, or even of death. So, too, infection of the meninges, is another threatening and often lethal possibility.

But the most distressing symptoms and the gravest dangers, in the vast preponderance of cases, arise not from tissue changes or mechanical disturbances, but from toxic interference with function.

Cough is often, in great degree, a toxic symptom, arising from nervous irritation rather than from mechanical conditions. The rapid, labored breathing is a toxic symptom; the frequency and feebleness of the pulse is a toxic symptom; the depression of the blood pressure is a toxic symptom; the dilatation of the heart is largely a toxic symptom; insomnia is a toxic symptom; renal failure is a toxic symptom; and the death by cardiovascular paralysis, whether it occurs before the development of crisis, or during or after crisis, is a toxic death.

This is proved by the phenomena of crisis and the changes which follow. Crisis, indeed, gives us the most significant clue to the character of the morbid processes, and to the mechanism alike of

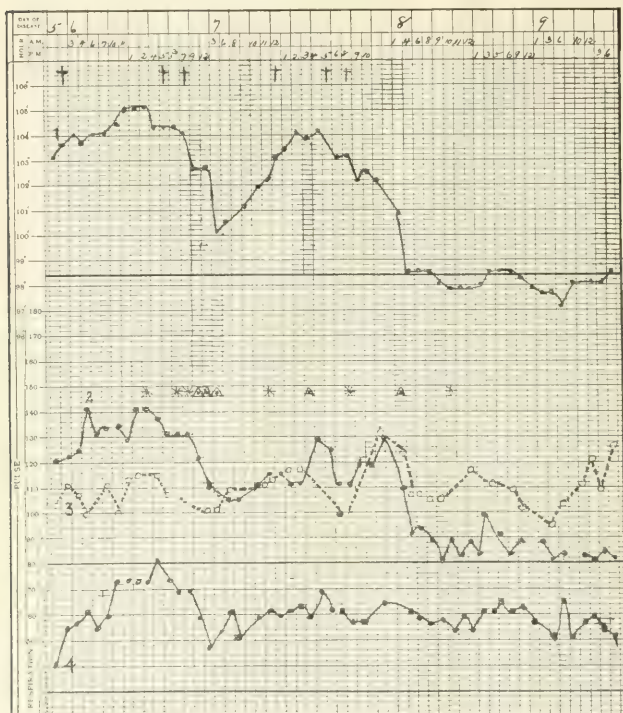


FIG. 4.—Double lobar pneumonia, severe. Mrs. E. C., housewife, aged thirty-one years. Chronic nephritis. Base left lung, middle right lung extensively consolidated. Sputum rich in pneumococci, relatively poor in other organisms. Leucocytes 24,000. At first diminished, following quinine injection, then rapidly increased to 40,000. Polymorphonuclear, from 65 to 79 per cent. Admitted fifth day, much prostrated. * = quinine and ureahydrochloride 15 grains (six injections). * = cocaine $\frac{1}{2}$ grain and strychnine $\frac{1}{10}$ grain (six injections); * = caffeine sodium salicylate one grain and strychnine $\frac{1}{10}$ grain (five injections). Defervescence complete on ninth day. Resolution complete on sixteenth day. Systolic blood pressure, 3, in dotted line.

that value—be it much or little—cannot be increased by an array of symptom pictures, or blood counts, or acoustic findings.

Temperature charts, however, with pulse and respiration curves, and blood pressure curves, especially the latter, while they are far from representing the whole case, do possess a certain amount of demonstrative, if not of evidential value. A number of these will therefore be exhibited—some of them published in previous papers, some hitherto unpublished—partly to illustrate the effects of treatment, but chiefly to show how these easily obtained clinical data may be utilized at the bedside, to guide the tactics of the definite treatment.²

² On the "P" chart tabulated, as are reproduced in this paper.

recovery and of death. From the viewpoint of the therapeutic diagnosis, it is the most important of all the phenomena of the malady. Our knowledge of its intimate processes is quite imperfect. Nevertheless, while we wait upon laboratory investigations to give us larger and better data, we are compelled to interpret the knowledge at hand as best we may; for upon our interpretation of crisis, must depend our treatment—any treatment, that is, beyond the crudest empiricism.

ture, the sweating and even some amelioration of certain symptoms, including the dyspnea, the cyanosis deepens, the heart becomes feebler and feebler, the skin becomes chill to the touch, pulmonary edema may be manifested, and death occurs in collapse.

In some cases, doubtless, a fatal termination such as I have described, attends what in other cases is a pseudocrisis. But whether pseudocrisis or crisis, whether of favorable or unfavorable termination,

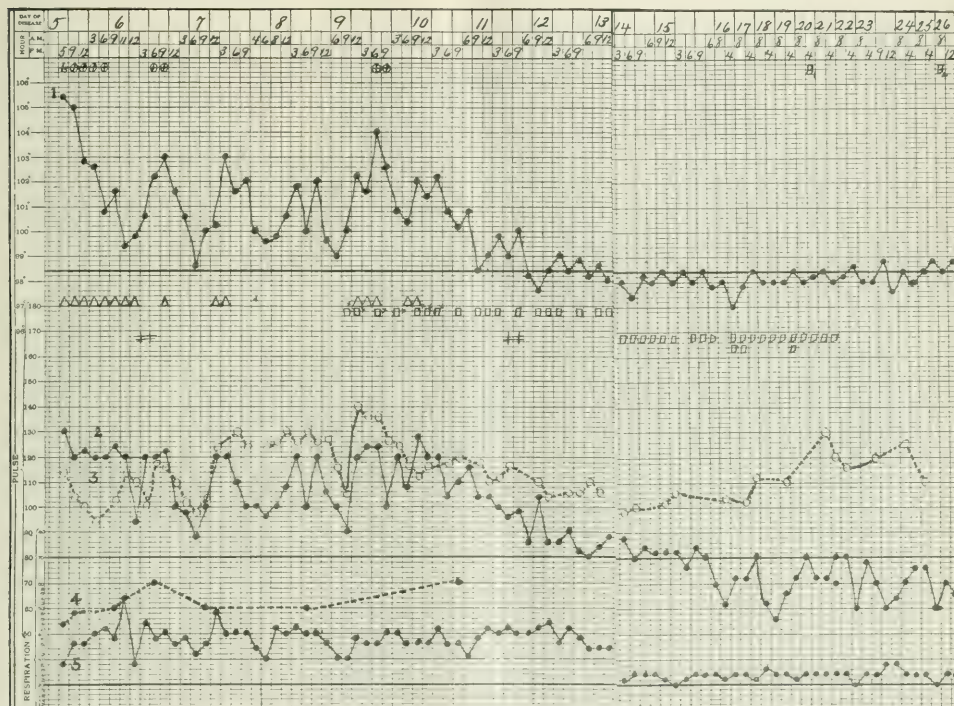


FIG. 5.—(Jefferson Hospital.) Case summary. Acute lobar pneumonia. Severe toxæmia. Recovery. Man, twenty-one years old, admitted in grave condition fifth day. Pneumococcus No. 1 in blood and sputum. Influenza bacillus, streptococci and staphylococci in sputum. Chill. Cyanosis. Delirium. Twenty-five grains (1.6 gm.) guinine and ureahydrochloride intramuscularly plus 80 grains (five grams) + = 10 grains by mouth. First sixty-five grains (4.2 grams) in twelve hours. No tuberculosis. Intermittent type of temperature, probably due to mixed infection (influenza). Prolonged lysis complete thirteenth day. Seventeen injections pituitrin (one c. c.), four injections camphorated oil (twenty minims, twenty per cent.), seven injections digalen (MXX). Tincture digitalis by mouth (20m), thirty-four doses. Resolution delayed. Convalescence tardy. Bacterin (autogenous vaccine) injected in ascending doses. Good result. Systolic blood pressure, 3, and diastolic, 4, in dotted lines.

Let us recall the familiar phenomena. The patient has been ill for a week, more or less, with high fever, perhaps delirium. Cyanotic in countenance, with flushed, dry skin, he is fighting for his every breath; and his heart, progressively weakening, is beating 120 to 140 times a minute. Suddenly he begins to lose his pyrexia. In the course of a relatively few hours his temperature falls below normal. Meanwhile his skin becomes cooler and more and more moist, until at last there is a profuse perspiration; and with this, all the symptoms may be ameliorated. The breathing becomes easier and easier, the heart beats more and more slowly and with ever increasing vigor, the delirium disappears—and recovery has taken place, as if by magic, before our eyes. Or, despite the fall of tempera-

ture, the sweating and even some amelioration of certain symptoms, including the dyspnea, the cyanosis deepens, the heart becomes feebler and feebler, the skin becomes chill to the touch, pulmonary edema may be manifested, and death occurs in collapse.

Examining a patient who has passed happily through his crisis, we find dullness and bronchial breathing just where they were before; sometimes with, and sometimes without beginning crepitus redux. Apart from this, however, the whole aspect of the case has been changed. The patient is breathing quietly, with a respiration rate somewhere in the twenties; the frequency of the pulse is reduced, its force and volume increased; the blood pressure is progressively rising; the appearance of the face and the tint and temperature of the skin are normal.

The toxic phenomena have disappeared; but the tissue changes remain the same, or have barely begun their involution.

Something, then, has occurred to remove or neutralize the toxic agent that has been responsible for the distress and the embarrassment of vital functions; and the most plausible supposition is that there has been suddenly poured into the circulation a supply of specific antibodies—antitoxin, it may be, or bacteriolysin, or perhaps both bactericidal and antitoxic substances—and these substances, whatever they are, or however and wherever they may

or, with Bass, as a hemolytic) from the "totality" of the phenomena—timing that administration so that the drug may reach its maximum activity coincidentally with the maturation of the parasite—so we adopt in pneumonia a strategy based upon the totality of its phenomena viewed in the light of the crisis. That strategy will accord with our interpretation of the crisis and our conception of the aid that can be afforded by available therapeutic means.

Expectancy passively awaits the crisis; or if it is armed expectancy, engages meanwhile in a little series of skirmishes to resist a minor attack here and there, or to support some gravely threatened position. According to the testimony of its own advocates, this plan succeeds about as well as letting the patient alone would have succeeded. According to our available mortality statistics, which merge together all four groups of cases, about thirty to thirty-five per cent. of all patients die, irrespective of the treatment adopted. This is about ten per cent. (of the total) worse than the statistics of thirty and fifty years ago; and about twenty-five per cent. worse than the ninety to ninety-five per cent. of recoveries stated by country practitioners.

The reason of failure with the expectant form of treatment is quite obvious—namely, that either the patient has been so violently poisoned that he succumbs to the attack before the antibodies have been developed sufficiently to bring about crisis, or else he is so worn out in the struggle that he cannot recover, despite crisis. It may even be, in some cases, that the patient's slight remaining vitality is exhausted by the profound disturbance which crisis itself entails, and thus Nature's tactics may prove not restorative, but directly destructive.

I once saw a case of pneumonia in which that preparation of toxic filtrates termed "phylacogens" had been administered in the massive doses at first advised by the deviser and the manufacturers. Critical phenomena ensued promptly; the patient passing into a state closely resembling collapse. Whether his recovery was due to the immediate application of external heat, the administration of pituitrin, camphor, and other stimulation, or whether he would have come out safely in any event, I cannot say. At all events, it was quite evident that this sort of occurrence is attended with a severe strain upon the vital powers; perhaps a profound de-

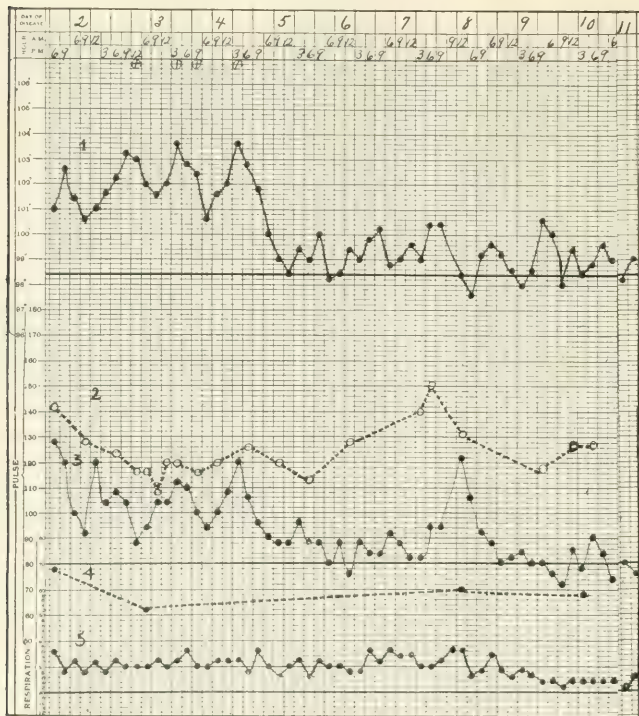


FIG. 6. (Jefferson Hospital.) Case summary. Acute lobar pneumonia. Pneumococcus No. 1 in sputum and sputum. Alcoholic. Severe toxemia. Consolidation left lower and right upper lobes. Man aged forty-five years, debilitated from Philippine service and recent debauch. Admitted second day. Chill. Delirium necessitating restraint, but short of delirium tremens. Albuminuria; granular and hyaline casts. Moderate arteriosclerosis. Pulse feeble and irregular. Solution ammonium acetate, one half fluidounce (15 ml.) every second hour, alternated with Quimby's chloride mixture every second hour (one or the other hourly). Sixty grains quinine and urea hydrochloride by mouth in 4 doses. Rapid defervescence fourth day, completed fifth day, without critical phenomena. Alcoholic delirium and febrile movement continued for several days. Resolution tardy; began tenth day; promoted by bacterins. Systolic blood pressure, Δ ; diastolic blood pressure, \circ , as shown in dotted lines, maintained by arterio-sclerosis. No pressor medicaments of digitalis used.

have been elaborated, have evidently required these seven or nine days, more or less, for their production in sufficient quantity to produce crisis and recovery.

The classic Hippocratic picture of "crudity, concoction, and evacuation" is thus typically presented by the typical case of lung fever.

The resemblance of the pneumonic crisis to the defervescence stage of a malarial paroxysm is striking, and whatever may be the detailed differences between them, their general mechanism must be very similar.

Now, just as we take our clue for the administration of quinine in malaria (whether as a parasiticide

pression of the autonomic sympathetic nervous system.

With recovery from collapse, the patient referred to recovered also from his pneumonia. This may have been because of the treatment or in spite of it; but it is quite possible, especially in view of the numerous case reports from apparently competent observers, that this particular form of specific treatment is capable of scientific development into a more or less trustworthy therapeutic measure. If that be so, the proprietors are all the more to blame for the unnecessary and repellent secrecy which they still throw about the details of the manufacture and composition of these substances.

This, however, is a digression, germane to the general subject, but not to the special phase that now concerns us. To resume: Natural recovery takes place by crisis. But natural recovery may fail in several ways. Three have been mentioned, and these only need here be discussed: 1. Death may occur too soon for crisis to develop; 2, exhaustion may have occurred before crisis appears, and death occur notwithstanding; 3, the profound disturbance attending crisis may be the direct cause of death.

Therapeutics may accordingly endeavor, 1, to *hasten crisis*; and this has been attempted in the specific treatment by serums, bacterins, and toxic filtrates. It is to be hoped that this method is capable of perfection.

Or, 2, the effort of the physician may be to *prevent premature death by exhaustion*, so that the crisis may duly come and with *due support* be successfully passed. It may be said that this is the strategy of expectancy—but if so, expectancy and its supporting tactics have not succeeded any too well in accomplishing their object.

Or, 3, the physician may endeavor to *avert crisis* with its dangerous disturbances by anticipating the antitoxic (or bacteriolytic) tactics of Nature; thus substituting a termination by lysis. At the same time he employs supporting measures and endeavors to prevent too great interference with function. Thus when the bacteriolytic or antitoxic substances of crisis appear, they come as a reinforcement to an unexhausted defense; they produce no violent disturbance; and if the tactics employed have been successful, the day is won.

The tactical measures of this plan are not perfect. But they are, I do not hesitate to say, better than those of expectancy. A combination of chemotherapy and serotherapy may perhaps be evolved that will be still better. Thus the use of serums from convalescents, long ago proposed, may now be much more definitely applied, by means of the group criterions—and certain observations and experiments in this direction are now under way, upon which I hope to be able to report hereafter.

Excluding serums, however, from present discussion, what tactics, over and above the fundamentals of nourishment and nursing, does the definite strategy necessitate?

Natural recovery is by crisis, and crisis implies destruction or neutralization of the poison of the malady. The strategy of definite defense, imitating this, but as a gradual rather than a sudden action, seeks:

1. *Neutralization* of the toxic agents present.

2. So far as neutralization fails, *antagonization* of the toxic actions of those agents.

3. In so far as antagonization fails, *counteraction* of the toxic effects.

4. Free *elimination*, to carry off as rapidly as possible, the compounds, probably incompletely neutralized, formed by toxic and antitoxic agents; together with the effete products of normal and abnormal metabolism and tissue change.

5. *Specific stimulation* of defensive and restorative tissue changes.

In addition, certain other measures are suggested by considerations of a somewhat empirical character.

6. The theory of F. P. Henry, that the decreased elimination of urinary *chlorides* indicates that the natural defense is utilizing these compounds, and his expedient of saline infusion to supply additional chlorides; the traditional use of ammonium chloride; and Quimby's good results with the administration of a mixture of ammonium, sodium, and calcium chlorides by mouth, are at least suggestive.

7. Observation in many forms of infectious fever has convinced me, empirically, that patients do better not only when they are excreting large quantities of urine, but when the urine is kept alkaline. In other words, there is in most, if not all infections, an acidemia; and a crude index to its neutralization is afforded by the urinary reaction. Hence *alkaline salts* are associated with the chlorides, whether given by mouth or by rectal or subcutaneous infusion.

8. Finally, it would be highly desirable to have also a *bactericidal* agent, general or specific, the possession of which might indeed render much of the other tactics superfluous. Bacteriology or chemistry may yet give us this. Optochin has its advocates. Iodine in the colloidal state has been advocated, and may possibly have some potency. Creosote and phenol compounds may have some value. Other drugs are under investigation. But speaking of the tactics of the definite treatment as thus far developed, this desideratum remains for the future. Moreover, it is not to be forgotten that the pneumonia poison is probably an endotoxin, set free by the death of the coccus; and that one may possibly do harm by inducing an excessive bacteriolysis in the absence of an efficient antitoxic.

So much, then, for the principles of the definite treatment, which remain true, however much their applications may be varied. The applications to be described are the best known to the speaker in the light of present day resources. They are all subject to modification with the discovery of better agents, especially the long hoped for "biological products."

We have to attempt, 1, *neutralization*; 2, *antagonization*; 3, *counteraction*; 4, *elimination*; 5, *specific stimulation*. By what means, today, may these objects be measurably accomplished? In other words, what are the tactics in detail?

I. ANTITOXIC AGENT.

While awaiting the antitoxic serum or immunizing bacterin which shall merge the definite with the specific treatment, we may make use of *quinine* or of *digitalis*, possibly also of *veratrum viride*.

I have as yet no laboratory proof to offer of this assertion, although certain experiments have been made, but not generally accepted or confirmed, tend-

ing to support this view as to quinine and as to digitalis. I have frequently and publicly suggested that in view of the great mass of clinical evidence, old and new, competent investigators ought to take the matter up and settle it definitely. I have also privately asked laboratory workers of my acquaintance to do so. These requests have gone unheeded. Recently, however, I have been enabled, through the generosity of one of my patients and with the assistance of a competent experimenter, to institute a series of laboratory studies in this connection which may in time give some demonstrative result. Whatever that result may be, it will be reported faithfully.

But we already have in abundance what is, to my mind, convincing clinical evidence as to quinine; very suggestive clinical evidence as to digitalis; and clinical evidence provoking inquiry as to veratrum viride.

Clinicians who have used quinine—by whatever method—agree in the observation that in practically all cases, not excepting those of fatal issue, the clinical picture is completely changed. This is especially marked in the freedom from cough and from pain, so that neither expectorants nor opiates have to be used; in the relative ease of respiration, even when the rate is but little lessened, so that oxygen is rarely called for; in the comparative rarity of insomnia, and the frequent relief of delirium. The patient is comparatively comfortable, throughout the course of the malady, although he may be very ill—even ill to death.

In cases in which quinine is used effectively, termination by crisis is rare. Lysis takes its place.

Notwithstanding the large quantity of quinine sometimes administered (Fig. 1 and Fig. 5), cinchonism does not occur.

These are negative points. Now, as to some of the observable positive effects of quinine:

In many of the temperature charts shown, it is seen that the temperature promptly falls after a single injection of quinine—1.0 to 1.5 gram of the quinine and urea salt in twenty-five to fifty per cent. solution in hot water—and does not rise again, or at least does not exhibit a sustained rise. With this, fall the respiration and the pulse, but also, unfortunately, just as in natural crisis or phylacogen crisis—although not to anything like the same extent—the blood pressure.

Concerning blood pressure, I have some special observations to make later—but just here it may be remarked that this tendency to depress it slightly is one reason for avoiding excessive quinine doses or too prolonged use of the drug. Enough must be used, and long enough—but *no more*, and *no longer*. Each case is a law to itself. Close observation and good judgment are required.

In some of the charts it will be seen that even after repeated doses of quinine, the temperature is but slightly affected, if at all (Fig. 1). In others, as stated, a single dose brings the temperature permanently below 102.2° F. (Fig. 2). These two groups represent the extremes—possibly indicating definite—mild and virulent—strains of the infecting organism. As yet, I cannot say with certainty.

In the majority of the charts, however, while the temperature curve goes down promptly, it also tends to rise again, and repeated doses—sometimes only

two or three, sometimes five or six or more—are necessary to keep it down to the range adopted—not arbitrarily, but as the result of experience and reading—as the most desirable, namely, above 102° F. and below 104° F. The exact point has varied somewhat, and is immaterial, except that nurses and interns must have a guiding rule. These references are to mouth temperatures; the figures for the rectum would be higher; and both are, of course, below the temperature of the blood, especially in the deeper parts.

The present rule is to repeat the injection—or to give the drug by mouth—but with smaller and smaller doses (0.5 to one gram) every third hour until the temperature falls to 102.2° F.; and to repeat the dose—*other things being equal*—whenever there is a renewed rise to 103° F. This may need to be kept up for two or three days, or even longer; but often for less than twenty-four hours. Moreover, if three or four doses have been given in succession without persistent effect on the temperature, the intervals are lengthened, commonly to six hours. In all, the number of injections throughout the whole case varies from one to ten, although in extreme cases I have given fifteen—with recovery. If there is such a thing as an average number of doses, I should say four or five, spread over twenty-four to forty-eight hours. Patients are not disturbed during sleep. This may seem a supererogatory remark—but I have known patients to be awakened by zealous nurses, to take their “sleeping medicine,” and I have also had to forbid the waking of very sick persons to take the temperature.

Although the effect of the drug on temperature is taken as a clinical guide, it is not the only one. The general condition of the patient is also to be considered; and the quinine may be omitted even when the temperature remains around 103° F. or more, if there seems to be no necessity for its use at that particular time. It is not employed as an antipyretic to depress temperature *per se*—but with the idea of neutralizing the poisons that give rise to pyrexia among other toxic phenomena; and the antipyretic effect is taken merely as an index to its general efficacy.

In selecting the lines 102.2° F. and 103° F. three things were in mind: First, the necessity of giving nurses and interns some definite guide for the repetition of doses; second, the statistics of Fenwick, showing that in 1,000 cases the patients with a general range of temperature between 102° and 103° F. did better than those with either a much higher or much lower range—a fact paralleled by my own and other published observations, not only in pneumonia, but also in typhoid fever; third, the fact that 104° F. is a temperature lethal to pneumococci *in vitro*.

Also, it was found that in cases of a fair degree of severity, the effect of one gram of the quinine and urea salt by intramuscular injection, was to bring the temperature down in the course of three or four hours to 102° or 103° F., and to hold it there for from three to six or eight hours (Fig. 4).

Apart from that, however, the rule is not arbitrary. If other symptoms so indicate, and especially upon admission of the patient, the quinine may be given even when the temperature is at or below

102.2° F. On the other hand, as already stated the drug may be omitted even when the temperature reaches 103° F. or more. It is to be used without fear, but not without discretion. (Fig. 4.)

Other indications for the omission of quinine, beside the maintenance of a relatively low temperature, or of a very low diastolic blood pressure, are tinnitus, sweating, visual disturbances, or other signs of cinchonism. As a matter of experience, however, cinchonism is extremely rare; and that fact constitutes, to my mind, the strongest evidence of the antitoxic or toxin neutralizing effect of the remedy.

Chemical neutralization is always mutual; acid neutralizes alkali, alkali neutralizes acid. When large, very large, and even enormous doses of quinine produce no toxic effect, there would seem to be an immunization against the drug. In other words, quinine is apparently neutralized by something in the pneumonia patient's circulation. But if neutralized, it also neutralizes. That which neutralizes the quinine, and is neutralized by it, may fairly be assumed, on the clinical evidence of therapeutic action, to be the pneumonia poison.

If the indubitably beneficial action of the quinine-urea salt in pneumonia is not antitoxic, I am at a loss to explain it. In the test tube the drug is, indeed, highly toxic to many varieties of pneumococcus. I cannot give the exact figures until the researches of which I have spoken have gone a little further. But the clinical effect does not seem to be, at least in chief, bactericidal. There is no evident effect upon tissue changes. Despite the amelioration of symptoms, the physical signs pursue their ordinary course, thus indicating that the morbid and recuperative histological processes are alike unaffected; and cases coming to autopsy exhibit no essential differences from cases in which the death occurs under expectant management, except, indeed, that, as a rule, with longer survival, they show more extensive lesions. In other words, a greater number of patients with moderate and severe lesions recover.

It is desirable to know, and I hope ere long to be able to say in which of the four etiological groups the effect is most pronounced, and in which the greatest number of failures or relative failures occur. At present one may guess that the cases in which symptoms so far subside after one dose of quinine that they give us no further anxiety, belong to the milder strains of Group IV; those which require repeated doses, to the more virulent groups; and perhaps the fatal cases, to the most virulent—but after all, that is, as yet, only guessing.

Nor can we announce for the treatment any exemption from complications. Empyema and abscesses occur with about the usual frequency. I had one case of pneumothorax, with recovery. One death occurred suddenly, about two weeks after apparent and surprising recovery from acute dilatation of the stomach; but I could not get an autopsy. Cases of meningitis have developed. Deaths from embolism and from pulmonary thrombus have occurred. In many of the cases at the Philadelphia Hospital recorded as pneumonia deaths, the patient recovered from the acute symptoms of "lung fever" to succumb—sometimes weeks later—to his chronic myocardial, arterial, and renal degenerations,

doubtless because of the aggravation of the lesions and general exhaustion consequent upon the pneumonic toxemia.

A significant fact is the increased number of cases of delayed resolution. Here, for example, is the chart (Fig. 1) of Louis K., a boy of fifteen years, who when first seen looked like an old man, he was so severely ill. On admission there was consolidation of the entire left lower lobe; and consolidation of the upper lobe developed under our ears. Also, as this second rise of temperature shows, portions of the right lower and middle lobes became involved after recovery from the fever accompanying the affection in the left lung. Resolution remained in abeyance in both lungs long after complete recovery from the second access of fever—from intoxication, that is. The diagnosis was verified by x ray examination, and a personal bacterin (so called autogenous vaccine) administered. Under its influence crepitus redux soon developed, and yesterday both physical signs and fluoroscope showed both lungs almost completely cleared.

Our explanation is that under expectant management the boy would have been buried with one solid and one nearly solid lung—under definite treatment he lived in that condition. And this is only an extreme type of a common occurrence.

The phenomenon is exactly parallel with the increased number of cases of postdiphtheritic paralysis that followed the early use of antitoxin. Patients badly poisoned recovered in a condition of partial paralysis, instead of being buried in a state of complete paralysis.

Digitalis and veratrum viride will be taken up in connection with the drugs acting on circulation.

(To be continued.)

HOURGLASS GALLBLADDER.

Calculus in Upper Compartment; Calculus in Common Duct; A Case Report,

By RUSSELL S. FOWLER, M. D., F. A. C. S.,
New York.

Chief Surgeon, First Division, German Hospital of Brooklyn; Surgeon, Methodist Episcopal (Sney) Hospital; Consulting Surgeon, Hebrew Orphan Asylum and Caledonian Hospital.

While hourglass gallbladder is not sufficiently rare to warrant an extensive report of the present case, the clinical symptoms were so characteristically classical as to be of interest.

CASE (serial No. 592; M. E. H. No. 18,180). G. L. W., aged fifty-seven years, native American, business man of Brooklyn, referred by Dr. A. Ross Matheson, admitted November 26, 1915, operated on November 27th, cholecystostomy and choledochotomy; discharged cured, December 23d.

History: Five years ago there was noticed occasional epigastric discomfort occurring two or three hours after meals and persisting for one or two hours. There was no nausea or vomiting. Once in a while this discomfort amounted to real pain and was accompanied by belching of gas. About this time constipation developed. These attacks recurred every four or five months for two or three years, gradually increasing in severity. The pain became more marked, and following the epigastric pain would appear under the ribs on the right side and at times tenderness would persist for a short time. Finally the attacks occurred every three or four days. With some attacks the pain would go around the ribs to the back and with others there would be in addition an area of painful discomfort

beneath the angle of the right scapula. There was at no time jaundice or fever (see later note).

Examination, November 23d, was negative, except for some tenderness on deep pressure over gallbladder and slight resistance. Radiographic examination, June 22, 1914, by Dr. Charles Eastmond, had disclosed adhesions and shadows in the gallbladder region, which latter were taken to be gallbladder with gallstones. November 26, 1915, increased epigastric pain, tenderness in gallbladder region, slight jaundice. This was the first time that jaundice had been noted. Slight fever, 100° F.

Diagnosis: Chronic cholecystitis, with calculus; stone in common duct.

Operation. Cholecystostomy, choledochotomy, was done November 26, 1915. The gallbladder was

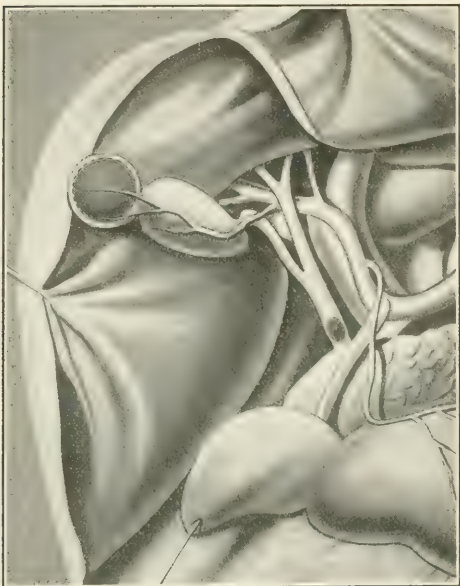


FIG. 1

FIG. 1. Hourglass gallbladder; calculus in upper compartment; calculus in common duct.

densely adherent to the colon and duodenum. It was somewhat distended, and a stone could be palpated in the upper portion. Adhesions were separated and the gallbladder was aspirated; the contents were mucopus; when incised, it was found to consist of two pockets (hourglass gallbladder). The upper of these pockets from which mucopus had been aspirated, contained a round rough stone of the size of a hazelnut. The upper pocket connected with the lower pocket by a small opening surrounded by a quarter inch thick wall. The opening just admitted a fine probe; it was less than one quarter inch in length. On opening the lower pocket, its contents were found to be thick grumous material. Each pocket was about one inch in interior diameter, the lower somewhat larger than the upper. The wall of each was much thickened. They were made to communicate freely. The common duct was opened in the lower portion of the middle section. It was much dilated and chronically thickened. A rough highly elongated stone the size of half the last joint of the little finger was removed from the third

portion of the duct. A probe passed freely into the duodenum. No further stones could be demonstrated in the ducts. The cystic duct was patent, but densely adherent to the common duct, as was also the lower portion of the gallbladder to the common duct and liver, so much so that cholecystectomy, though indicated, was deemed unwise. The incision in the duct was sutured, the gallbladder reconstructed and drained. A split tube was placed in the foramen of Winslow. The fluid aspirated from the upper pocket proved to be sterile. The stones were mixed cholesterolin and bilirubin calcium. The after course was uneventful. There was but slight discharge of bile from the wound. The patient was discharged December 23, 1915. The wound had healed by December 30th. The last report, free from symptoms, was rendered February 20, 1916.

It is not always in cholelithiasis that the clinical symptoms can be so closely correlated with the pathological conditions found at operation as in the case here reported. The increasingly severe symptoms occurring *pari passu* with the progressive involvement of the gallbladder wall; the quiescent stone in the common duct; (it must be remembered that in many cases of common duct stone there is no jaundice); the sudden jaundice just before operation, accounted for by the thickened nonelastic common duct wall, the size of the stone, and the probable temporary blockage by the passage of some of the grumous material from the lower compartment of the gallbladder; the fever, never before present and pointing to a recent infection of the gallbladder contents or the passage of infected material into the common duct—these points and many others suggest themselves and lead us into pleasant and profitable speculation whether perhaps, in spite of what has been said against the possibility of making a diagnosis from the clinical symptoms in gallbladder and duct disease, it may not after all be possible, through close study of the symptoms and their relation to accurately observed operative findings, to correlate them and arrive at definite conclusions.

301 DEKALB AVENUE, BROOKLYN.

LYE STRICTURE OF THE ESOPHAGUS.

Blind Bouginage; Perforation; Death.

By H. ARROWSMITH, M. D., F. A. C. S.,

New York,

Laryngologist, Kings County Hospital.

CASE. M. D., a female infant, two and a half years old, was brought to my associate, Dr. F. R. Herriman, early in February, 1916, with the following history: On August 18, 1915, she swallowed a solution of lye. Her parents saw at once that her mouth and lips were burned, but paid no special attention to the matter until, after a lapse of time, they noticed that it seemed difficult for her to swallow, and while she did not refuse food, its ingestion apparently produced a great deal of discomfort. She was taken to a number of physicians, but no direct treatment was instituted until October 15th, from which date blind bouginage was practised, twice monthly, until she came under Doctor Herriman's care. At his suggestion she was admitted to our service at Kings County Hospital on February 7th, late in the day. She was extremely emaciated and very weak and made a most pitious and continuous demand for water, which, although given in the smallest amounts, was immediately rejected. Her temperature was 101° F., pulse 148, respirations 46.

Owing to the extreme water hunger and debility, direct inspection of the esophagus was deferred and Dr. E. H. Fiske was requested to do an immediate gastrostomy, which he did on February 8th, the interval being devoted to hypodermoclysis at 6 p. m., midnight, and 6 a. m., twenty, twenty, and fifteen ounces respectively being administered and very rapidly absorbed. Several enemata of maltodextrose were also given and retained. Under local novocaine anesthesia, Doctor Fiske did a gastrostomy in thirty-three minutes, apparently without pain or shock to the patient. Shortly afterward, small amounts of water were given by mouth and were not regurgitated. Thereafter, peptonized milk was regularly given by the gastrostomy tube.

Early on the ninth the temperature rose to 103° F. For the next week there was a typical septic curve, gradually rising. Convulsions supervened on the 16th, and the patient died. No endoscopic examination was attempted. Autopsy showed that the gastrostomy wound was leakproof throughout. The peritoneal cavity contained "a large amount of greenish purulent material," the source of which was not clearly determinable. The peritoneum

was intensely congested, but there were no adhesions. On raising the right lung a large opening was made into the mediastinum and a small amount of grayish material ran out into the pleural cavity. Doctor Terry, our pathologist, has mounted the specimen in a wonderfully clever way, so that all the points of interest are clearly shown.

Just below the bifurcation of the trachea there is a distinct constriction of the esophagus. The wall is thickened and inelastic. Above the constricted portion, in the anterior wall, there is an opening, about 0.5 cm. in diameter, communicating with the mediastinum, which contains pus and whose walls are sloughing.

The periphery of this opening is distinctly organized and therefore of some age. Had the patient been in condition to stand endoscopy I doubt very much if I should have discovered this opening. In any event, all attempts to dilate the stricture would to a certain extent have also opened this adventitious passage to the mediastinum and perpetuated its infection. I cannot see in this, or a like case, how the most skilled endoscopic intervention could at so remote a date have circumvented what had been accomplished by repeated blind bouginage.

It is impossible to say when the false passage was made, probably some time before Doctor Herriman saw the patient. On the other hand, it seems quite certain, from an inspection of this esophagus, that dilatation under endoscopic control would have speedily overcome the stenosis and achieved a cure, for as the esophagus is seen spread out, it is obvious

that the unopened tube was by no means impermeable nor are its walls particularly dense.

The symptomatic absolute stenosis was due partly to spasm, presumably from the irritation of the false passage (she was able to swallow fluids immediately after the gastrostomy) and partly from periesophageal pressure from the inflammatory products in the mediastinum.

Here is one patient who, almost certainly, would have been cured by endoscopic examination and treatment, and who was sacrificed by ignorant interference, which at this date is assuredly beyond excuse or defense.

A patient, four years old, seen with Doctor Mangano on January 7th, with a stenosis of similar etiology and not less marked than in the previous case, was endoscopically examined, explored, and progressively dilated. In a little more than two months she was swallowing solids with perfect ease, her esophageal calibre had increased from 12 to 36, French scale, and she had made remarkable gains in weight and strength.

The moral is perfectly obvious.

170 CLINTON STREET, BROOKLYN.

THE DIAGNOSIS OF URETERAL CALCULUS.*

The Use of Wax Tipped Whalebone Filiform Bougies, in Conjunction with the Brown-Buerger Cystoscope and the Author's Special Obturator,

By VICTOR COX PEDERSEN, A. M., M. D., F. A. C. S.,
New York,

Associate in Urology and Chief of Clinic in Urology for Men, Women, and Children, St. Mark's Hospital.

The application of seventy-five cm. whalebone filiforms with waxed tips to the diagnosis of ureteral and renal lithiasis was suggested by Burton Harris.¹ In using this admirable method with the Brown-Buerger cystoscope the writer found the great obstacle of chafing the urethral mucosa and causing great pain and sometimes considerable bleeding owing to the passage of the wide fenestrum of the sheath of the telescope over the filiform as it lies in the urethra with its tip coiled in the bladder. The writer, therefore, decided to devise and try the special form of obturator shown in Fig. 1, whose principle is familiar, to provide a free canal through which the filiform guide or the catheter will readily slide as the cystoscope is passed along it into the bladder, exactly as a tunnelled and grooved sound is threaded over a filiform in passing a stricture. Fig. 1 shows from right to left the old style obturator, the sheath of the Brown-Buerger instrument with its long fenestrum, and the author's new obturator duplicating the old, except that the shaft is eccentric so as to allow a wide and deep slot in both the tip and the handle as runs for the filiform. The slot in the handle is placed laterally and obliquely so as not to interfere with the fork which secures the obturator in the sheath with the thumbscrew.

*Read before the Genito-Urinary section of the New York Academy of Medicine, May 17, 1916.

¹Burton Harris, The Diagnosis of Ureteral Calculus by Means of the Wax Tipped Whalebone Filiform Bougie Used with the Nitze Cystoscope, *Surg., Gynec. and Obst.*, Dec., 1912.



FIG. 1.—Structure of esophagus, half the actual size. A, perforation; B, stricture (Case 1, M. T.)

Fig. 2 shows the obturator and sheath assembled with a filiform guide run through the sheath by way of the slots in the tip and handle of the obturator.

The author's technic is the same as that of Harris, with the exception of minor details, and covers the

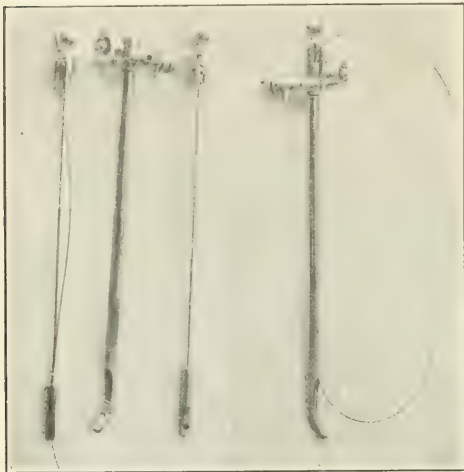


FIG. 1.—The author's obturator with the Brown Bueger Cystoscope. From left to right are: The obturator with the filiform passed through the two slots; the sheath and the standard obturator of the Brown-Bueger cystoscope, and the author's obturator seated in the sheath with the filiform passed through and through the instrument.

following points. The patient presents himself with a full bladder—otherwise it should be filled with two or four per cent. boric acid water up to 200 c. c.—then the filiform guide with its tip suitably prepared with wax is passed into the bladder. The excess of length is coiled there, protected by the fluid, while about half the filiform rests in the urethra and

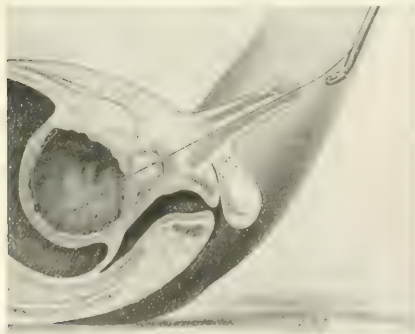


FIG. 2.—Wax-tipped filiform in the bladder and cystoscope about to be guided over it (Harris.)

outside the body. The cystoscope, closed with the new obturator, is now threaded over the filiform guide and passed into the viscus, and reveals its penetration by a flow of water. The obturator is removed and then the catheterizing telescope is also threaded over the filiform and passed

through the sheath and seated. The bladder must now be filled to comfortable distention, the light turned on, and the wax in the filiform is examined in the field in order to be sure that no scratches or chips have occurred, then the wax tipped instrument is passed, making the diagnosis. In withdrawing the filiform the writer uses these following steps as securities against damaging the wax. The instru-



FIG. 3.—Deflector has been raised and filiform is being withdrawn, in order to locate and control the waxed tip. (Harris.)

ment is left in the ureter until the telescope is removed in the usual manner, leaving the sheath in the urethra. Then the special obturator is replaced and the cystoscope, obturator, and filiform are removed in one piece so that when they are in the hand the waxed tip represents the distance of the stone up the ureter when measured from the lamp of the instrument. In some cases a discarded graduated ureteral catheter may be used in the same way instead of the filiform guide, with the advantage of having its graduations indicate the exact distance from the bladder to the stone. The writer is certain that this

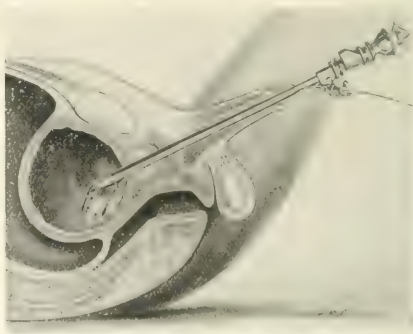


FIG. 4.—The cystoscope has been passed over the filiform guide and the ureter has been brought into view. The waxed tipped filiform has been uncoiled ready to enter the left ureter.

obturator will be found of great service for the purposes named. In cases of irrigation of the ureter and kidney pelvis on one side, it is desirable to remove the cystoscope to set the urinary system at rest as far as possible. For this purpose, the obturator may be passed through the sheath, leaving the

catheter in the slots, after which the instrument may be painlessly withdrawn, leaving the catheter within the urethra, bladder, and ureter for the treatment. In cases of double catheterization the two catheters seem to protect the mucosa from being caught in the fenestrum of the sheath, so that insertion of the obturator is not necessary, provided that gentleness and deliberation in withdrawal are exercised.

45 WEST NINTH STREET.

SARCOMA OF TIBIA, WITH METASTASIS TO CHEST.

A Case Report,

By E. PENDLETON TOMPKINS, M. D.,
Roanoke, Va.

CASE. Miss L. W. C., aged twenty-nine years, school teacher, a lady of the highest refinement and culture. Father, minister of Presbyterian church, died at sixty-three years of nephritis; mother living, at sixty-five years, in good health. Two brothers, one a lawyer, the other a medical student, both in good health. One sister, with slightly enlarged thyroid, was otherwise normal. The sister underwent double tonsillectomy done two years ago, and one brother had recently a phlegmonous tonsillitis, requiring incision. The patient herself had severe tonsillitis in May, 1914, requiring incision, and later had double tonsillectomy. On the same day and under the same anesthetic a dilatation of cervix uteri was done for recurring dysmenorrhea.

In June, 1914, she complained of a pain, slight in character, in the upper portion of the left tibia, with a feeling, as she expressed it, of "brittleness." Palliative treatment, antirheumatic in character, was given, and the trouble was not thought to be of serious consequence. A few days later (June 22d) she went to a distant town, to teach in a summer school. Here she remained a month. Just prior to leaving for North Carolina, she wrote: "My left leg is still giving me trouble. It is swollen below the knee, and pains me almost constantly. It is free from pain only when in motion, walking, or swinging it. It gives me concern because I do not know what the trouble is." I wrote immediately, advising x ray examination for diagnostic purpose. No facilities being at hand, she went a few days later to Lynchburg (*en route* to North Carolina), where radiograph was made. The physicians there strongly advised her returning home. She abandoned her journey, and came home, and the same day was referred by me to Dr. H. H. Trout, of the Jefferson Hospital. An operation was done by him the next day, July 29th, consisting of wide and deep curettage, and chiseling of bone, followed by application of carbolic acid and alcohol. A section taken at this operation showed spindle celled sarcoma. Amputation was suggested, but refused by the family.

Following the operation, x ray treatment was instituted by Dr. E. T. Brady, whose notes on the case are appended: "October 6, 1914. Miss L. C., referred by Doctor Tompkins. Patient had had operation for sarcoma in upper third of tibia. Unmistakable recurrence *in situ*, and possible extension upward. Protected nonexposed parts by heavy foil, and used pasteboard filter. Tube M. and W. tungsten target, 4 inch spark gap, 5 m. a., 15 minutes. Wappler transformer. Repeated raying on the 8th. Same technic."

It was decided to send the patient to Baltimore for consultation, so perforce the raying was discontinued. On October 11th, she left for Baltimore, referred to Dr. J. C. Bloodgood. Amputation at junction of upper and middle third of thigh was done very shortly after. She made a good recovery, and came home in November fitted with an artificial limb. In the month of June, 1915, she was able to resume duty, teaching in the summer school. She gained flesh to such extent that in July, 1915,

a visit had to be made to Baltimore to have the socket of the artificial leg enlarged. In September, she went to South Carolina as professor in a young woman's college. Very shortly after her arrival there she had a rather sudden attack of dyspnea and coughing, with the result that Doctor Saunders and Doctor Watson were called to see her. The following excerpt to her home people best relates this:

COLUMBIA, S. C., October 14th.

DEAR G.—About three hours ago, Doctor Watson and Doctor Saunders were here. The easiest way is the direct way. They say I have sarcoma in the chest, that the right lung is sealed completely by the growth, hence my difficulty in breathing and the bad cough I've had for ten days. . . . I have been in bed since yesterday, my slight exertion leading to coughing and high pulse (140). . . . I am in no pain so long as I remain quiet in bed, and only extreme discomfort in breathing when I move. The pain I had in June and July, the trouble I had in my shoulder before I left home, were all steps. . . . The hardest part for me, of course, is what it will mean to you and the others at home. I've been reading a foolish novel for the last hour! It is all right with me, but for you, for you!

COLUMBIA, S. C., January 29, 1916.

Dr. E. P. Tompkins,
Roanoke, Va.

DEAR DOCTOR TOMPKINS—Your inquiry in regard to my association with Miss L. W. C.'s case came in my absence from home, hence the delay. As you know, Miss C. came to South Carolina as teacher in one of the colleges here. On Tuesday, three weeks after her arrival, she came to me for treatment for a rather persistent breathlessness. I made an examination, and seeing the gravity of the case I called another physician. From her history and the chest findings, I felt morally certain she had a metastatic growth. Doctor Watson and I saw her on Wednesday, and found her more comfortable. I then told the president of the college to send her home. She, however, insisted on going to Hopkins. After notifying her family, we started on Saturday. She was then in better condition, stood the trip well, and seemed to be glad to be able to rest as she was "so tired." I left her at St. Agnes Hospital, where I saw Doctor Bloodgood, who told me he had had the shadow of a probable metastasis in July.

Her personal history is more familiar to you than to me. The points before my seeing her were a dyspnea before she came to South Carolina. This was observed by her brother as well as the patient herself. From the time of her arrival till the date of my first examination she was on duty, but hampered by the shortness of breath and a weakness, with rapid loss of weight and anemia. At the time I first saw her she was in a pitiful condition, pale, panting for breath with a peculiar huskiness. On account of local symptoms I made a thorough examination of her chest. On the right side there was a complete absence of all breath sounds and marked dullness. The other was, of course, compensating for the loss of the opposite side.

The complete dullness of the right lung pointed to a constriction of the bronchus. On the next day, whether from rest in bed or relative change from position of tumor and tube, the distant sounds could be heard. Then I had the first signs of fluid. We did not aspirate, as we wished Doctor Bloodgood to have the benefit of all symptoms, especially as we were to do nothing for her. Doctor Watson felt her life would be short and urged an early departure before she was unable to go. After we arrived in Baltimore, the sounds, which were more distinct each day, were very well heard. Before she left Columbia a menorrhagia, previously troublesome, set in and was free until I saw her no more. There was a marked fatigue and a longing to be free of the school care, but great grief over the physical failure.

E. B. SAUNDERS.

She was taken at once to Baltimore, but careful study and observation offered no hope and shortly she returned home. While in Baltimore an aspirating needle was inserted, and a litre or more of fluid was drawn from the right pleural cavity. After

her return, aspiration was again done, and nearly two litres appeared. X ray treatment for the chest was used as a forlorn hope, the Coolidge tube being employed, and I am indebted to Dr. J. F. Armentrout for the following notes on this aspect of the case:

Miss L. W. C., referred October 30, 1915, for intensive filtered irradiation of mediastinal sarcoma due to metastasis from sarcoma of left tibia. October 29th, large pleural effusion had been drawn off. Intensive filtered irradiation with Coolidge tube was given with cross fire effect through six ports of entry, four to the front and two to the back,



FIG.—The arrows indicate the shadow of the mediastinal tumor lying behind the heart, shading to lighter areas outward; thickened right pleura, due to effusion; mediastinal organs and spine displaced, slightly to the left. A, apex of heart shadow.

the rays being directed chiefly to the centre of the mediastinum, where skiagraph showed tumor about seven by nine mm., lying behind the heart, gradually shading into the surrounding mediastinal glands. This first treatment of 120 x was given through six ports of entry, spark gap nine inches, filtration four mm. aluminum, one layer sole leather, five m. a. for five minutes to each area, target skin distance six inches. Patient advised to return in three weeks for the second treatment. Following this first irradiation, there was no return of the pleural effusion, and patient appeared to be more comfortable, and gained a little strength, her voice becoming noticeably stronger.

November 20th, a second irradiation was applied, same dose as the first. There appeared some distention of the superficial veins, of the right mammary and axillary region, due likely to pressure of the tumor on some portion of the return circulation.

December 18th, a third massive dose of x ray was applied in the same manner, 140 x being given. No skin distur-

ance was at any time manifested. In the beginning the condition was seen to be a desperate one, and only a probable temporary relief was promised, and it appears that this much was realized.

Toward the latter part of November the fourth and last aspiration was done, which resulted in only an ounce or so of fluid. After this no further fluid was apparent. The dyspnea continued with varying severity, and paroxysms of coughing gave great distress, lasting sometimes for more than an hour, and usually causing vomiting. The cough was only partly controlled by remedies, best by codeine sulphate, which for a long time the patient would not permit herself to take, but finally assented. For a number of months it was impossible for her to sleep on either side by reason of pain, and she would awake on account of fatigue from prolonged lying on the back, and was distressed by this insomnia. From October until her death in January, the pain was constant, aching in character, never excessively acute, and at times abating somewhat. The mental attitude of the patient was wonderful—cheerful, brave, fully cognizant of her condition, yet hoping against hope. Her questions led one of the physicians to say, "Miss C., don't you think you had better not know too much about yourself? How did you learn so much about these matters?" She replied: "I have been with many doctors and I pick up a little from each. One can learn a great deal by close attention; for instance, one doctor disclosed a good deal by the single word 'already.'"

Gradually toward the end the blocking of the return circulation caused swelling of the right arm, the right mammary vein being swollen to the size of a finger, very tender and painful. This was followed shortly by swelling of the face and neck, to such an extent that a diplopia occurred, due, I take it, to engorgement of tissues in the orbits.

Her appetite was poor, and food distasteful, but she took liquid nourishment, mostly eggs and milk, very faithfully from a sense of duty. The bowels were for the most part regular, requiring only a very occasional laxative. The kidneys functioned normally, and uranalysis showed no albumin.

The x ray treatment was responsible, it seemed to us, for the drying up, so to speak, of the effusion, as soon after the irradiation was done there was no more fluid found. But there was no apparent effect upon the tumor growth, as shown by successive skiagraphs. Some weeks prior to her death she began to complain of her inability to straighten up. "I am in a crook, and I cannot straighten myself up," and this is borne out by the x ray picture, which shows the spine bent to one side.

Death occurred January 10, 1916—twenty months after the first symptoms were noted—and was due to asthenia. The pulse showed no sign of flagging until about forty-eight hours before the end, and breathing was apparently no more labored than for a good many weeks previous. There was no autopsy, so the exact macroscopic and microscopic condition can only be surmised.

311 SERRICKLAND BUILDING.

The Therapeutic and Reaction Effects of Khar-sivan. The results of the administration of this British form of salvarsan are reported by H. C. Lucey in the *British Medical Journal* for April 20, 1916. Doses of six-tenths of a gram were administered intravenously in the same manner as salvarsan. The effects produced seemed to be quite equal to those observed from the use of the German preparation and no more toxic. Toxic symptoms observed were similar to those produced by salvarsan.

PRESENILE GANGRENE—THROMBO- ANGIITIS OBLITERANS.*

A Serological Study with Reference to the Possibility of Typhus Fever as an Etiological Factor; a Preliminary Report.

By CHARLES GOODMAN, M. D., F. A. C. S.,
New York,

Professor of Clinical Surgery, New York University and Bellevue
Hospital Medical College; Visiting Surgeon, Beth Israel Hos-
pital and Montefiore Hospital.

AND EUGENE P. BERNSTEIN, M. D.,
New York,

Associate in Clinical Pathology, Mount Sinai Hospital; Pathologist,
Lebanon Hospital.

I. GENERAL CONSIDERATIONS (DOCTOR GOODMAN).

Probably no other disease has recently aroused more interest on the part of the clinician, surgeon, and pathologist than the condition generally known as presenile gangrene of the extremities, or thromboangiitis obliterans (Buerger). The causative factor has up to the present time not been discovered. It is beyond the scope of this report to take up for discussion the various designations that have been given to the disease or the opinions that have been suggested in regard to the etiology. A knowledge of the real cause of the disease may lead to more satisfactory methods of treatment.

The first case of this disease came under my observation twenty years ago while I was intern at the Mount Sinai Hospital. Since that time I have had the opportunity of studying over 200 cases. A review of the literature shows that presenile gangrene of the extremities is common in almost every country, but is more prevalent in those countries where typhus fever is epidemic, as in Russia, Austria, Japan, Bulgaria, Turkey, etc. It appears that the number of cases, in many countries at least, is almost in direct proportion to the frequency of the epidemic of typhus fever. The majority of the cases seen in this country has been among the poor Jewish immigrants from Russia and Galicia, so that some of the writers have believed the condition to be one peculiar to the Jewish race. This is a misconception, as is evidenced by the fact that the disease is seen in countries where typhus fever is endemic and epidemic irrespective of the ethnic condition of the population.

For a number of years I was inclined to share the prevailing opinion that cigarette smoking (nicotine) entered largely into the etiology of the disease, but while a large majority of the patients gave a distinct history of cigarette smoking, there are thousands in this country and elsewhere who are inveterate smokers and do not acquire the disease. Moreover, individuals afflicted with arterial disease, the result apparently of chronic alcoholic intoxication, do not manifest this condition.

Syphilis as an etiological factor can be excluded by the fact that in the series of cases which I have studied, the Wassermann reaction has been almost invariably absent. This is in accordance with the results obtained by Buerger and Kaliski in the study

of a series of cases of thromboangiitis obliterans in all of which the Wassermann reaction was negative.

For a number of years I have been much impressed with the remarkable latency of bacteria remaining in the body after infectious diseases, and of the development of local foci set out by such bacteria a long time after the original infection had occurred. On the occasion of a visit to Breslau, several years ago, I was informed by two of the assistants of Professor Kuettner that gangrene of the extremities has been found by them to be quite frequent while they were doing medical service in the Bulgarian campaign. It struck me then that, in view of the great frequency of typhus fever and cholera in the Bulgarian camps, there might be a causal relationship between these infections and the frequent occurrence of gangrene.

In a recent conversation with Professor Hans Zinsser he informed me that during his late visit to Serbia he had observed a considerable number of cases of gangrene of the extremities. Gangrene of the lower extremities as a direct complication of typhus fever is described in textbooks dealing with typhus fever.

A careful search of the literature reveals the fact that other authors have suspected the infectious origin of thromboangiitis obliterans. Among these may be mentioned Saltikow. The recent histological studies of Buerger have led him to believe that an infectious agent would be found to be the etiological factor.

Studies on the metabolism of cases of this disease carried out at the Beth Israel Hospital showed that the belief of certain authors, that the condition was due to a disturbance of metabolism, is not founded on fact.

A study of the epidemiology of typhus fever shows distinctly that in countries where this disease is quite common, thromboangiitis obliterans is also abundantly found; on the other hand, in countries where typhus fever is lacking or is rarely present or mild in type, the condition is usually found less frequently or not at all. As it has been shown that there is a mild form of typhus fever endemic in this country, the presence of the typical syndrome in five native Americans of my series could be accounted for.

The specific microorganism of typhus fever having at last been isolated by Plotz, Olitsky, and Baehr,¹ I considered it advisable to have serological studies made in this condition. I was enabled to have this done through the kindness of Dr. Eugene P. Bernstein, whose report follows. A perusal of the results shows that, while definite conclusions cannot as yet be drawn, they are sufficiently suggestive to make it important to carry on further studies. It will be noted that the strongest serological reactions were found in the only case that had fresh lesions. This shows that in future work it will be essential to study a large number of cases with recent lesions. In connection herewith it will be advisable to learn what the histological picture is in the bloodvessels in cases in which gangrene of the extremities has occurred during, or directly after typhus fever. If a lesion was found which is

*Read at the stated meeting of the New York County Medical Society, held at the New York Academy of Medicine, March 27, 1916.

similar to that found in thromboangiitis obliterans, this would lend support to the theory which I have advanced, because the histological changes found in the fresh lesions in thromboangiitis obliterans are different from those found in any type of vascular lesion so far described.

II. SEROLOGICAL STUDIES (DOCTOR BERNSTEIN).²

There were sent to me by Doctor Goodman serums from twenty-one cases which were clinically diagnosed as typical cases of thromboangiitis obliterans, most of them having no recent lesions. The agglutination reactions and complement fixation tests were made according to the methods described by Olitsky.³ All tests were amply controlled by negative and positive serums. In eighteen of the cases the serological reactions were negative, thirteen cases being investigated once, and five cases twice. The three other cases gave quite marked reactions. In one case there was almost complete agglutination up to a dilution of one in 200, and in two almost complete agglutination up to a dilution of one in 400. In the first of these three cases the complement fixation test showed a three plus reaction and the other two a four plus reaction. As the result of the studies made by Plotz, Olitsky, and Baehr, it was concluded that agglutination reactions up to a dilution of one in fifty were not specific. In three cases in which a previous typhus fever could not be excluded, a positive agglutination reaction in a dilution up to one in 200 was found.

In the study of 102 controlled cases in the wards at Mount Sinai Hospital, the complement fixation test was found negative. Complement fixation tests were found positive, however, in a certain number of people who had been in contact with epidemic typhus fever or with animals in which the experimental disease had been produced. Recent studies have made it evident that people in contact with typhus fever acquire the positive serological reactions because they have been infected by a number of bacilli, too small to give the typical picture of the disease, but enough to set up immunological reactions.

The view might be entertained that, because only three patients with thromboangiitis obliterans out of a total of twenty-one presented positive serological reactions, the thromboangiitis obliterans developed independently of the previous infection by the typhus bacillus. It is important, however, to remember that patients with typhus fever may lose their serological reactions within even as short a period as five months from the termination of the disease, and that therefore at some previous time more of the cases studied might have presented a positive reaction. In all the cases which we investigated, we were dealing with the end results of a previous inflammatory disease of the arteries and veins, with the exception of one—and that case gave the best serological reactions.

We wish to thank Dr. E. Libman for his kind interest in these investigations.

969 MADISON AVENUE.

A DEVICE FOR PROTECTION AGAINST THE TUBERCLE BACILLUS.

BY ROBERT A. KEILTY, M. D.,
Philadelphia, Pa.

(From the McManus Laboratory of Pathology, University of Pennsylvania.)

Numerous devices have been advocated from time to time to overcome the "jumping" of the tubercle bacillus as well as other material from a platinum loop while it is being flamed. A mass may jump at least fifteen inches from the flame,

unless one is very cautious. It is possible to overcome this fault by first gently heating and then bringing the needle into the flame, but this is time consuming where one has considerable work at hand. I lay claim to no originality for this device because, had I the time, I am sure I might find a similar contrivance reported previously. My idea is simply to call attention to this, since in many laboratories working with the tubercle bacillus no protection is used, and undoubtedly there is an element of danger.

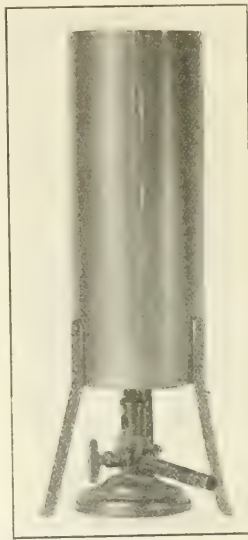


FIG.—Keilty's device for protection against the tubercle bacillus in "flaming" platinum loops.

The tube is made of Russian iron, has a bottom with a hole just large enough to admit the burner of a Bunsen, is high enough to cover the flame, and is mounted on three legs long enough easily to work the pilot light. The lumen of the tube is small so that the sides become fairly hot. This is an advantage, since many of the masses will adhere to the inner side of the tube and eventually be consumed. Bacteria which do not adhere will drop to the bottom. In use the platinum loop may be immediately plunged into the flame. Any masses which jump will be caught. After one is through, the Bunsen is to be removed and the inside of the tube thoroughly flamed or otherwise sterilized.

Primary Sarcoma of the Sclerocorneal Junction Treated with Jequirity.—V. L. Raia (*Providence Medical Journal*, May, 1916) reports a case treated by applying a disc containing four and a half milligrams of jequirity. There was considerable chemosis, a pseudo-membrane formed, and the patient experienced considerable pain. After three years a scarcely visible scar remained.

¹These studies were carried out in the pathological laboratory of Mount Sinai Hospital.

²Plotz, Olitsky, and Baehr, *loc. cit.*

UNUSUAL COMPLICATIONS IN A CASE OF GLAUCOMA FROM ATROPINE.*

By T. Y. SUTPHEN, M. D.,

Newark, N. J.

Unusual clinical cases are, as a rule, instructive and worth recording, and as this one was new to me, after many years of special work, I am giving the main facts as briefly as possible.

CASE.—Mrs. F., Russian, a vigorous healthy woman, thirty-eight years of age, presented herself at the clinic, November 2, 1914, with asthenopic symptoms. She gave no history of former illness, had had children, but not for several years, but had missed her last menstruation, an unusual circumstance. Her vision was 20/20, each eye. A solution of atropine, 0.5 per cent., was prescribed as a cycloplegic. When she returned two days later her vision as recorded was:

R. E., 20/30 raised to 20/20 by +1.25 D. spherical.

L. E., 20/30, 20/20, with +0.50 D. spherical+0.25 D. cylindrical, axis 150°.

Her next visit was on November 11th, when I saw her for the first time. She then complained of great dimness of vision. There was slight pericorneal injection, pupils widely dilated, the right cornea steamy, tension 30. Vision reduced to 20/40 each eye. Warm compresses locally, were ordered and a two per cent. solution of pilocarpine. November 13th, both pupils were contracted to normal size; tension normal, as judged by palpation; ophthalmoscopic examination negative—no cupping of either disc. November 15th, vision 20/20 each eye. One week later, she came again to the clinic, when she was seen by one of the assistants, a man of experience, who felt sure there was a mild iritis—the pupils being contracted, and slight synchia observable in the left eye. Atropine was again prescribed. November 28th, the patient returned with a decided glaucomatous condition in both eyes, pupils dilated, anterior chamber shallow, cornea steamy, tension high, and vision reduced to fingers at ten feet. Eserine solution, grain one quarter to the ounce, together with moist heat, was prescribed locally, and sodium salicylate internally. Two days later, being no better, she was admitted to the hospital and a subconjunctival injection of sodium citrate made in each eye. This proving of no benefit, a paracentesis of each cornea was made. Twenty-four hours later, December 4th, the patient's condition being still bad, iridectomy was performed upon each eye. Hemorrhage followed the corneal incision in both eyes, obscuring the effect of the iridectomy, but the tension was reduced at once. Upon removal of the dressing for the first time, the left coloboma was found correct, but in the right eye the iris was seen to be entangled in the angles of the corneal incision. The tension in the right eye was slightly greater than that in the left, which was normal apparently. The patient did well until December 9th, when the left cornea became milky in appearance—not especially like striped keratitis, but looking more like a general infiltration of the corneal layers. To my dismay this appearance steadily increased for several days, and I was anticipating a sloughing of the cornea, with all its sequelae, when the trouble began to mend under rather strenuous applications of hot compresses, and continued to improve rapidly, the cornea being again clear in about a week.

As the tension of the right eye was still greater than it should be, a broad corneal incision was made with a Graefe knife, completely severing the columns of entangled iris, and the tension in that eye was reduced at once and remained so. The patient was allowed to leave the hospital for the holidays, reporting at the clinic occasionally, and continuing the use of eserine, as the pupillary spaces were larger than they should have been, although the tension was

good. On January 10th, the patient reported that the evening before, while making a great effort to see some small object, she was startled by a sudden and severe pain in her left eye—her better eye. At the lower nasal sclerocorneal border, some distance away from the corneal scar, was seen a dark protrusion the size of a buckshot—evidently a sclerocorneal rupture, with prolapse of the iris at its periphery. There was no history of injury which might cause such a condition. Although a pressure bandage was applied, this little swelling slowly increased for ten days, until it was the size of a large pea, oblong in shape, its greater length corresponding to the border of the cornea. A free section was then made through the protrusion, which collapsed as the aqueous escaped. A pressure bandage was again applied, and this performance was repeated several times, at intervals of two or three days. The swelling gradually grew smaller and in about three weeks was completely gone, the surface being level with the surrounding cornea. The patient reported occasionally at the clinic, still continuing the use of eserine. A refraction test, made April 20, 1915, showed the vision of the right eye to be 20/100 with correction of an enormous corneal astigmatism, while in the left eye, the one having had the sclerocorneal rupture, she had 20/30 with correction. There were no further signs of glaucoma, and tension was normal in both eyes. April 26, 1915, her vision was:

R. E., 20/100 with +4 D. cyl. axis 120°.

L. E., 20/20 w.+2.50 D. cyl. axis 150° at right angles to -3.50 D. cyl.

May 18, 1915, vision: R. E., still 20/100.

L. E., 20/15 with correction as above.

When I saw the patient last, in November, 1915, just before she left for South America, and one year after the beginning of her trouble, her vision was still 20/15 in the left eye, and she could read the smallest type readily.

This case is reported chiefly on account of the spontaneous sclerocorneal rupture and prolapse of iris, and the excellence of vision after treatment by repeated paracentesis. It also emphasizes the great mistake of neglecting to relieve iris entanglements, especially in glaucoma, as shown in the other eye. The immediate improvement in tension, when the pillars of the entangled iris were cut across, was conclusive, to my mind, that this should have been done earlier. The danger of the use of atropine in some patients under forty years of age, is also exemplified, but I do feel that no other drug will so completely and surely give us absolute paralysis of accommodation, especially in childhood. Why this rupture occurred I am unable to say, unless there was a peculiar lack of resiliency in the cornea, as indicated by the unusual infiltration into the layers of that membrane after the iridectomy. I might add that the woman menstruated regularly during the entire time she was under observation.

As I look back upon the history of this case, it seems a warning against temporizing in such a serious condition as acute glaucoma, and had a La Grange or similar operation been done early, no doubt good vision would have been preserved in both eyes.

*Read before the American Ophthalmological Society, May 15, 1916.

PELLAGRA.

A Clinical Report on the State of New York,

By JAMES MACFARLANE WINFIELD, M. D.,

New York,

Consulting Dermatologist, Long Island and Central Islip
State Hospitals.

Judging from the limited number of reported cases, we are led to suspect that pellagra is a comparatively rare disease in New York State and the immediate vicinity.

According to MacKee (1), there is a record of only seven imported cases reported by New York physicians. In 1911, Caccini (2) and Wende (3) each report an indigenous case. MacKee adds another occurring in his service at the St. Vincent's Hospital, New York. Fred Wise (4) reports two additional indigenous cases, making a total of only twelve reported cases occurring in this State in fifty years. MacKee reviews the literature pertaining to New York, but it is evident that some of the reports have escaped his notice, for I have been able to find records of at least two more cases buried in the reports of the State hospitals.

Experience leads us to agree with MacKee in assuming that there have been cases of pellagra in New York and vicinity that have either been overlooked or incorrectly diagnosed; any one who has read the history of the spectacular discovery of this disease in the Southern hospitals will readily concede this point.

A classical case, with the typical dermatitis, the persistent diarrhea, and the final dementia, is perhaps easy to diagnose, especially if we are looking for the disease, but as Babcock and others have pointed out, the disease does not always present the same clinical symptoms and appearances. While the dermatitis is the most constant and earliest symptom, there are cases on record where the erythema was so slight that it was at first overlooked, or the correct diagnosis was not made until the gastrointestinal and mental symptoms became so pronounced that the skin manifestations were viewed in their true significance.

As a matter of interest and to put upon record, I beg to submit the histories of eight indigenous cases that have been seen in various parts of the State since 1911. Five were inmates of State hospitals, two were in the dermatological service of the Kings County Hospital, Brooklyn, and one was that of a private patient of Doctor Robbins, of Hornell, N. Y. I wish to take this occasion to thank the gentlemen who have courteously furnished the histories for allowing me to incorporate them into this report. The history of the first case was furnished me by Dr. William A. Macey, superintendent of the Kings Park State Hospital.

CASE I. Female, aged forty-three years; a native of Turkey. She had been in the United States eleven years, all of that time a resident of New York city or vicinity. In 1905, she was admitted to the Long Island State Hospital, Brooklyn, suffering from acute melancholia. There was no record of any cutaneous or gastric symptoms at that time. After three months she was discharged from the hospital, improved. Six years later—1911—she became an inmate of the Kings Park Institution. She was a poorly nourished, anemic woman. There was an erythematous eruption over the backs of the hands and wrists, sharply defined. There were ulcers about the gums and other evi-

dences of stomatitis; she also had a profuse watery, foul smelling diarrhea, that continued until her death, one month after admission. On account of her low mental condition it was impossible to obtain data regarding the length of time the dermatosis had existed, her former mode of life, what she had been in the habit of eating, or the previous duration of the final psychosis. The hospital authorities were unable to obtain an autopsy.

CASE II. (History given by Dr. George K. Collier, of the Craig Colony for Epileptics, Sonyea, N. Y.). Male, aged thirty-eight years, born in New York city, where he had always resided until he was sent to the hospital at Sonyea. There was nothing of special interest in his family or personal history, except that he had been subject to epileptic seizures since he was twenty-three years old. He was admitted to the colony early in 1913. In June, 1915, over two years after admission, a brownish discoloration of the hands and wrist was noticed; three weeks later, the same discoloration was observed over the face and neck. The color gradually deepened, the affected skin grew thick and leathery, the line of demarcation between the diseased and healthy skin was very sharp, while the skin over the rest of the body was normal. The erythematous skin soon began to peel, the buccal mucous membrane was red and inflamed, the tongue looked as though the epithelial layer had been removed. A profuse diarrhea began with the onset of the dermatitis, which continued until the patient's death, three months after the skin eruption was first noticed. There was no autopsy. The Wassermann was negative on several examinations.

CASE III. (History given by Doctor Worthing, one of staff of the St. Lawrence State Hospital, Ogdensburg). Female, native of New York State, as far as could be learned, had never been out of the State during her life of thirty-eight years. She was a farmer's daughter of good habits; although married, she was obliged to work as a domestic. She had had two living children. Two of her maternal aunts were insane, but there was no insanity in her immediate family. The psychosis was of gradual onset, at first simply a depression; later the depression deepened. The patient was admitted to the St. Lawrence State Hospital, September, 1913; previous to her admission she had received some treatment for the mental condition at the Albany City Hospital.

About the middle of September, 1914, just a year after her commitment, an eruption resembling, in some respects, sunburn was noticed on the backs of the hands and wrists. The skin was a reddish brown in color, chapped and cracked. The eruption extended around the wrist, like a bracelet, and ended with a sharp line of demarcation. A few days later a profuse diarrhea was noted, which continued in spite of medication, until her death. Three weeks after the eruption was observed on the hands, a similar eruption appeared on the face, first seen over the nose, and gradually extended until the lips, cheeks, temples, and neck were involved. The patient complained of a burning and itching sensation of the hands and arms, and severe pain in the legs. Her tongue was red and denuded and she experienced difficulty in swallowing. Her temperature became elevated, going as high as 102° F. A lumbar puncture was made; the fluid showed one cell to the c. c.; chemical tests were negative, as was the Wassermann.

Urine, specific gravity 1.014; a few pus cells, numerous granular casts, albumin positive. Examination of the blood showed red cells 5,000,000, white 6,800, hemoglobin seventy per cent. Differential leucocytes; lymphocytes twenty-one per cent.; large mononuclear, fifteen per cent.; polynuclear neutrophils, sixty-four per cent.; no eosinophiles. The day before her death, the urine contained a large amount of albumin and a great many granular and hyaline casts; the stools contained large clots of blood. The patient died from exhaustion about six weeks after the skin eruption was first observed.

Autopsy.—Brain weighed 1,390 grams; no atrophy. Pia greatly congested and there was a slight amount of bloody exudate on its inner surface, most noticeable over the base of the brain and cerebellum. Floor of fourth ventricle appeared normal. Temporal tips adherent. Numerous Pacchionian granulations along the margins of the superior longitudinal fissure. Basal vessels not sclerosed.

Microscopical examination of brain.—Left parietal convolution, central neuritis, homogenization of intracellular substance. Slight increase in number of satellite cells.

Right parietal convolution, some of the larger cells showed parenchymatous changes. Medulla, many of the large motor cells showed parenchymatous changes.

Heart and lungs.—Heart, fibrous tissue increase in muscle, pericardium normal slight thickening, in places, of endocardium. Small masses were found in the lungs, due evidently to an inactive tuberculous process. The connective tissue of the spleen was increased. The epithelium of the kidney was granular throughout, the vessels of the adrenals were distended with blood and the peripheral cells were granular.

Intestines.—Cecum and ascending colon showed great degeneration and ulcerated mucosa, some of the ulcers extended down to the peritoneal coat; two had perforated. They varied in size from a pin head to a ten cent piece, and were ragged and irregular in outline. The lower jejunum and ileum showed evidence of severe enteritis. There was some infiltration throughout the intestinal tract.

The history of Case IV was embodied in a paper read by Dr. W. W. Wright (5) before the Ward's Island Psychiatric Society. I wish to take this opportunity of thanking Dr. James V. May, the medical member of the State Hospital Commission, for granting the privilege of incorporating an abstract of the history of the case in my report.

CASE IV. The patient was a female, aged fifty-eight years, born in Indiana, but had lived in New York or New Jersey since her first year. Since forty-nine years of age she had had nine attacks of manic depressive insanity; the last attack began in April, 1914, and lasted until her death, in September, 1914. In none of the eight previous attacks were there ever any symptoms of pellagra, nor did her family remember her having any skin disease or gastrointestinal disorder of any sort at any time. When she was admitted to the Ward's Island institution she was emaciated and physically run down. Her appetite was good; her diet was the mixed hospital fare, which included meat, milk and eggs. In August, about four months after admission, she began to complain of pain in the abdomen and also of a soreness and numbness of lower extremities; she was troubled with nausea, loss of appetite and a sore mouth. Simultaneously with these symptoms, white lines appeared on the back of the hands; the white color soon gave place to an erythematous eruption, which extended over the backs of the hands and wrists, ending with a sharp line of demarcation.

In a short time the eruption became more inflammatory; the skin cracked and in places was covered with an exudate. The stomatitis was more pronounced and the diarrhea more intractable. She complained of hot burning sensations in the palms and soles; the muscles of the thighs and calves were tender upon pressure. The patient died from exhaustion, about six weeks after the advent of the first pellagrous symptoms.

Upon autopsy, the whole intestinal tract was found to be inflamed and riddled with ulcers. The thyroid gland, which was enlarged, showed colloid degeneration.

The fifth case was referred to by Doctor Dunlap during the discussion of the pathological findings in Doctor Wright's patient. It occurred in the practice of Doctor Robbins (6), of Hornell, N. Y.

CASE V. Woman, aged forty-two years, was born and had always lived in Steuben county, western New York. Two years previous to the attack of pellagra, Doctor Robbins had attended her for diarrhea and jaundice; her convalescence was slow; she was depressed and unable to work without becoming exhausted, and became slovenly in her habits and childish mentally. The pellagrous symptoms were typical: Dermatitis, stomatitis, diarrhea and the psychosis. The disease ran a rapid course, lasting only twenty days after the first symptom was observed.

CASE VI.—Female, aged forty-nine years, inmate of the Long Island State Hospital, born in Pennsylvania, but had lived in Brooklyn for the last fifteen years. Admitted to the hospital, February 1914, suffering from melancholia. Examination showed skin clear, deep reflexes present, heart rapid, no murmurs, slight arteriosclerosis, tongue red but clean, urine contained albumin and hyaline casts; tenderness upon pressure of thigh and calf muscles. Three months after admission, the physician in charge noticed

that the dorsal surfaces of the hands and wrists were reddened. The redness was symmetrical and extended up as far as the wrist joint, where it stopped with a sharp line of demarcation. Two months later, a similar discoloration was noticed upon the face, which involved the cheeks, forehead, nose, and chin. At first the skin was a brownish red, simulating a sunburn, later it desquamated. Simultaneously a stomatitis developed, accompanied with a profuse diarrhea. The patient died two months after the first pellagrous symptom was noticed.

Upon questioning her son regarding her past history, it was learned that she had always been subject to digestive upsets. He also stated that a year previous to her last illness, she had had an attack of eczema of the face, which lasted about two months; he did not remember if it was accompanied with any intestinal trouble or not.

CASE VII. Admitted to the Kings County Hospital, May, 1915. Female, married, aged thirty-six years; born in Albany, N. Y., but had lived in Brooklyn for the past ten years. She had had six children, the youngest five years old; no miscarriage. Since the birth of the last child, her health had been impaired, menstruation irregular, often missing for four or five months in succession. About a year previous to her final illness, her abdomen began to enlarge until it assumed the size of a seven months' gestation. Two months prior to her admission to the hospital, her husband noticed a slight roughness of the skin over the backs of the hands, wrists, lips, and neck. Later she became mentally disturbed, and would talk incoherently; she also had a slight diarrhea. The patient was referred to the dermatological service because of a brownish red eruption of the hands, wrists, face, and neck. The skin of the hands and neck was cracked and some of the cracks were covered with an exudate.

She was in a low muttering delirium and seemed insensible to her surroundings. Her tongue was coated and fissured; there was nothing abnormal found in her chest; the abdomen was enlarged; examination proved that this enlargement was not due to pregnancy. There was a profuse creamy vaginal discharge, which was gonococcal negative. The blood was also Wassermann negative.

The entire skin was bronzed, that of the hands, wrists, face and neck was erythematous, fissured and desquamating. Her condition steadily grew worse until she died, about two weeks after admission to the hospital. There was a complete autopsy. Nothing of importance was found in the heart; the lower lobe of the left lung was edematous, in the centre were pneumonic areas and a large cavity containing pus; around the cavity was gangrenous lung tissue. The spleen, liver, and kidneys were practically normal. The stomach was enormously enlarged and prolapsed; the abdominal contents were pressed down into the lower part of the abdomen and pelvis, which accounted for the enlargement of the lower part of the abdomen. The upper part of the intestinal tract was congested, but no ulcers were found. Her husband, a laboring man, stated that for many years her diet had consisted principally of baker's bread and tea.

CASE VIII.—Woman, married, aged thirty-three years, born in Ireland, but had resided in New York city for the past twenty years. Nothing of importance in her personal history, until a year before her admission to the hospital, when she had an attack of diarrhea which lasted about two weeks. Coincident with the intestinal trouble she had an erythematous eruption over the backs of the hands, which persisted for six weeks after the cessation of the diarrhea. She was admitted to the dermatological service of the Kings County Hospital, Brooklyn, November 11, 1915. Six weeks before coming to the hospital, she began to lose interest in her surroundings, appeared dull and drowsy, would not answer when spoken to; formerly she had been fond of company, now would avoid seeing any one, even of her own family. This condition came on rapidly.

After she had been in this mental state for about a week, a slight diarrhea developed and her family noticed that her hands were discolored and erythematous. She had been unable to walk since the beginning of the diarrhea.

Examination.—A poorly developed woman; looked to be over forty years old, although her age was given as

thirty-three. She was irrational and delirious; there was tenderness over the nerve branches, especially the lower extremities; muscles of the legs and arms were flabby and atrophied. Cervical glands enlarged. Chest poorly developed and emaciated. Impaired resonance over apex of left lung. Heart sounds normal. There was a corneal ulcer of right eye; tension of the eye increased. Von Pirquet and Wassermann tests negative. Her temperature ranged from 99° to 103° F. She complained of pain in the abdomen. Stools were dark brown and watery, containing at times partially digested food, mucus, and blood. Her lips were dry and cracked; her tongue and gums were red and ulcerated. Over the backs of the hands, wrists, nose, and around the neck there was a dark red dermatitis; the skin was desquamating and fissured. The eruption stopped abruptly at the wrist joint and was distributed in a collar-like band around the neck. The patient died eighteen days after admission to the hospital; an autopsy was not allowed.

In conclusion, the points of interest in these cases will be briefly summarized.

All the patients, except one, were females; five were inmates of hospitals for the insane. One had been in the asylum two years before the pellagrous symptoms were first observed; the hospital time of the others varied from two months to one year.

Two of the reported cases were those of patients in a general hospital. One had had symptoms which were undoubtedly pellagrous, one year before the final attack; in the other all of the symptoms began simultaneously.

The private patient of Doctor Robbins had suggestive signs at least two years before the observance of the classical symptoms.

Two of the patients had enlarged thyroids, three had evidence of pulmonary disease, in one the process was active, in the other two the disease had been arrested. The immediate cause of death of one was pneumonia and pulmonary gangrene.

It was not possible to learn what the diet of all of the patients had been, but from what we could ascertain we concluded that none of them indulged to any great extent in meat. One gave a history of having eaten, for years, only beans, oleomargarine, and tea biscuits.

Two had subsisted for a long time on bread and tea.

This report is not made to bring up discussion regarding the etiology of pellagra, nor to point out any new symptom. It was thought, however, that a report of eight cases of pellagra observed in the State of New York during the past six years might prove of interest to the profession.

REFERENCES.

1. MACKEE: *Jour. Cutan. Dis.*, May, 1915.
2. CACCINI *Med. Rec.*, March 11, 1913.
3. WENDE: *Buffalo Med. Jour.*, May, 1911.
4. FRED WISE: *Jour. Cutan. Dis.*, November, 1915
5. W. W. WRIGHT: Review of the History of Pellagra, with report of a case, *State Hospital*.
6. ROBBINS: *Med. Record*, Jan. 11, 1913.
7. Report of a Case, *State Hospital Bulletin*, vii, February, 1915

47 HALSLEY STREET, BROOKLYN.

Treatment of Bronchial Asthma.—Swan (*Journal of the Med. Soc. of N. J.*, May, 1916) recommends the following:

- | | | |
|----------------------------------|---|--------------|
| 1. Sodi iodidi, | } |aa 5ii; |
| Tinctura belladonnæ toharum, | | |
| Tinctura hyoscyami, | | |
| Tinctura lobeliae, | | |
| Syrupi pruni virginianæ, ad..... | | 3iij. |
- M. of Sig. One teaspoonful in water, four times a day.

THE CURATELLE AND MODERN PSYCHIATRY.

A Critical Review, with Suggestions for Reform,

BY GEORGE W. JACOBY, M. D.,
New York.

(Concluded from page 1031.)

It is therefore immaterial for the determination of a curatelle on account of extravagance, whether in the individual case the existence of psychic disease can be proved or not; still more irrelevant is the question of the nature of the disease. Thus, in view of the social prejudice against everything relating to mental disease, many persons may be ready to have a curator appointed for a relative on the ground of improvidence, though they would hesitate to apply for a curatelle on account of insanity or feeble-mindedness. Strange to say, the existence of a vice, to the minds of many people, is socially more endurable than the presence of a mental disease, no matter how fortuitous its origin. While the establishment of a curatelle on account of extravagance, as has been shown, is essentially a nonmedical question, and the cooperation of the physician is not required, it is exceptional to find such proceedings instituted without medical advice, for the establishment of the fact of a confirmed propensity, upon which the legal decision depends, can be materially aided and facilitated by expert medical observation.

Although we have already said that not all economic expenditures are to be considered extravagance or dissipation, we must lay emphasis at this point particularly on the fact that the sacrifice even of an entire fortune for a scientific or other lofty purpose, for discoveries and inventions, even when it involves economic bankruptcy, is not necessarily an extravagance in the conception of the law. Of course it would be necessary to determine in the individual instance whether the scientific or other ideal is not merely the cloak for some deep seated mental disorder. We need only mention as examples the many paranoiacs who consider themselves inventors and discoverers. Should an entire family be ruined because an individual desires to invent a *perpetuum mobile*, or to discover a means for the abolition of gravity? Furthermore, as the law views it, there is no extravagance when, according to certain doctrines, the dissipation of values, time, and working capacity is brought about as a result of neglect or omission. In other words, only that which affects tangible properties is legally an extravagance.

So far as concerns the imminence of want, which must exist in order to justify the form of curatelle we are discussing, it is not necessary that the spendthrift should be well on the way to becoming a pauper and a care of the State, but it is ample that he be in danger of being unable to provide properly for himself or his family—that is, to furnish such means of existence as with proper care as to manner of living would be adequate for his position in life. That the spendthrift who has been declared incompetent—just as the one declared incompetent on account of insanity or on account of inebriety—is, in the eyes of the civil law, on a par with a minor not more than seven years of age, and that in addi-

tion he is incompetent to make testamentary disposal of his belongings, has already been explained.

Proceedings for the establishment of a curatelle on account of extravagance vary only slightly from those necessary for a curatelle on account of feeble-mindedness. The differences are legal ones which concern the physician little, but what may be of interest to him is that the court cannot, of its own initiative, order the production of a medical certificate before the beginning of the inquisition, as it may in the proceedings for a curatelle for other causes. This is so because the legal conception of extravagance is based, not upon medical proofs, but entirely upon ethical, social, and economic considerations, and the question of curatelle on account of extravagance is decided entirely independently of any psychopathological relationship it may have. The decision for the establishment of this form of curatelle may be given without personal examination of the spendthrift and without presentation of medical expert opinion. Nor is an order for observation in an institution admissible. As the parties making the application have the right to offer all proper means of proof, however, they cannot be prevented from adducing medical expert opinion and calling medical experts. If they do that, the court must, so far as it considers the available evidence capable of elucidating the question before it, examine such evidence and also listen to the experts, and, if it considers it necessary, it may ask for further elucidation and proof and also call for further expert testimony. Furthermore, the curatelle may—but again only upon application—be revoked, if the reason for the guardianship has passed away, that is, if the spendthrift has mended his ways so much that there is no longer any danger that he or his family will be exposed to want in consequence of his extravagant acts. Annulment of a curatelle on this ground, however, is much more difficult than its establishment, inasmuch as the spendthrift who is under curatelle naturally has only limited opportunity for demonstrating that a permanent alteration of character has taken place. Moreover, apparent improvement may be the result of crafty and well planned dissimulation. This has frequently been demonstrated by the fact that spendthrifts have relapsed into their old manner of living as soon as the curatelle has been removed, in which case, of course, nothing else remains but the establishment of a new curatelle. These are inadequacies which are dependent upon the essence of the entire matter and which cannot well be avoided. On the other hand, we should not forget that a new curatelle may be brought about with comparative ease, because the patient's relapse has made his failing more patent and more evident to every one concerned. The procedure for the annulment of this curatelle is very similar to that for the annulment of a curatelle on account of feeble-mindedness.

4. *Curatelle on account of inebriety.* "He may be placed under curatelle who, in consequence of inebriety, is unable to manage his affairs or exposes himself or his family to want or endangers the safety of others. . . ."

What has been said in regard to the pathological aspect of extravagance applies with equal force to inebriety. Inebriety is an inrooted tendency to an

excessive use of alcoholic beverages. That the notion of "excessive" is sure to be an entirely individual one is self evident. A given quantity of alcohol which a healthy individual might not feel may prove the undoing of a degenerated one. It would seem almost unnecessary to state that the term, inebriety, is to be applied in reference to alcoholic beverages; but in different countries attempts have been made to extend the meaning of the law cited at the head of this chapter to have it apply to the introduction into the organism of any narcotic, so that not only the imbibing of alcohol but also opium smoking and morphine injections would be included.

It cannot be denied that a law so elastic as to cover few or many cases as they may occur would be desirable, but the law as just given and as it now stands cannot be so interpreted. Nor can a drinker be placed under curatelle solely because he is addicted to the exclusive use of alcoholic beverages, but certain contingencies which the law specifies must have arisen. These are three, any one of which suffices. The first, which is also a presumption for the establishment of a curatelle on account of feeble-mindedness, is an inability to manage one's affairs; the second, which coincides with the presumption for the establishment of a curatelle on account of extravagance, is the danger of want; and the third is the endangerment of the safety of others.

No matter how unstable the concept may be theoretically, no difficulty will arise in its practical application by the unbiased judge. Conditions of human life admit of no absolute standards, and laws made according to mathematical formulas must often fail in their application. According to the spirit of the law, a correct interpretation would absolve a habitual drinker from being a menace to those surrounding him, even if he had once drawn a knife in some public brawl, or if, in a state of drunken vacillation or self assurance, he had brought a lighted candle or lamp too near a curtain and caused a conflagration. The opposite would be true when such manifestations of violence or recklessness had become second nature, so that the drinker's surroundings were momentarily endangered through his alcoholic excesses. Against a man of the latter type and his acts the community requires timely legal protection, notwithstanding the outcries for consideration of the sanctity of personal freedom.

The "incompetent" inebriate is legally on a par with a minor over seven years of age. The guardian has the right and must assume the duty of caring not only for the property of the inebriate, but also for his person unrestrictedly in the case of minor inebriates, and so far as is called for by the purpose of the curatelle in the case of major inebriates. The guardian can and must determine the place of sojourn of his inebriate ward. It need scarcely be stated that in many instances the first step under a guardianship would be the internment of the patient in an asylum for inebriates.

The subject is one of extraordinary importance. Experience shows that only in very rare instances do alcoholics and persons addicted to drugs voluntarily place themselves in institutions for care and treatment. In such patients their free determination is lost as a result of their addiction; their actions are

mundigung, *Deutsche medizinische Presse*, xii, s. 90, 1908. 11. HAMILTON: The Development of the Legal Relations Concerning the Insane, *Med. Record*, Nov. 7, 1908. 12. HOCH: Die Entmündigung, *Handbuch der gerichtlichen Psychiatrie*, 1901. 13. HERMAN KORNFIELD: Die Entmündigung Geistesgestörter, 1901. 14. KRAFFT-LEBING: Lehrbuch der gerichtlichen Psychopathologie, 3te Auflage, 1900. 15. PADELLETTI: Lehrbuch der römischen Rechtsgeschichte, 1879. 16. LEONE RONCALLI: Civilgesetzbuch des königreichs Italien, 1885. 17. ERNST SCHULTZE: Die für die gerichtliche Psychiatrie wichtigsten Bestimmungen des Bürgerlichen Gesetzbuches und der Novelle zur Civilprozessordnung, 1899. 18. SOHM: Institutionen des römischen Rechts, 5te Auflage, 1894. 19. STABEL: Institutionen des französischen Civilrechts (Code Napoléon), 1871. 20. WEDMEYER und JAHRMAEKER: Die Praxis der Entmündigung wegen Geisteskrankheit und Geisteschwäche, 1908. 21. ZINGERLE: Ueber transitorische Geistesstörungen und deren forensische Beurtheilung, *Jurist-psychiat* Grenzfragen, viii, 7.

44 WEST SEVENTY-SECOND STREET.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXX.—How do you prevent laceration of the perineum in childbirth? (Closed.)

CLXXI.—How do you treat a sprained ankle? (Answers due not later than June 15th.)

CLXXII.—What are your methods of resuscitation and aftercare of persons apparently drowned? (Answers due not later than July 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXIX has been awarded to Dr. Herman Louis Fuerstman, of Newark, N. J., whose article appears below.

PRIZE QUESTION CLXIX.

HOW TO PROCEED IN POST PARTUM HEMORRHAGE.

By HERMAN LOUIS FUERSTMAN, M. D.,

Newark, N. J.

In the majority of cases post partum hemorrhage is a preventable accident if proper precautions be fore and during labor are instituted to combat the conditions which predispose to hemorrhage. If, during the last month of pregnancy, it can be ascertained from the history of the patient that she has suffered from hemorrhage at any previous labors, put the patient on ten to fifteen grains of calcium chloride, three times daily, as a precaution against retarded blood coagulation. Hemorrhages occurring in patients in the ante partum period should make us expect possible post partum hemorrhage, and send such patients to a hospital, where this accident can be better and more safely treated.

Likewise precautions taken during labor to insure good uterine retraction will do much to avoid bleeding post partum. In the first stage, make a

great effort to recognize complications that are likely to cause uterine inertia and, if found to exist, treat them promptly. During the second stage conditions tending to prolonged labor and consequent exhaustion in the absence of malpresentations are overcome by pituitrin, or forceps if the former fails. Pituitrin is better given in doses of 0.33 c. c. every half hour till three doses if necessary. The proper management of the third stage is by far the most important. During this stage, if exhaustion in the previous stages has been observed, or where relaxation of the uterus is imminent, as in deep anesthesia or overdistention from twins or hydramnios, delivery of the placenta should be delayed until pituitrin is administered and everything necessary for the control of bleeding placed at hand.

It is my routine practice in every obstetric case to have in readiness a hypodermic syringe in working order, ergot, pituitrin (a number of vials of recent date), acetic acid U. S. P. tincture of iodine, a large funnel and tube, sterile water (hot and cold), sterilized rubber gloves, three sterile bandages of three inch width, Sims speculum, volsellum, and dressing forceps. In every case soon after the birth of the baby the uterus is held firmly under control of the hand and kneaded vigorously at the first sign of marked relaxation, avoiding, however, any attempt at delivering the placenta prematurely. After the expulsion of the placenta it is examined to see that no fragment is left in the uterus, and ergot in half dram dose is given to promote contraction. The uterus is watched for at least a half hour or until retraction is complete by holding the hand over the lower abdomen.

By following the foregoing procedure I feel safe in stating that many a hemorrhage would be avoided that might otherwise prove serious. As soon, however, as the bleeding begins to be excessive and the uterus feels relaxed, it is grasped in the left hand by the Créde method and firmly ante-flexed. But if the bleeding does not cease or if the uterine contents fail to be expelled, the right hand, gloved, is introduced within the uterine cavity, while the uterus is still held in the grasp of the left hand. The contents are then expelled, and the uterus explored. The uterus now being empty a hot intrauterine douche at a temperature of 120° F. is very effectively given. Three per cent. acetic acid may be added to the douche for its styptic effect. While the douche is being given pituitrin or ergotin or both are injected hypodermically, and the uterus is gently kneaded until these drugs take effect.

With these measures promptly carried out, the bleeding is safely controlled, and seldom does it become necessary as a last resort to pack the uterus with sterile gauze, which should be removed in twelve hours.

Retained placenta, placenta succenturiata, or fibroid of the uterus may be suspected when the bleeding occurs several hours or days in the post partum period. In such cases it is better to explore the uterus under an anesthetic. Should the douche and pituitrin fail to be effective, the uterus is curetted and packed with gauze.

With the bleeding controlled, the treatment is now directed toward combating the effects of excessive blood loss. The indications for treatment are: 1. Cardiac stimulation. 2. External heat. 3. Posture. 4. Refilling of bloodvessels by normal saline.

Heart failure is combated by means of brandy and strychnine hypodermically. Heat is applied to the body vigorously, while the patient remains absolutely quiet, with the foot of the bed elevated to pour blood into the head for the vital centres.

Normal saline solution is introduced into the body by enteroclysis, intravenous infusion, or hypodermoclysis. The intravenous method is the most effective in severe cases of bleeding. A most valuable drug as a vasomotor stimulant is adrenaline. Give a good generous diet with arsenic and iron, as tonics hastens convalescence.

Dr. Adrian A. Landry, of Plaquemine, La., writes:

Much of the danger of hemorrhage will be avoided by a proper management of the second and third stages of labor, and by being in no hurry in an instrumental delivery or version to extract the child, especially between pains unless it is in immediate danger of death. The same holds good in the overdistention of twins, hydramnios, etc. Allow the exhausted or overdistended uterus ample time to regain its muscular tone, to contract and retract properly.

Immediately upon the birth of the child, the uterus is kept constantly under control by one hand on the abdomen, except for the few moments given to ligating and severing the cord, until the uterus, emptied of the placenta, is firmly contracted and hard, and we are satisfied it will remain so, regardless of the time it requires to get into this condition. As a general rule, if no trouble shows up in an hour or so, it is safe to relax our vigilance, provided that the uterus is firmly contracted and the pulse is below 100.

After delivery of the child, if no bleeding occurs, no interference is indicated; in fifteen or twenty minutes during a contraction the placenta is expressed without traction on the cord. Should bleeding be noticed, the uterus, which will generally be flabby, is vigorously kneaded to promote contraction, and as soon as possible emptied of placenta, clots, etc., by introducing the gloved hand into the uterus. The mere introduction of the hand will excite uterine contraction, a great desideratum. Pituitrin, one c. c. intramuscularly, is given at the same time. Formerly we depended upon aseptic ergot in ampoules, given the same way, but since the introduction of pituitrin, we find it much quicker in action. Should bleeding persist or the uterus still show signs of not remaining hard and contracted, a hot intrauterine douche, normal saline solution 120° F. is in order. One quart is generally sufficient. We use a glass douche about one half inch in diameter. In the event of the uterus not contracting after the douche, bimanual compression may be tried. This we have never had occasion to resort to, nor to packing the uterine cavity. The maintenance of an aseptic technic is necessary for the safety of the patient, a desideratum not always

easy without trained help. The cotton tampon saturated with vinegar formerly recommended has no place in modern obstetrics, as vinegar is not aseptic and may cause infection. The same applies to the introduction of ice into the uterus. The intrauterine use of coagulants, such as perchloride of iron, etc., cannot be too strongly condemned.

When we have reason to expect hemorrhage in tedious instrumental labors, in versions, in overdilatation or exhaustion from any cause, we use pituitrin, one c. c. intramuscularly, immediately upon delivery of the child, in twins, of the second child, not waiting for bleeding. It will produce firm contractions, expedite the detachment and expulsion of the placenta and membranes, and prevent the formation of clots. The fundus of the uterus is grasped and kept constantly under control until all danger of hemorrhage is passed and the pulse is below 100.

Hemorrhage from lacerations of the cervix or vaginal tract is generally easy to diagnose. Where, with a firmly retracted uterus we have a steady trickling of bright red blood, uninfluenced by compression of the uterus, bleeding from some laceration may be assumed. Careful inspection will clear up the diagnosis. A hot vaginal douche, 120° F., is indicated and suturing the lacerations is the proper procedure. Anesthetize the patient in the lithotomy position, insert posterior vaginal retractor, pull down cervix with volsellum forceps, and suture lacerations with strong catgut or silk. Vaginal and perineal lacerations are easily detected by careful inspection and should be sutured in all cases regardless of hemorrhage.

Measures to combat shock and loss of blood are important and at times urgent. If the loss of blood has been marked, replenish the circulatory system with normal saline solution, intravenously if the indications are urgent, subcutaneously or by proctoclysis if less pressing. Elevating the foot of the bed, the application of heat externally, stimulants hypodermically, camphor in oil, strychnine sulphate, pituitrin again, and adrenaline to raise blood pressure should not be forgotten. Hot coffee, hot milk diluted, and, later, water at frequent intervals to replace fluids lost are helpful measures. Absolute rest and quiet, mental as well as physical, are indicated. The after treatment consists of tonics, iron, arsenic, etc., nutritious and easily assimilated diet, and fresh air and sunshine.

Dr. Louis L. Hoff, of Holyoke, Mass., writes:

The necessity of guarding against relaxation of the uterus and promoting uterine contraction during the third and near the end of the second stage of labor—by manual pressure—is a necessary precaution in every case. Every obstetrician should prepare for flooding during the second stage of labor—whether it is likely to occur or not—by providing beforehand a good working Davidson syringe, ice in pieces the size of an egg, brandy, sulphuric ether, neutral perchloride of iron, lysol, ergot, a solution of morphine, a carton of iodoform gauze, a hypodermic syringe filled with extract of ergot, or two grains of ergotin in solution, together with pitchers of hot and cold water, an empty basin, a fountain syringe, and a bed pan, all placed within easy reach

of the bedside; a preparation neither tedious nor troublesome, but which may save a life.

If hemorrhage occurs grasp the uterus without a moment's delay through the abdominal wall and knead it with the finger ends to secure contraction, while an assistant injects hypodermically one dram of fluid extract of ergot into the outside of the thigh. Let the nurse give a dose of ergot by the mouth and also put the child to the breast. With proper previous preparation and self possession, all this can be done within thirty seconds.

Should the womb not yet contract and the flooding continue, grasp the fundus on the outside, while the other hand is passed quickly but gently into the vagina and uterus. The hands must of course be rendered aseptically clean. Now the uterus wall is between the two hands and may be effectually compressed, while the outside one applies friction to the fundus, or again, the hand inside may be gently twisted around so as to irritate the womb and produce contraction.

If the placenta is undelivered, it must be removed at once, either by grasping and squeezing the fundus firmly by the outside hand, or the hand inside may grasp the placenta bodily, having previously separated any remaining adhesions, and gently withdraw it, the hand outside meanwhile compressing the uterus with sufficient firmness to squeeze its anterior and posterior walls together. If the placenta is delivered before the flooding, and large blood clots occupy the cavity, these must be instantly removed, and the obstetrician's hand take their place.

A perfectly aseptic sponge, or preferably a similarly clean bit of gauze or small pocket handkerchief, saturated with spirit of turpentine or whiskey, passed into the womb and squeezed so that the spirit comes in contact with the uterus wall, is an efficient stimulus to uterine contraction.

One of the best internal methods for arresting this hemorrhage is irrigation of the uterine cavity with hot sterilized water (115° to 120° F.) by means of a Davidson or fountain syringe, care being taken that the nozzle of the instrument is free from germs and its tube completely emptied of air before being used. A bed pan receives the returning water. In every case the child, whether washed or not, may be put to the breast by an assistant in the hope that suction of the nipples will produce reflex uterine contraction.

Another safe and efficient method of arresting hemorrhage is the uterine tampon of iodoform gauze, or a gauze soaked in a one per cent. creolin mixture. We must remember it is a tampon in the uterus, not in the vagina. The gauze is soaked in a twenty per cent. solution of iodoform and sprinkled with iodoform powder. Three strips of gauze each two inches wide and three yards long are prepared.

After disinfecting the vagina with a two per cent. creolin solution, or with a one in 3,000 solution of corrosive sublimate, the patient is placed crosswise on the edge of the bed and the tampon introduced by seizing the cervix uteri with the hooks of a volsellum forceps and pulling it down, while one end of a gauze strip is grasped by a pair of long uterine forceps and carried to the fundus, when the forceps are withdrawn and fold upon fold of the strip introduced until the womb is filled—com-

pletely and firmly filled from fundus to external os. The tampon may remain twenty-four hours, when it is easily removed by traction on one end of the strip.

I consider it so sure, safe, and simple that, instead of making it a last resort, I would use it at once if ergot and manual compression fail to arrest the bleeding. It must be remembered that under no circumstances should a vaginal tampon be used, as it would cause the uncontracted empty womb to fill up with blood, thus converting an external hemorrhage into an internal concealed one, enlarging instead of diminishing the uterine cavity.

As a last resort, when other means fail, the uterine cavity may be injected or simply swabbed out with liquor of iron, persulphate one part to five parts of water. This constricts the mouths of the blood-vessels, coagulates the blood in them, and stimulates uterine contraction. This remedy is not without danger to life, but is justifiable when all other means fail. Tincture of iodine, one part to three parts of water, has been used in the same manner.

In feeding the patient, the smallest quantity—only a teaspoonful every one or two minutes—may be all the stomach will bear without vomiting; this to be increased as larger portions are tolerated. If, in spite of care, vomiting occurs, opiates, stimulating and nutrient enemata, or hypodermic injections may be used, to the temporary exclusion of mouth feeding.

Admit plenty of fresh air from open windows. Remove all pillows, keep the head low, and elevate the foot of the bed, thus promoting gravitation of the blood to the brain and medulla.

The head must not be raised from its dependent position to give food or medicine, nor for any other purpose, for fear of syncope and fatal heart clot, until reaction has taken place.

Compression of the brachial and femoral arteries—or binding the four extremities with Esmarch bandages—like aortic compression, may keep enough blood in the brain temporarily to prevent death, until stimulants have time to act.

When stimulants and other measures mentioned fail to produce reaction, transfusion of blood may save the patient.

The simplest and best method of replenishing the depleted bloodvessels and restoring the circulation (far safer than transfusion into an artery or vein) is to inject large quantities of saline solution hypodermically into the cellular tissue, either in front of the chest, or behind between the scapulae, or into the nates. Two or three pints of normal salt solution is prepared (the water having been previously sterilized by boiling) and placed in a fountain syringe, the tube of which is surmounted by a large hypodermic or exploring needle, which is plunged beneath the skin and the solution allowed to flow into the cellular tissue by gravitation.

After reaction has been established, the woman will suffer perhaps for several days with neuralgia, headache, and photophobia, due to cerebral anemia, hence iron, quinine, strychnine, and nutritious diet are required, and opium to relieve the pain.

Secondary post partum hemorrhage may occur within three or four days, or even as many weeks after labor. Its causes are retained blood clots, membrane, or pieces of placenta in the uterus. It may also arise from violent mental emotion or phys-

ical exertion, or use of alcoholic stimulants soon after labor. Fecal accumulation, retroflexion of the womb, laceration of the cervix, inversion, thrombus of cervix or vulva, fibroid and polypoid tumors, and certain blood changes or miasmatic poisoning are additional causes.

Treatment depends upon cause, which must be thoroughly investigated. In case of retained clots or secundines, remove them by finger or blunt curette, swab uterine cavity with tincture of iodine, and give ergot with tincture cannabis indica, fifteen drops every six hours. If there are septicemic symptoms, creolin injections to uterine cavity are needed, with care to insure the immediate return of the fluid. Retroflexion will require replacement and a full sized Hodge pessary.

Whether or not the cause has been discovered, the bleeding may be often arrested by vaginal injections of hot water— 113° to 120° F.—continued for ten or fifteen minutes. Should it fail, pack the cavity of the uterus with iodoform gauze. All cases demand absolute rest and mental quietude, with tonics—especially iron—and with nutritious liquid diet as a matter of course.

(To be concluded.)

Contemporary Notes.

The Physician's Cross.—The *Medico-Legal Journal* for May, 1916, observes that physicians who, in the city of New York, attach a cross to their automobiles with the idea that such insignia of their calling will ease the way for them when hurrying to a patient, will find that they are sorely mistaken, as, although the physician's cross on their machines may single them out and make them noticeable when a physician is wanted in a hurry to attend to an accident case on the street until the arrival of an ambulance, yet it does not confer any privileges; that is to say, notwithstanding the cross conspicuously displayed, any infraction of the traffic rules makes the physician as liable to punishment as any other driver.

The physician may be called to a patient who is in danger of dying unless the physician arrives in a hurry; or, at least, the physician may be so informed, and, jumping in his machine, he may exceed the speed limit.

A summons handed to him by a traffic policeman will force him into court the next morning, causing him to lose the best part of the day, time which he may sorely need to attend to his waiting patients, and the police magistrate will, most likely, after hearing his statement that he was driving carefully and exceeding the speed limit only because needed by a patient and in a desperate hurry to get there—the magistrate will most likely . . . fine him twenty-five dollars.

What is the poor physician to do? Pay the fine of twenty-five dollars, of course, add to it the loss of half a day, deduct from it mentally the two or three dollars which he may have collected from the patient whom he was so anxious to reach, and then hope that the self same magistrate may some time be in dire need of a physician's help and telephone for a physician, and have to wait—and wait—and wait.

Are We Not Regular?—The *Journal of the Kansas Medical Society* for May, 1916, notes that a bill has recently been introduced in the United States Senate which, if passed, will require the president of the A. M. A. to resign his position, and will prohibit all medical officers of the government from belonging to medical societies. The man who introduced this bill is said to be an advocate of Christian Science, and his supporters are mostly of the same faith. Their contention is that the A. M. A. is the representative organization of a medical belief or a school of practice.

The public is still under the impression that the practice of medicine is a sort of religion in which there are various denominations or faiths, and that each practitioner must be allied with one of these. It is certainly time to eliminate the idea of sectarian medicine from the minds of those who belong to the A. M. A. or any of its affiliated societies. Every applicant for membership signs a pledge not to support any exclusive dogma or school, but we still persist in calling ourselves "regulars." As long as we continue so to designate ourselves we must expect the public to recognize the term as signifying a school of practice. The name means nothing and should be discarded. The title of Doctor of Medicine is comprehensive enough for this age of medical progress.

Superstition Up to Date.—Allowances may be made for the newspaper correspondent in Saloniki whose agitated senses led him to "smell typhus," and to see its immediate source in ancient oysters in wayside shops, remarks the *Survey* for April 1, 1916, but what of every day Americans who, without the newspaper man's excuse for hectic imaginings, still rub gold rings (they must be *gold*) on their eyes to cure a stye? or soak horse hairs in water to see them turn into snakes? or attribute lunacy to the moon? or think that red flannel (it must be *red*) will cure sore throats? or hold that if medicine is food for sick people it must be still better for well ones? that children ought to have "children's diseases," and the younger the better? or who contend that vaccination is worse than smallpox and that cold weather is "healthy" since it kills germs?

These instances are actual and might be multiplied. They are among the current beliefs cited by Dr. H. W. Hill, director of the Minneapolis Institute of Public Health, whose book, *The New Public Health*, is a record of changed conceptions of health, public and private, and of conceptions that ought to be changed.

But perhaps the most remarkable instance of fairly modern folk lore was one which the *Survey* received with respect to a recent article on quarantine. Dr. Richard Green Moulton, of the University of Chicago, writes:

Your account of prevention and its theory in the early stages recalls to me an incident which I must have remembered for about sixty years! I was a small child living in the island of Guernsey; there had been an epidemic of cholera some time before, and I remember listening open mouthed to a story of how a ship was approaching the island when a yellow cloud descended in the sky without quite touching the ship. It was strongly suspected to be the "cholera cloud," and, to test it, the captain had a leg of mutton hoisted up to the top of the mast. It came down full of maggots!

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.,

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office, at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 3, 1916.

HYGIENIC IMMIGRATION.

In keeping with the modern tendency of prevent-
ive medicine to detect and to eliminate the focus of
infection rather than merely to isolate infected cases,
are purposed the immigration and quarantine exam-
inations to eliminate the immigrant as a new focus
of disease. But their purpose is even broader. It is
desired to exclude, not merely the patent active foci
of infection, but as well the human strains likely to
transmit to the future citizenship defective or dis-
eased constitutions. Recent legislation has probably
gone further in this endeavor than any before it. In
excluding the constitutionally inferior they are re-
cognized as more potent causes of danger than even
more obvious defectives. It is conceded that the
recognition of the inferior is not an easy matter.
Yet more intensive studies and surveys of the im-
migrant, such as the Public Health Service are now
conducting, must soon bring out definitely the ele-
ments which can be embraced in the term, consti-
tutionally inferior.

While it has been the ever increasing stringency
of the immigrant medical examination which has
produced so much improvement in the health, and
especially in the quality of the immigrant, that
stringency must not begin with the examinations at
this end of the immigrant's voyage, but rather it
must end here. Observation and examination
throughout the voyage must bring out a great many

conditions that an inspection on debarkation cannot
do, beside furnishing first hand data for the im-
provement of the general hygienic conditions of the
immigrant. It is not so very long since the "open"
method of carrying immigrants was abandoned for
the "closed" or cabin method, wherein a few immi-
grants occupy a cabin instead of the whole mass oc-
cupying one vast 'tween decks. The presence of
even one focus of infection was a menace to all the
immigrants on the deck. In the closed method only
a few could be exposed. Close association on board
ship, perhaps more than elsewhere, unless there are
proper safeguards, proper separation, renders the
spread of disease rapid and difficult of control.

It matters little that care has been exercised to
exclude the diseased at the point of embarkation, if
they are all later exposed to contamination from a
case that may have escaped detection, by overcrowd-
ing and promiscuous contact while together. The
thoroughness of a medical examination has not ex-
pended itself with that given on arrival, but must
include as well observation and care during the voy-
age, so that the minimum amount of sickness will
occur. The best plan for this observation and su-
pervision cannot be determined in advance, but must
await the result of thorough trial. Nevertheless, the
law which provides for inspection and rejection for
cause must provide for supervision *en route*, so that
those embarking well shall not arrive with disease
because of unhygienic boat conditions over which
they have no control. Moreover, many conditions
contracted on board because of improper housing
and care are latent on arrival, but become patent
very soon thereafter; and, according to the statistics
of various public institutions receiving them, the suf-
ferers are far more numerous than those prevented
from landing.

CHANGES IN THE MAXILLÆ DUE TO
DENTAL INFECTIONS.

In the past few years much has been written con-
cerning the role of chronic focal infections in the
production of systemic disease or of disorders re-
mote from the foci of infection. Prominent among
these foci are dental infections, including pyorrhœa
alveolaris, and hidden conditions found only by
x ray, such as abscesses at the roots of the teeth.

Although the remote and systemic effects of
chronic absorption from these foci of infection have
been well developed by many writers, we have not
been hearing much, in the medical journals at least,
concerning the local results in the maxillæ, and the
physician is not well acquainted with the changes
that have been found to occur in these conditions,
nor has he a clear idea as to the x ray findings ob-
tainable in the maxillæ.

Dr. A. Berger, director of the oral surgery clinic of the New York College of Dentistry, contributes a valuable and instructive paper on this interesting question in the April number of *Dental Items of Interest*. The x ray pictures accompanying the article give a comprehensive idea of what may take place in these bones, and thus make the text more understandable.

Let us, as physicians, enumerate the essential points to be obtained from such a study. The two most common results are suppurative osteitis and bone necrosis. Suppurative osteitis is more common, and occurs more frequently in the superior maxilla. It is always present in some degree if there are chronic alveolar abscesses, as well as when abscesses have formed about supernumerary, impacted, or unerupted permanent teeth. In its most usual form it presents itself as a dark shadow, of varying size, about the apex of the tooth or teeth involved. In the superior maxilla the sinus may be attacked and infected, and in the inferior maxilla penetration and obliteration of part of the inferior dental canal may be a consequence.

The local symptomatology is slight and periodical or altogether absent, even in severe cases, until the process becomes active or there is involvement of the superior maxillary sinus or inferior dental canal. Objectively we may find swelling of varying size, or flabby and bluish overlying gum, or, quite often, single or multiple perforations containing pus and leading into a cavity filled with pus (which is discharged constantly or periodically) or cheesy material broken up by portions of necrosed bone, with the contents practically always foul smelling, and commonly giving rise to an offensive breath often attributed by the examining physician to gastric disorder.

The management of these cases is important. A radiograph must be made in every case, and the cavity explored with a probe, where possible. Since the apices of the teeth involved in the suppurative process always undergo a varying degree of devitalization, it is essential that the canal contents be removed and the root canal filled in teeth that need not be removed, while all teeth in doubtful condition should be extracted. As a general principle, says the author of the paper referred to, we should try to save teeth presenting roots which, for some distance apicogingivally, show "unimpaired peridental membrane attachment on their entire circumference." But where the apical area communicates with the buccal cavity through one or more passages of broken and destroyed peridental membrane, he advises removal of the tooth, since reinflection will take place.

The treatment requires removal not only of the

offending tooth or teeth, but of all infected and deteriorated tissues; the sockets of all abscessed teeth should be curetted, and antiseptic dressings used for a few days. With an extensively involved area, however, flap operation is advised, with incision raising, and eversion of overlying mucous membrane and periosteum, and exposure of overlying bone, which, being thinned out, is easily removed. There is consequent exposure of the entire cavity, the liquefied contents of which are removed by sponges, and the semisolid material by curette, including the degenerated and granulomatous tissue, until healthy tissue is struck. Berger disapproves of making the abscess cavity continuous with the buccal cavity, advising instead, although it means more prolonged treatment, the return of the flap to its original position, suturing and draining, followed by antiseptic washing and dressing till healing is perfect. In these cases, with proper treatment, the prognosis is always favorable.

Necrosis, of slight or great degree, is also a sequel of tooth infection, especially in the inferior maxilla, being confined to the alveolar process, part of the body, part of or the entire ramus, or even involving the entire bone. It is found most often in children, with the exanthemata, syphilis, tuberculosis, malnutrition, and the like as the usual predisposing causes which permit the tooth infection to play havoc. Suppuration continues until complete exfoliation of the sequestrum, the cavity being filled by the cicatrix or perhaps some regenerated bone. Until healing takes place the usual local signs of inflammation present themselves, but even after complete subsidence of all inflammation some swelling persists for years or for life, owing to thickening of the bone, especially in children, giving rise to some facial asymmetry.

In the treatment of necrosis, drainage of the pus is absolutely necessary. Conservative treatment should be the rule after drainage has been effected, nature being given an opportunity to produce exfoliation of the sequestrum, and unnecessary surgical interference and too radical curettage being avoided.

HELVETIUS.

A curious convention seems to limit discussion of the worthies of former times to centenaries of their birth or death. We offer no apology, however, for a short tribute to Helvetius on the 201st anniversary of his birth, save that lately we accidentally picked up the excellent work of A. Keim, *Helvétius, sa vie et son œuvre*, which we had not read since the year of publication, 1907. This philosopher should interest American physicians, as he was the son and

the grandson of physicians. His grandfather introduced the use of ipecacuanha and his father was first physician to Queen Marie Leczinska of France. Furthermore, his ideas on education were American in their nature, and his best known work, *De l'esprit*, published in 1758, must have been widely read by the fathers of this republic. We commend this philosophical treatise to our friends, for the son of a physician is not unlikely to reason like a physician, and even if they disagree with some details of the general theory of Helvetius, they will nevertheless find that it strikes many a sympathetic chord in their breasts. Moreover, the author's style is witty and epigrammatic and his book is intensely interesting. The work was bitterly attacked, not only by government and ecclesiastical authorities, but by Voltaire, Rousseau, and Grimm. The author, however, was welcomed in England, and, later, by Frederick II, who entertained him with marked courtesy at Berlin. Following out the ideals of many a physician, Helvetius retired to the country on attaining middle age; he died prematurely in 1771.

The most marked characteristic of Helvetius's philosophy was its strong emphasis on education, which the author believed to be a panacea; he taught that public ethics had a utilitarian basis and insisted on the importance of culture in national development. It seems to us that culture is exactly what is most needed in the further development of American civilization, and when we hear artists and writers, to say nothing of physicians, talking exclusively about their profits and the best markets for their products, precisely as if they were tradesmen, the time has come for the copious injection of some prophylactic cultural serum. The best kind of creative thinking is not done for money, or the phenomenon of the penniless inventor would not be so common, while the histories of great thinkers would not so often present the absence of any constant ratio between their intellectual endowments and their incomes.

Helvetius recognized the basic teachings of Christianity, Do unto others as you would be done by, and Love thy neighbor as thyself, while he combated the purely ecclesiastical superstructure whereby was inculcated contempt of self, of the body, of nature, of civilization, of the family, and of woman. He taught separation of Church and State, as well as of Church and Education. The teachings of Helvetius on the value of education are, we might say, rehabilitated in France and the United States, for it is not to be denied that the moral conscience is a keener and finer thing among a universally educated people. If the conduct of the uneducated is inoffensive, it is due to fear—of the heavy hand of authority or of a hot hereafter. Helvetius would be

called a pragmatist nowadays. Keim says of him that if his philosophy does not lead us to heaven, at least it keeps us out of the pit. He was an eminently sane thinker, opposed to rocking humanity to sleep with childish dreams and vain illusions. If, under terrible threats, he philosophically retracted not fewer than three times, he well knew that if he had written the truth, it would prevail. Apparently he knew nothing of evolution or heredity; but in other respects his writings were nearly two centuries in advance of his time.

WOMEN'S CLUBS AND PUBLIC HEALTH.

The gathering of 2,400 representative women in the biennial convention of the General Federation of Women's Clubs in New York city during the current week is significant of growing sex solidarity and the organizing power of women. Departments of public health, education, and home economics aroused the chief interest of these thoughtful women; the fact that the main topics for discussion were matters pertaining to public health and public welfare means much to the nation, for interest by women in community well being is a public safeguard. Governor Whitman's declaration that the care of the public health is the people's chief interest was the keynote, not only of his notable address on Politics and Public Health, but of the convention itself. His statement that public health is purchasable and depends for its conservation on the intelligent, organized endeavor of the community, is a message which may profitably be carried home by every woman delegate.

The Federation of Women's Clubs is becoming an educative force of the first magnitude in advancing public health education, essential to National preparedness. The federation has covered a wide field already in its activities. It has given hearty backing and support to the early efforts of the National Child Welfare Bureau; it initiated Baby Week; it organized and popularized the annual Clean up Week; it has sponsored the nationwide campaign on social hygiene, and has been intensely active in organized efforts to prevent tuberculosis. It is now advocating full term paid health officers. Its present chief concern is the prevention of diseases of middle life.

These two million club women have organized their health activities by instituting an efficient National department, working with the United States Public Health Service and the American Red Cross; in every group of States is a section on health which works in close affiliation with State boards; local organizations have sections acting in cooperation with local authorities. Wherever physicians are

struggling to foster interest in preventive hygiene and public sanitation, the women's clubs are ready to lend effective and tactful aid, if duly enlisted. We trust these organizations may be wielded as true social clubs with unsparing material force in matters pertaining to public health when their aid is refused because of vicious political influence or a *laissez faire* policy.

LAUGHTER AFTER A CEREBRAL INJURY.

Dr. J. M. MacPhail, of Edinburgh, communicates to the *British Medical Journal* for May 13, 1916, an account of what, on two occasions last summer, he considered an unusual feature connected with the condition of two patients who were brought into an advanced dressing station suffering from severe head injuries. The injuries were in the lower occipital region of the skull, and were caused in one instance by shrapnel, in the other by high explosive. The shrapnel had caused a small fracture of the occipital bone, through which blood oozed, and the high explosive some bruising of the back of the head and neck. The men suffered from severe shock and were unconscious of their surroundings, but exhibited the striking combination of rambling and muttering delirium, associated with mild and frequent laughter.

There was here the suggestion of a continuous stimulation of the emotional centre for laughter, and as laughter is a modified form of respiration, an injury to some area near the respiratory centre in the floor of the fourth ventricle might account for the condition. The difficulty is that high explosive tends to spread its energies, and other centres of the brain may have suffered from concussion.

ON TREATING OLD WOUNDS.

Le Für communicated to the Société de médecine on April 14th his views on the treatment of old wounds. They may be stimulated by hot air or by the direct rays of the sun or by cauterization with silver nitrate or zinc chloride. Most important of all, according to *Presse médicale* for April 27, 1916, Le Für advocated the frequent change of the agent used in dressing old wounds, as the good resulting from the constant use of one drug rapidly lessened. Where pus was profuse, aspiration yielded excellent results.

News Items.

V. C. for a McGill Physician.—A portrait of Captain F. A. C. Scrimger, of the faculty of medicine, McGill University, was recently hung in the building of the McGill Union, in honor of the Captain's receipt of the Victoria Cross for valor near Ypres on April 28, 1915.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, June 5th, Academy of Surgery, Philadelphia Clinical Association; Tuesday, June 6th, Laryngological Society; Wednesday, June 7th, Motor Club (directors), College of Physicians; Thursday, June 8th, Pathological Society; Friday, June 9th, Northern Medical Association, Medical Club reception.

New Buildings for Har Moriah Hospital.—The directors of this hospital have decided to erect new buildings for this institution at a cost of about \$400,000. Funds amounting to \$50,000 are already in hand, and \$50,000 has been promised. An active campaign will be started at once to secure the remaining amount.

New Jersey State Pediatric Society.—The fifth annual meeting of this society will be held at the New Monterey Hotel, Asbury Park, N. J., Monday evening, June 19th, under the presidency of Dr. B. Van D. Hedges, of Plainfield. The program will include the following papers, in addition to the president's address: Boiled Milk in Infant Feeding, by Dr. Roger B. Bennett, of New York; Pediatrics and the General Practitioner, by Dr. Arthur Stern, of Elizabeth; Infantile Scurvy, by Dr. Alfred F. Hess, of New York.

Philadelphia Medical Club Reception.—The following officials will be guests at the reception of the Medical Club of Philadelphia, Friday evening, June 9th, at the Bellevue-Stratford Hotel; Dr. John B. McAllister, president of the Medical Society of the State of Pennsylvania; Dr. Charles A. E. Codman, president elect of the State society; Dr. Alexander Marcy, Jr., of Riverton, N. J., representing the president of the Medical Society of New Jersey, and Dr. George I. McKelway, president of the Delaware State Medical Society.

Medical Association of the Greater City of New York.—A joint meeting of the Richmond and Queens branches of this association will be held at the Hotel St. George, Staten Island, Monday evening, June 5th, under the direction of the chairman for the Borough of Richmond. The program includes the following papers: Problems in Radium Therapy and Some Correlated Subjects, by Dr. Walter B. Chase, of Brooklyn; Technic and Practice of Diathermia, by Dr. Heinrich F. Wolf; Eyestrain, by Dr. Isaac Hartshorne. These papers will be discussed by Dr. Joseph B. Bissell, Dr. A. C. Geyser, Dr. Harry Bock, and Dr. Ellice M. Alger.

Additional Endowment for Jefferson Medical College.—A movement has been inaugurated to secure as soon as possible at least \$2,000,000 additional endowment for Jefferson Medical College. Mr. David Baugh, a member of the board of trustees, and founder of the Baugh Institute of Anatomy and Biology, has subscribed \$100,000, provided that an equal amount is raised on or before June 16th. The money so obtained goes to permanent endowment. Jefferson Medical College was founded ninety years ago and is said to be the oldest independent medical school in the world. It has been a chartered university since 1838. It has graduated 13,278 physicians, of whom 4,678 are in active practice.

Supplies of Salvarsan Received.—For the information of our readers we desire to state that H. A. Metz, the New York representative of the manufacturers, has received a half million dollars' worth of salvarsan, and that additional supplies are now at sea and will arrive in New York shortly. To prevent speculation in the drug and to insure the use of the genuine article, he is supplying it only to physicians direct and to hospitals. He will not supply it through the ordinary channels of the drug trade. The German Government has placed an embargo on the exportation of this and other drugs, but on humanitarian grounds the embargo was raised to the extent of permitting these two shipments which will furnish a year's supply.

Personal.—Dr. H. Sheridan Baketel, of Brooklyn, has been elected professor of preventive medicine and hygiene in the Long Island College Hospital, in which institution he has been teaching genitourinary surgery for the past three years. He was made lecturer on hygiene at the death of the late Dr. Joseph H. Raymond, and now receives an entirely new department, in which he will have two assistants and the help of ten special lecturers.

Dr. George W. Crile, of Cleveland, received the honorary degree of doctor of letters from Wooster College, May 12th.

Dr. H. S. Holloway, of Boston, has been appointed State bacteriologist of Alabama.

Dr. Warren E. Davis, assistant surgeon at the Jefferson Medical College, Philadelphia, has been appointed oral surgeon on the visiting staff of the Philadelphia General Hospital.

Interstate Association of Anesthetists.—The second annual meeting of this association will be held at the Hotel Seelbach, Louisville, Ky., July 26th and 27th, in conjunction with the National Dental Association. The address of welcome will be delivered by Dr. Lewis S. McMurtry, and will be followed by the address of the chairman, Dr. William Hamilton Long, of Louisville, his subject being Progress in the Technical Administration of Anesthesia and Analgesia. An interesting program has been prepared, a special feature being a section in dental anesthetics, which will hold a joint session with the dental association. For further information, address Dr. F. H. McMechan, secretary-treasurer of the association, Avon Lake, Ohio.

Last Week's Death Rate.—During the week ending May 27th, the death rate for the city of New York was 13.89 per 1,000 of population compared with 13.82 for the corresponding period of last year. This difference in the weekly rate is equivalent to an increase of eight deaths. The total number of deaths reported for the week was 1,487. The mortality of the following diseases showed an increase: Whooping cough, cerebrospinal meningitis, heart disease, lobar pneumonia, Bright's disease, nephritis. The mortality of the following diseases was lower than during the corresponding week of last year: Measles, scarlet fever, digestive diseases, influenza, bronchopneumonia, pulmonary tuberculosis, and other tuberculous diseases. The death rate for the first twenty-two weeks of 1916 was 15.19 compared with 15.42 for the corresponding period of last year.

Medical Society of New Jersey.—The 150th annual meeting of this society will be held in Asbury Park, June 20th, 21st, and 22d, with headquarters at the New Monterey Hotel. On Tuesday evening, the annual presidential address will be delivered by Dr. William J. Chandler, of South Orange, which will be followed by the oration in surgery, by Professor John O. Clark, of the University of Pennsylvania, his subject being Recent Advancement in Our Knowledge of Cancer. The oration in medicine will be given by Professor Martin H. Fischer, of the University of Cincinnati, on Classification, Prognosis, and Treatment in Nephritides. The annual banquet of the society will be held on Wednesday evening, at eight o'clock. The Committee on Arrangements has secured as speakers at the banquet Professor Hobart Amory Hare, of the University of Pennsylvania, ex-Attorney General Robert H. McCarter, and others, and among the distinguished guests will be President Wilson and Dr. Rupert Blue, surgeon general of the United States Public Health Service and president elect of the American Medical Association. Dr. Harry A. Stout, of Wenonah, N. J., is corresponding secretary of the society and will be glad to furnish further information to all who are interested.

A Summer Course in Military Medicine.—The Harvard Graduate School of Medicine has arranged a course of twenty-three lectures on military medicine, which will be offered in July and repeated in August. The main part of the course consists of sixteen lectures on military medicine by Major W. P. Chamberlain, of the medical corps of the army, and in addition there will be two lectures on Military Surgery in the Navy, by a naval surgeon; four lectures on Military Surgery in the European War, by members of the Harvard units who have served abroad in the present war; and one lecture on the Medical Department of the Militia, by Surgeon General Frank P. Williams, of the Massachusetts Militia. The object of the course is to acquaint physicians, as far as may be done by lectures, with the duties of a surgeon in the army, so that he may be better prepared to assume such duties in case of emergency. The course will also be valuable for those who contemplate entering the Medical Reserve Corps of the Army. The course is open to graduates in medicine and also to undergraduates of Class A medical schools. The lectures will be given at the Harvard Medical School. The fee for the course is \$10; for students registered in the Graduate School of Medicine, \$5. For further information regarding the course, address the Harvard Graduate School of Medicine, 240 Longwood Avenue, Boston, Mass.

Clinic for Industrial and Occupational Diseases at the University Hospital, Philadelphia.—On June 1st the Hospital of the University of Pennsylvania, Philadelphia, opened what is said to be the first clinic for the exclusive study of industrial and occupational diseases. An entire ward will be devoted to patients suffering from diseases believed to be the result of conditions under which they worked. The establishment of this clinic was rendered possible by the cooperation of Dr. Alfred Stengel, professor of medicine at the University of Pennsylvania, with the State Commissioner of Labor and Industry, and Dr. Francis D. Patterson, chief of the division of industrial hygiene and engineering of the department of labor and industry. Two physicians of the hospital and a number of social service workers will assist Doctor Stengel in his study of vocational diseases, which, it is said, have never been thoroughly investigated.

Annual Meeting of the American Medical Association.—The sixty-ninth annual meeting of the American Medical Association will be held in Detroit, Michigan, June 12 to 16, 1916. The House of Delegates will convene at 10 a. m., Monday, June 12th. The general meeting, which constitutes the opening exercises of the scientific assembly of the association, will be held at 10.30 a. m., Tuesday, June 13th. The various sections of the scientific assembly will meet Tuesday at 2 p. m., and subsequently, according to their respective programs. The meeting will be called to order by Dr. Albert Vander Veer, of Albany, president of the association, and the address of welcome will be delivered by Dr. A. W. Hornbogen, president of the Michigan State Medical Society, which will be followed by the introduction and installation of President-elect Rupert Blue, of Washington, D. C.

The following medical societies are listed to hold their annual conventions and congresses in Detroit preceding the scientific assembly of the American Medical Association: American Academy of Medicine, June 9th to 12th; American Bacteriologic Society, June 12th; American Therapeutic Society, June 9th and 10th; and the Alpha Omega Alpha Society, June 12th; and following the scientific assembly, the National Association for the Study of Epilepsy, June 16th.

The Medical Society of the State of New York has arranged with the New York Central Railroad for a special train scheduled to leave New York and Boston, Sunday, June 11th. A train will leave the Grand Central Terminal, New York, at 5 p. m., on Sunday, and cars from Boston will be attached at Albany. The equipment will be of modern all steel Pullman open section drawing room and compartment observation car, dining car, and buffet library smoking or club car. The special rates may be obtained from local ticket agents. It is important that the purchase of tickets shall not be left until the time of starting. Dr. J. Rawson Pennington, of Chicago, is chairman of the Committee on Transportation.

Detroit as a convention city, especially at this season of the year, offers much of interest to the visitor. The local committee of arrangements have planned for extensive entertainment of visiting physicians. The chairman of the subcommittee on hotels is Dr. Rolland Parmeter. Communications should be addressed to him at the office of the committee of arrangements, 33 East High Street, Detroit. Sunday, June 11th, will be Public Health Sunday. Many of the alumni associations are to hold meetings. The Sections in Obstetrics, Gynecology, and Abdominal Surgery, Diseases of Children, Nervous and Mental Diseases, and Practice of Medicine will have section dinners. There will be a golf tournament held at the Country Club by the American Medical Golfing Association. Many receptions and dances will be tendered to visitors.

The scientific exhibit will be of unusual interest, emphasizing experimental work to show the effects of alcohol, lead, Röntgen rays, etc., on germ cells, and the application of biological methods to clinical medicine, including sensitization, anaphylaxis, biological serum tests, and vaccines. Dr. J. Walter Vaughan, of Detroit, will receive shipments. Inquiries concerning the scientific exhibit should be sent to the director, Frank B. Wynn, 421 Hume-Mansur Building, Indianapolis.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Twenty-second Communication.

TOBACCO.

Although tobacco is no longer accepted as a medicine, fortunately, its wide adoption among possible patients, and its extended and indefensible use as a narcotic by many sufficiently reflective physicians, make some comment on the plant and its use a serious duty. Accumulating data by careful investigators show that tobacco smoking is a hygienic as well as a social problem, demanding urgent attention from all who value prophylaxis. A brief résumé of the known and easily demonstrable pharmacodynamics of tobacco, as manifested during and after smoking, may be stated as follows:

Tobacco depresses the higher centres of the central nervous system, especially those of imagery, perception, and association; it first irritates and then depresses the lower centres and the cord. The actual ability of the voluntary muscles is greatly reduced by tobacco, as earlier shown clinically by Seaver and later experimentally by Lombard. Varying considerably with different individuals, the heart gradually manifests irregularities of action which may be either centric or local in origin. Continued use frequently brings on irritation of the optic nerve with more or less amblyopia. The secretory and alimentary glands are first irritatively stimulated, but later depressed. There is an obscure, but presumably toxic interference with metabolism, especially in youth. Absorption takes place readily from the mucosa; elimination is carried on through the kidneys, lungs, and sweat glands.

Before major tolerance has been acquired, tobacco smoking usually produces all the major symptoms of acute poisoning; altered vision, muscular weakness, nausea, severe vomiting, and great prostration. When a user of tobacco has become so habituated as to escape acute effects, chronic manifestations slowly supervene; impaired sense of taste and smell; disagreeable emanations from lungs, mouth, and skin; mucorrhea and dyspepsia; cardiac palpitations, visual disturbance, muscle incoordination; weakening of the moral fibre, relative enfeeblement of the will, diminished sense of personal responsibility and social obligation; lowered mental efficiency.

The tobacco user may hotly deny his individual inclusion in the foregoing symptom complex; but in any smoker all these symptoms, in varying intensities, are readily demonstrable at some period of his enslavement; a fact which may well give serious pause to the thoughtful mind. Unhappily the user of tobacco is not unlike the alcoholic in being ap-

proximately unable to apprehend his true situation; and we frequently find the smoker, when still able to break the habit, either not amenable to scientific demonstration, or willing to accept his narcotic handicap with whatever mental, moral, and physical deterioration may be entailed.

Many observers have testified to the lowered recuperative power shown by tobacco users during acute infectious attacks or following severe injury. Some industrial concerns now take cognizance of the relative efficiency of smokers and nonsmokers; and more than one insurance company regard the nonsmoker as a preferred risk.

The physician who smokes is unfair to his patient since both diagnostic acumen and therapeutic discretion are both diminished by the smoking of tobacco. (See the *NEW YORK MEDICAL JOURNAL*, March 14, 1914.) To sensitive patients the smoking physician is an esthetic abomination, especially if he is a cigarette fiend, because of the rank, persistent tobacco smoke odor. He is, moreover, a walking example of a man who wilfully insults his own intelligence, and thereby justly invites a growing lack of confidence in would be patients.

A vigorous protest against the public smoker as a social nuisance ought to be made in behalf of the nonsmoker. If the user of tobacco persists in wilfully poisoning his own system, he ought at least to be prevented from contaminating the air breathed by others, whether his wife, children or the general nonsmoking public. Disseminating pyridine vapors in a closed room must result inevitably in a toxemia of whoever may be occupying the same compartment. Smoking should therefore be prohibited in all closed public places, especially in waiting rooms, hotel lobbies, and dining rooms. Railroad corporations should be required invariably to place their smoking cars at the end of the train, so that tobacco smoke, and the other vile odors common to the average smoking car, may not be swept by draughts through the other coaches; and the smoking compartment in the sleeping car ought to be abolished. Surely the comfort and health of all women, children, and the nonsmoking element of the population should take precedence of the selfishness of users of the weed.

Jejunostomy in Fecal Vomiting.—Experience has taught Victor Bonney (*Brit. Med. Jour.*, April 22, 1916) that the best method of treatment of intestinal obstruction is the performance of an enterostomy at a point sufficiently far above the obstruction to drain away all of the fluid intestinal contents. In obstruction of the small intestine this should be in the jejunum. Following the operation an abundance of water should be given by mouth, with whiskey or brandy as required. Later readily absorbable meat extracts may be added. Saline hypodermoclysis or rectal infusions of saline containing glucose may also be employed.

The Intravenous Use of Mercuric Chloride.—

Owing to the danger of thrombosis and obliteration of the veins and of severe sloughing following the intravenous injection of bichloride of mercury, many methods have been suggested for the preparation of solutions which would be free from these effects. None of the methods is without disadvantages, however, and P. I. Nixon (*Journal A. M. A.*, May 20, 1916) therefore offers a new method which has given perfectly satisfactory results in his own hands and one which is exceedingly simple. The requisite dose of mercuric chloride is dissolved in ten c. c. of distilled water and drawn into a twenty c. c. syringe. With the syringe attached the needle is introduced into a vein and ten c. c. of blood are drawn into the syringe. This mixture is then injected without removal of the needle. The amount of blood taken into the syringe is more than enough to convert all of the mercury into the nonirritating albuminate at once. Repeated injections can be given into the same vein by this method and the use of a heterologous serum is avoided.

Catarrhal Deafness.—Claude G. Crane (*American Journal of Surgery*, May, 1916) says that there are two groups under which we may probably consider that form of deafness which beginning at birth may pathologically change the Eustachian tube, middle ear and labyrinth, resulting in deafness partial or complete. These are the mechanical or anatomical group, and second, the inflammatory or infectious group. All the cases coming under the former group can be cured. They should be recognized early before the damage is done to the middle ear and Eustachian tube. They constitute a large percentage of our cases of deafness. Mechanical blocking of the Eustachian tube of this type, is invariably due to pathological conditions in the nose or nasopharynx or pharynx, or all three may be at fault. Diseased tonsils may be the cause and the only cause. The treatment of these ears divides itself into two groups: It consists in complete removal of all etiological factors and the relief of the local conditions in the tube. The infectious or inflammatory group includes all cases in which, as a result of bacteriological invasion, there are pathological changes in the Eustachian tube, middle ear, membrana tympani and labyrinth. During an attack the treatment is confined to securing a patent tube and promotion of drainage towards the nasopharynx. This is done by applications of astringents to the mucous membrane, surrounding the opening of the tube, and instillation of cocaine and adrenaline within the mouth of the tube, followed by the instillation of argyrol. When the infectious process invades the middle ear, there is a much more serious condition to deal with. The construction of the middle ear is such that there cannot be an infection of even the slightest degree without serious damage. If only simple congestion is reached the patient is comparatively well off. It may subside without leaving damage that cannot be repaired with treatment. Here again the same treatment as that employed for inflammation of the tube is used. If we are successful in getting drainage early through the tube the damage may be

slight, especially if the treatment is followed in the way mentioned above. We must not inflate these middle ears until all fluid exudate has either been drained through the tube or absorbed. We must not incise the drum in these cases when we have only this stage to deal with. The third or purulent stage calls for immediate opening of the drum. This should be well done—not with a pin prick somewhere in the drum, but by a deliberate incision in the posterior inferior quadrant, beginning at the floor of the canal and carried up to the posterior fold. In such cases the result depends much on the early drainage and subsidence of the infectious process. If there is a permanent hole in the drum it is better for the ear if the tube is permanently closed.

Surgical Treatment of Suppurations in the Posterior Mediastinum.—Vincent Gandiani (*Annals of Surgery*, May, 1916) concludes with regard to the operative treatment of suppurations of the posterior mediastinum, that abscesses in this region must be treated by incision through the dorsal or cervical route. All abscesses located at any point in the posterior mediastinum may be dealt with by the dorsal incision, but its real indication is for cavities located low in the mediastinum below the arch of the aorta, from the fourth to fifth dorsal down. All abscesses situated at the level or above the fourth dorsal may be opened successfully and drained through a cervical incision. Only secondarily a dorsal mediastinotomy may be necessary. Cervical mediastinotomy has a rather wide range, principally because of the fact that many abscesses have their origin in the superior portion of the esophagus or in the retropharyngeal space and only secondarily migrate into the chest. Abscesses whose origin is in the superior part of the mediastinum have, according to Von Hacker, no tendency to spread downward. Because of the lessened density of the cellular tissue about the heart, they easily migrate toward the neck.

Preoperative Treatment of the Hands.—As the result of investigations made by A. D. Whiting and Morris A. Slocum (*Annals of Surgery*, May, 1916) the conclusion was reached that none of the various solutions used as skin antiseptics, disinfectants and so on, will destroy all germs of the skin in all instances, but that a solution consisting of acetone, alcohol, and one of the coal-tar disinfectants of a high phenol coefficient was more efficient than any other agent they had ever used for skin sterilization. In such a solution, the acetone (dimethylketone) acts as a solvent of the fatty or oily material of the skin and thus aids in exposing the bacteria to the germicides. The alcohol acts as a solvent; it has the power to penetrate into the cracks and crevices of the skin, as alleged by Braatz, through its ability to decompose and remove small particles of air that may be present; it is germicidal in solutions as weak as thirty per cent., according to Post and Nicoll, in solutions ranging from forty per cent. to ninety-five per cent., according to the writers' findings, with its strongest germicidal powers in solutions ranging from sixty per cent. to seventy per cent., according to Leedon-Greene; it also makes a good vehicle. The coal-tar disinfectant which may

be used acts simply as a powerful germicide, destroying all bacteria with which it comes into contact for a length of time varying with its coefficient and the degree of dilution. The advantages of such a solution are many. Patients do not complain of irritation following its use, though it causes a burning sensation when used on the scrotum. It does not stain the skin. It reduces to a minimum the time consumed in preparing the field of operation, and its method of application is the simplest. It may be used on a wet or dry skin, for emergencies or in cases where the consumption of time in preparing the patient is not of great moment. There is no exfoliation of the skin as is seen after the use of iodine, nor is there any blistering. It may replace all other solutions in sterilizing the hands, although its continuous use causes irritation in some instances; in others, no effect is noticed; others say the application of the solution gives rise to a decided feeling of warmth. The solution may be used repeatedly, any collected detritus being removed by filtration.

Conservative Treatment of Wounds and Burns.—Some points of value are brought out in notes from the front by A. Laphorn Smith (*Brit. Med. Jour.*, April 22, 1916). Since the loss to the patient through escape of pus is very great, the amount of such loss should be gauged by weighing the dressings before and after application, or by measuring the pus collected through a siphon drainage tube, with or without vacuum suction. The exhaustion from this loss should be met by the administration of the phosphate or hypophosphite of iron. Among antiseptics potassium permanganate has proved of the utmost value, either in concentrated solution, or in the form of the finely powdered crystals introduced into every crevice of the wound. The best results in the treatment of extensive burns have been secured by the initial application of a thick layer of zinc oxide ointment covered air tight with ordinary table oilcloth. The ointment should be made with petrolatum as the base. Where grafting has to be done the extremity should be kept continuously extended until healing is complete to avoid the deforming effects of contraction of scar tissue.

Milne's Method of Preventing the Transmission of Contagious Diseases.—According to Lemoine and Devin (*Bulletin de l'Académie de médecine*, April 4th) a modified Milne procedure was carried out in some improvised military hospitals where a sudden influx of contagious cases, coupled with the restricted quarters available, rendered proper isolation of the cases impracticable. The method was thus put to the test to an extent inadvisable under ordinary conditions in civil practice. In January, 1916, a number of cases of diphtheria, measles, scarlet fever, and mumps had to be lodged in a factory previously used for cases of slight wounds and mild illness. A few wooden partitions were rapidly erected, rather to separate the different groups of cases than with the idea of affording any sort of isolation, and Milne's method was rigorously applied. Over each bed a mosquito netting, consisting of gauze, was hung from the ceiling and tucked under the mattress and bolster round the patient. Tincture of eucalyptus

and gomenol were thoroughly sprayed over this netting three times a day, the patient's throat was carefully painted with a one in sixty iodine glycerin solution every three hours and a solution of gomenol in oil instilled in the nasal fossæ at like intervals. These measures were carried out either by the physician himself or by a special nurse attending to a single group of patients. When the patient, clinically well, left his bed, he was kept for a time in the division set apart for suspected cases, and the throat and nose were disinfected as before three times a day. There were thus treated within a month ten cases of measles, eighteen of scarlet fever, sixteen of mumps, and twelve of diphtheria. No instance of transmission or complication was observed. Stress is laid on painstaking treatment of the throat and nose; superficial applications to the tonsils or gargling with some ordinary more or less antiseptic solution would undoubtedly render the procedure a failure. By careful application of the Milne method the period of isolation after contagious diseases could be greatly shortened. Thus, in scarlatina, instead of continuing isolation until the end of desquamation, at a time when the mouth and pharynx are the sole actual sources of contagion, all danger could be removed by a strictly carried out local disinfection of these cavities. The results obtained already in diphtheria in this direction could undoubtedly be obtained in scarlet fever.

Skin Affections Arising around Wounds and Sinuses and Their Treatment.—A. Desaux, in *Presse médicale* for March 30, 1916, calls attention to the frequency of cases of dermatitis following wounds, especially compound fractures of the bones of the extremities, with infection, suppuration, and sinus formation. The frail cicatricial ring surrounding the sinus becomes abraded under the continued action of antiseptics such as hydrogen dioxide, potassium permanganate, chlorinated soda solution, mercury oxycyanide, and especially tincture of iodine. The red, raw area thus produced soon becomes infected with the streptococcus from the sinus discharge and secondarily with *Staphylococcus aureus*. Streptococci seropurulent pharyngitidis and staphylococci follicular inflammations then appear in patches surrounding the primary lesion. Prophylaxis consists in interrupting the use of antiseptics when the patient begins to complain of local itching, and in protecting the cicatricial margin of the sinus from antiseptics by application of a zinc oxide paste after each treatment of the sinus:

R Zinc oxide, } 3iiss (6 grams);
Adipis lanæ hydrosi, }
Petrolati, 3iij (8 grams).
M. Fiat unguentum.

Curative treatment of the established dermatitis consists, after removal of the scales with moist dressings, in tearing off any remaining epidermis and applying to the entire affected area, with special care at its periphery, a one per cent. solution of silver nitrate followed by Credé's ointment or a ten per cent. ointment of collargol. At successive treatments the strength of the silver solution should be increased to two and even five per cent. After a few days, the affected area has been disinfected, but

is still infiltrated, red, shining, and weeping. At this stage the following drying ointment should be applied:

R Picis carbonis loti,gr. xv (1 gram);
 Ichthyolis,3ss (2 grams);
 Zinci oxidi,}ää 3iss (6 grams);
 Adipis lanæ hydrosi,}
 Petrolati,3ii (8 grams).
 M. Fiat unguentum.

Five or six days later the area should be completely dried by painting with washed coal tar, to be left on forty-eight hours. The tar-ichthyol ointment should then be reapplied. To prevent the development of patches of the disease around the original lesion, the zone of healthy skin surrounding the latter should be kept covered with the following:

R Camphoræ pulveris,gr. xiiss (0.75 gram);
 Acidi borici,}ää gr. xv (1 gram);
 Ichthyolis,}
 Zinci oxidi,}ää 3iss (6 grams);
 Adipis lanæ hydrosi,}
 Petrolati,3ii (8 grams).
 M. Fiat unguentum.

Extirpation of the Lacrymal Sac in Chronic Dacryocystitis.

—J. Garcia del Mazo (*Revista de Medicina y Cirugia Practicas*, April 21, 1916) gives the results of this operation in fifty cases which demonstrate its certainty of cure, rapidity of results (no case taking over fourteen days to clear up) and painlessness. The scar is so small as to be almost imperceptible in almost all cases and the resultant lacrymation is insignificant, in many cases being completely absent. The removal of the sac permits operations on the eyeball without danger of infection. The slight disadvantages of the operation are the small operative field, the situation and relations of the lacrymal sac, adhesions, friability of the sac walls, danger of fistula, etc., while incomplete removal results in further suppuration under worse conditions, and perforation of the orbital cellular tissue may cause grave infection. However, the conclusions arrived at are that this operation is not only the method of choice, but that it should supersede all others, especially the use of caustics.

Colectomy; Final Results.—John G. Clark (*Surgery, Gynecology and Obstetrics*, May, 1916) summarizes final results of colectomy as follows:

1. In only six of the twelve cases operated in, may one consider the result as entirely satisfactory. 2. In all cases there has been great improvement in the constipation for a time, to be followed at variable intervals in four by a gradual recurrence of the constipation. In some cases this has not been so severe as formerly, whereas in others it is quite intense. X ray examinations in three cases showed in two decided dilatation of the ileum to a size closely resembling that of the colon. 3. In none of these cases has there been diarrhea of long standing, and none that was not controlled by simple medicinal measures. 4. In none of the cases has there been undue thirst. 5. In six cases there has been marked improvement in nutrition. In the remainder there was no visible effect, so far as physical improvement was concerned. As a final summary of these cases, Clark and coworkers feel that total removal of the colon is justifiable only in severe cases of obstructive constipation. From

their experience in the foregoing cases they are of the opinion that a less radical procedure must be employed, and incline to the limitation of the colectomy to the ascending colon and the middle of the transverse colon, with a lateral anastomosis of the ileum into the transverse colon. In this way the omentum is preserved and there is much less traumatism to the mesentery, with its very important sympathetic nervous system. From their experience in three or four cases they are convinced that any form of anastomosis between different segments of the colon or between the cecum and sigmoid flexure, with the expectation of diverting the fecal current into this new channel, will almost invariably be doomed to failure. Finally the writers believe that the one valuable point gained in the study of their series of cases of colectomy is that the ileum will not uniformly assume the vicarious function of the colon, and that the backward pressure from the colon through the anastomotic opening, when it is low down, in a definite proportion of cases causes dilatation and permanent impairment of the ileum.

Treatment of Venereal Ulcer.—A method for the complete extirpation of chancres, which yields perfect results with complete healing, is described in the *Berliner klinische Wochenschrift* (November 22, 1915) by Ferdinand Fuchs. It consists in the excision of the entire chancre by means of a cautery kept at a temperature just sufficient to cause a red glow. This does not produce severe thermal destruction of the bed, which remains and therefore permits prompt healing. After excision the edges of the wound are approximated by a few sutures and the wound is dressed with a vioform varnish. The penis should be supported horizontally in a suitable suspensory to prevent excessive edema, and the patient should receive specific treatment. This method is unsuited to cases where the chancre involves the coronary sulcus.

Malaria.—W. E. Deeks (*Southern Medical Journal*, May) says that the one specific drug for malaria is quinine, and the only questions to be discussed are the methods of administration, the dose, and the length of time necessary to keep up the drug action. He speaks from observation of 50,000 cases in the Ancon hospital, where the methods used were by mouth, rectum, hypodermic, hypodermoclysis, intravenous, and endermic in children. In the majority of cases administration by mouth meets every requirement, but the drug must be in solution. Quinine dissolves only in an acid medium; when temperatures are high the secretion of dilute hydrochloric acid in the stomach is lessened or absent and then the undissolved quinine passes through the intestinal canal without being absorbed, as the contents are alkaline. In addition to the quinine it was found important to give three grains of calomel on the day of admission, followed by an ounce of magnesium sulphate in eight or ten hours, and it was of great advantage to repeat the magnesium sulphate after the temperature had dropped, as it aided in the elimination of toxins. As a rule the appetite did not return until after this dose. Food was not denied when the patient could take it.

This simple method does not suffice in the cerebral and pernicious types of the disease; the drug must be placed quickly in the peripheral circulation hypodermically, intravenously, or by hypodermoclysis. The last was abandoned after trial. The hypodermic method was employed generally, seven and a half grains of the dihydrochloride salt in an ampoule were diluted with ten c. c. of normal saline and injected into the deep subcutaneous tissue. Usually two injections were given at a time at two or four hours until forty-five to seventy-five grains had been administered, and as soon as the stomach could tolerate it, the drug was given by mouth. In very grave cases the intravenous method was employed. The quinine solution needs to be diluted with 250 to 300 times the amount of normal saline. Occasionally a case of grave infection with severe and persistent vomiting, or a case of an algid type in which the foregoing methods failed, required the rectal method for a few doses. Sixty grains of quinine solution in ten or twelve ounces of warm normal saline were injected with a high rectal tube, after a preliminary cleansing enema. The writer closes with the statement that uncomplicated malaria is easily curable, if treatment is properly carried out, except in the rare, very severe pernicious types, where not even the most energetic action may succeed in saving the patient's life.

Local Anesthesia in Prostatectomy.—F. Lequeu, in *Bulletin de l'Académie de médecine* for April 4, 1916, reports 150 cases of prostatectomy under local anesthesia and emphasizes the advantages of his procedure in these cases, in which the use of general and other forms of anesthesia is often attended with undue risk. An initial hypodermic injection of morphine is given and forty to fifty c. c. of a 0.5 per cent. solution of novocaine, with five drops of epinephrine solution to the 100 grams of the entire solution, is then introduced in the bladder. The suprapubic region is infiltrated with the same solution, and the incision is made in this area; the bladder is exposed and incised without anesthesia, and anesthesia of the prostatic region then produced, with two fingers of the left hand in the bladder, by injections each of five or six c. c. of the solution, through long and variously curved hypodermic needles. The first periprostatic punctures are sometimes felt, but the remainder cause little discomfort. The periphery of the adenoma, the interectoprostatic regions, and the anterior zone of the urethra are thus anesthetized. As soon as the injections are finished the enucleation is proceeded with, the entire operation lasting fifteen minutes. Additional use of a general anesthetic has not been required. The quantity of anesthetic solution used, including the amount injected into the bladder, is 250 to 300 grams, containing 1.25 to 1.5 gram of novocaine. No unpleasant symptoms or after effects have been noticed. In the 150 cases thus anesthetized the mortality was only five per cent. On the whole, the procedure saves five or six per cent. of the cases, as this additional proportion would succumb under general anesthesia. The rapidity of the subsequent recovery permits of enlarging the indications of prostatectomy, to include, e. g., cases of aneurysm, bronchitis, and emphysema which could not have

been operated in under general anesthesia. The method is available in obese patients and in the presence of enormous prostatic enlargements. It is contraindicated, however, in cases in which the sensitiveness of the bladder is increased by cystitis or stone, as well as in cases of sclerous prostatitis without adenoma, in which there is no plane of cleavage to facilitate the anesthesia and operation.

Ultraviolet Rays in Dermatology.—A. Fischkin (*Illinois Medical Journal*, May, 1916) states that this method has given excellent results in his hands in cases of alopecia areata, lupus erythematosus, seborrhea of the scalp, onychia, pityriasis versicolor, lichen simplex, ichthyotic skin in children, chronic eczema, pruritus, and urticaria. Acne vulgaris sometimes yields, but the erythema produced by the rays is so annoying and persistent that it prevents the routine treatment by this method. Ringworm of the scalp gave varied success.

Intravenous Injections of Sodium Citrate.—In view of the value of the sodium citrate method of blood transfusion A. L. Garbat (*Journal A. M. A.*, May 13, 1916) made observations on man to determine the amount of sodium citrate which could be borne by intravenous injection without harm. He found that repeated injections of 100 c. c. of two per cent. solution could be given without the production of symptoms. In a few instances there was a chill and a moderate rise of temperature following such an injection, but it was evident that the salt was not harmful *per se*. Since clotting sometimes follows the use of 0.2 per cent. of sodium citrate in the blood, the employment of 0.25 per cent. is advised.

Diphtheria.—Aside from the administration of antitoxin, the absolute rest in bed of the patient, with fresh air and sunshine, are important aids, according to A. B. Morrill (*Chicago Medical Recorder*, April, 1916). The rest in bed should be prolonged in all severe cases, and goes a long way toward reducing the dangers of cardiac complications. The diet should be restricted to liquids and soft solids and the feeding should not be too frequent, as this tends to exhaustion. Painting the fauces with a one or two per cent. solution of cocaine will relieve dysphagia. Small, repeated doses of calomel are useful to keep the bowels open. The nervous depression may be combated by small doses of strychnine, and tonics are indicated, such as the tincture of the chloride of iron in doses of five drops. Where local treatment is painful it should not be given, but otherwise the nose may be irrigated with any mild antiseptic solution such as normal saline with a few drops of phenol. Gargles may be used, or the throat may be gently swabbed out with Loeffler's solution. The formula for this is:

R	Menthol,	100 grams;
	Toluol,	360 grams;
	Liquor ferri sesquichloridi,	40 grams;
	Alcohol (absolute)	600 grams.

Strychnine, absolute rest, and the application of an ice bag to the precordium are useful in heart complications, but cardiac stimulants are without value. The local instillation of diphtheria antitoxin and of atropine, and the injection of antitoxin should be used in diphtheritic conjunctivitis.

Pith of Current Literature.

CORRESPONDENZ-BLATT FÜR SCHWEIZER AERZTE.

April 15, 1916.

Miliary Tuberculosis.—L. von Duralt maintains that there are cases of general miliary tuberculosis which cannot be diagnosed by means of ordinary clinical methods because after the initial symptoms pass away no characteristic signs are left, and the disease is latent. Such cases can be detected by röntgenographs of the lungs, in which a characteristic condition is brought to light, but no diagnosis is possible by other means. The curability, although in rare cases, of miliary tuberculosis is established in the same way.

MEDIZINISCHE KLINIK.

April 16, 1916.

Weil's Disease, by F. Trembur and R. Schaller.—The clinical features of this disease are presented and discussed as the result of the personal observation of a number of cases occurring among the troops. An early diagnosis can usually be made from the symptoms before the appearance of the icterus. Prodromal symptoms begin suddenly and precede the fully developed disease by two to four or more days. They comprise severe frontal headache, lumbar pain, and pain and heaviness in the extremities sometimes extending to the chest and neck muscles, and marked tenderness of the affected muscles to slight pressure. These symptoms are so constant and so characteristic that they alone are often sufficient for diagnosis. In addition there may be vomiting, epistaxis, slight mucoid diarrhea, conjunctivitis, pharyngitis, vertigo and severe malaise. The temperature curve of the disease is irregular. It usually shows one or more recrudescences which accompany an increase in the severity of the symptoms. The respiratory tract is usually involved in a purulent bronchitis, and pneumonic symptoms may occur. There is usually a catarrhal inflammation of the buccal and pharyngeal mucosa with frequent dysphagia, and vomiting is the rule. The liver is enlarged almost from the first day and is tender to pressure. Diarrhea is common at the beginning and the movements soon become clay colored with a later constipation. There is usually circulatory depression with soft, rapid pulse, reduced blood pressure and a tendency to edema of the dependent parts. Small amounts of albumin with granular and hyaline casts are ordinarily found in the urine, and bile pigment is present in all cases. Moderate leucocytosis with relative polynucleosis is the rule. There is also reduction in the number of red cells, as low as half the normal. Lastly, there is more or less intense jaundice. Prognosis is good and recovery fairly rapid. Bacteriological study of the blood and excreta is negative, but animal inoculation serves to confirm the diagnosis.

Aorta angusta, by H. Strauss.—The author brings forth cumulative evidence in support of his belief that the developmental condition known as narrow aorta accounts for a large proportion of the instances of physical unfitness seen among re-

cruits who are subjected to the abnormally severe exertion of military training. Diagnosis of this condition is neither easy nor always certain, but it can be made with reasonable probability in the presence of sudden development of cardiac decompensation in a person with an apparently normal heart. This diagnosis is supported if the peripheral vessels are found to be small, and if there are evidences of lymphatism such as the female type of figure, small testes and external genitals and the feminine form of hair distribution over the pubes.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

April 11, 1916.

New Method of Examination of the Vestibular Labyrinth, by E. J. Moure.—During the war so many cases of labyrinthine involvement through disease, shell concussion, or direct injury have required examination that the author was led to seek a more rapid method of diagnosis than those ordinarily employed. The new procedure is adapted from a children's game, which consists in making five or six turns around a vertical pole or cane, with the head bent forward and the eyes closed, then stopping, opening the eyes, and attempting to walk in a straight line. Patients whose labyrinthine functions are impaired, the labyrinthine organs being not excitable, are able to walk almost or quite straight after the rotary movement, whereas a normal subject is not only unable to walk straight, but often falls on the side toward which he has been turning. If the turning has been performed in a clockwise direction, he deviates to the right, and if in a counterclockwise direction, to the left. The eccentric labyrinth is that most strongly excited. In cases with a hyperexcitable vestibular apparatus, the patient will at times fall before completing the five or six turns. The procedure may then be repeated at a slower rate and with the head less bent forward toward the pole.

Nervous Sequelæ of Craniocerebral Injuries, by Maurice Villaret.—The author's study is based on 256 cases met with in military practice. Excluding cases where the traumatism resulted in grave and incurable infirmity, many patients were encountered in whom such disturbances as hemiplegia or other paralyzes, contractures, speech disorders, and even Babinski's sign passed off after a time, leaving the individual apparently normal and fit for any type of duty. Careful examination of such subjects, however, usually revealed some less evident defect which reduced their capability for service. Visual sequelæ were met in forty-one cases, nearly always after occipital injury, and comprised temporary blindness in four instances, diplopia in three, contraction of one or both visual fields in sixteen, varying forms of hemianopsia in nine, and pupillary inequality or other disturbances in nine. Unilateral astereognosis was noted in twenty-seven cases, especially after parietal, but sometimes also after frontal and occipital traumatism; at times it was combined with disturbances of superficial or deep sensation on the side opposite the lesion. Sometimes astereognosis disappeared gradually, finally being confined to parts of fingers or of the hand. Typical Jacksonian epilepsy was noted as a sequel in fifty-three cases, but in twenty-

five others there were sensory equivalents of epilepsy such as tingling in the limbs, temporary deafness or tinnitus, scintillating scotoma or transitory blindness, psychic equivalents, attacks of vertigo (37 cases), and vertigo induced by changes of position, especially by bending the body forward (146 cases). These disturbances may follow injury at any part of the skull. Often they are overlooked, and may be followed, after an interval, by more severe manifestations, including typical epileptic seizures. Mental sequelæ were noted in 127 cases, including such conditions, often intermittent or cyclic, as mental inertia, neurasthenia, pseudogeneral paralysis, euphoria, puerility, amnesia, etc. These mental sequelæ do not follow frontal injuries, especially occurring, in fact, in over half the cases after parietal injuries and also after occipital injuries.

PARIS MÉDICAL.

April 20, 1910.

Method of Obtaining a Pure Bacterial Culture in Bronchopneumonia. by G. Rosenthal.—Text-books lay stress on the difficulty of securing exact knowledge as to the nature of the infection in pulmonary suppurations owing to contamination of the lung sputum in the mouth. Washing the sputum is a procedure available only where the exudate is a compact one. In the other cases, Rosenthal examines the patient's larynx in the usual way with a rather broad mirror, carefully sterilized, and avoiding all contact of the reflecting surface with the mouth. Previous gargling with dilute hydrogen peroxide solution is perhaps advisable. As soon as the larynx is in view, the patient is requested to cough slightly; often he does so spontaneously. Purulent matter is projected against the mirror, which is then withdrawn and supplies material for making cultures on the ordinary media. Where the patient is weak, the procedure can be used while he is recumbent.

LANCET.

April 29, 1910.

Pneumococcal Bronchitis, by James Goodhart.—This condition is often of a subacute or chronic nature and closely resembles tuberculosis. It is often encountered in phthisical looking persons who may present physical signs of consolidation and cavity formation. Such signs are, however, usually located in positions in which lesions of tuberculosis are relatively uncommon. Many cases show some degree of impairment of resonance at one apex with rales, but the latter are commonly somewhat different in kind from those encountered in tuberculosis so that the keen observer is put on his guard. Repeated sputum examinations yield negative results for the tubercle bacillus, but show the presence of pneumococci. Other organisms are often found in persistent association with the pneumococcus. The prognosis in these cases is good. The danger lies in the harm done to the individual by making an erroneous diagnosis of tuberculosis.

Blood Findings in Epilepsy, by Ralph H. Spangler.—Repeated, careful and comprehensive blood examinations have been made by the author in a series of epileptics coming from the better class of society. It was found that the average hemo-

globin content of the blood was comparatively high, averaging eighty-four per cent. No marked diminution in the number of red cells was encountered, and evidence of erythrocytic degeneration was rarely found. During the interparoxysmal intervals the leucocytes averaged within normal limits, but at the time of an attack and often for a day afterward, there was a tendency to an increased number of white cells sometimes amounting to a marked hyperleucocytosis. The large lymphocytes were found to average nine per cent. above the normal. Before the seizure the clotting time of the blood was found to be reduced, and even in the interparoxysmal period the average clotting time of 100 cases was below the normal range. On a standard diet the alkalinity of the epileptic's blood was found to be less than that of normal persons on the same diet.

Significance of the Presystolic Murmur, by Thomas Lumsden.—Three types of such murmurs are recognizable and have different prognostic values. The Flint murmur may be recognized by 1. The presence of an aortic diastolic murmur. 2. Absence of reduplication of the aortic second sound at the apex. 3. Marked dyspnea and palpitation after exertion. 4. Evidences of cardiac enlargement. It is of bad prognostic omen. Mitral stenotic presystolic murmurs are evidenced by: 1. Their roughness, intensity, and crescendo type; 2, a heaving precordial area with diffused apex impulse and heart enlarged to a moderate degree; 3, reduplication of the apical second sound; 4, upward conduction of the presystolic murmur; 5, dyspnea and increase in heart rate after exertion. The prognosis is bad, but less grave than in the case of the preceding type. Astenotic presystolic murmurs occur in persons apparently healthy and seem to be of little prognostic importance. They are not associated with reduplication of the second sound, there is no accentuation of the pulmonic second sound, there is no cardiac enlargement, and there are no evidences of cardiac deficiency. The cause of such murmurs is not understood, but their presence is not indicative of cardiac disease.

BRITISH JOURNAL OF CHILDREN'S DISEASES.

May, 1910.

Hearing Tests in School Children, by Macleod Yearsley.—The standard test is the forced whisper test and the standard distance is twenty feet. One classification is, a, very slightly deaf, when unable to hear the whisper at twenty feet but beyond six feet; b, slightly deaf, between three and six feet; c, hard of hearing, no whisper at three feet, but ordinary voice at six feet; and, d, very deaf children. Of a series of 194 children examined, 31.4 per cent. had defective hearing, but in only 5.6 per cent. was the defect marked. The commonest cause of defective hearing in another series of 1,000 cases was chronic middle ear disease and Eustachian tube troubles; then, plugs of cerumen, suppuration, and, finally, the results of suppuration.

Nephritis Without Albuminuria, by J. Porter Parkinson.—A boy aged three and a half years was admitted to the hospital suffering from pneumonia. He had been ill for three weeks pre-

viously with cough and fever. He had had pneumonia at the age of nine months. There were signs of consolidation in the left axilla. The temperature rose daily to 103° F. until the sixth day after admission, when it fell to normal by crisis. The urine, examined every third day, showed nothing abnormal. On the fourteenth day after admission there was slight edema of the face and the following day other parts of the body were affected. The daily examination of the urine now showed a few hyaline and granular casts and an occasional red cell, but no albumin. The amount of urine passed was normal. Most cases of this sort seem to be the result of scarlet fever, but in this particular case there was no history of any acute specific or other cause, except perhaps acute pneumonia.

Dyspituitarism, by Sidney Stephenson.—The patient, a girl aged fifteen years, came under observation complaining of failing sight for three or four months and headaches for one week. The vision at the time was R. 5/5, L. 5/36, and an examination under atropine revealed R. +0.50 cyl., axis 180°; L. +0.50 sphere. Seven weeks later the sight in the right eye was reduced to "shadows," while the left had remained the same. The sight of the right eye was stated to have failed suddenly two weeks before. The pupil of the right eye did not react directly to light, both optic discs were pale, but the retinal vessels were of normal dimensions. The girl appeared stout and the eyes were prominent. She was admitted to the hospital and the blood count showed a hemoglobin of sixty-five per cent., with a color index of 0.86. The Wassermann reaction was negative as to both the blood and the cerebrospinal fluid. Some time later she was placed on thyroid gland, one grain twice a day, as up to this time she had not menstruated. The vision was now reduced to perception of light in the right eye and to 3/60 in the left. The field of vision in the left eye was restricted in the temporal region. The dose of thyroid was shortly after increased to four grains a day. The condition gradually grew worse until the vision in the left eye was reduced to 1/24 and in the right to perception of light. The diagnosis of dyspituitarism is likely because of: 1. The existence of bilateral simple optic atrophy; 2, loss of the temporal field in the left eye; 3, the x ray evidence of enlargement of the sella turcica, and 4, the patient's general appearance. Surgical treatment is indicated, as no result was obtained after large doses of thyroid.

MEDICAL RECORD.

May 20, 1916.

Mechanical Factors in Colonic Stasis, by Charles H. Peck.—Four cases are described where nonmalignant partial obstruction of the large intestine existed. One showed Jackson's membrane with fixation of the cecum and ascending colon with rotation to the right and longitudinal buckling or angulation. Two others showed mechanical obstruction by bands at the splenic flexure, while the fourth showed strong omental and peritoneal bands across the descending colon.

Golfer's Foot, by Charles Cross.—This is a term applied by Cross to an acute foot condition

from distortion resulting from a broken arch in the anterior metatarsal curved area. Symptoms are discomfort at the base of the third and fourth toes, with sometimes tenderness and pain on flexion of these toes. If neglected, chronic broken anterior arch may result or Morton's metatarsalgia. Treatment consists of correction of the distorted position of the metatarsal heads with their maintenance in proper position and a toning up of the supporting tissues with removal of inflammation. Supports should be made of cork and rubber, while metal arches are to be condemned. Dry heat or moist dressings of a solution of magnesium sulphate covered with oiled silk may be of service.

Two Cases of Syphilis of the Lung, by Solomon Bauch.—These two cases of lung syphilis, one in a man of fifty-one, the other in a man of twenty-eight years, suggest the advisability of doing a Wassermann test in cases of lung involvement with negative sputum. Early diagnosis is important because gummatous ulceration or cavitation does not improve much under antisyphilitic treatment. In doubtful cases, antiluetic treatment should always be practised.

Salt Water Ear, by Hugh B. Blackwell.—Salt water bathing frequently causes ear infection through the Eustachian tube, while furuncles of the canals are common. A plug of lambs' wool in the external canal will keep out the salt water. Snuffing of salt water for nasal catarrh is dangerous to the middle ear.

JOURNAL OF MEDICAL RESEARCH.

March, 1916.

Bacteria Associated with Certain Types of Abnormal Lymph Glands.—Torrey, as a result of the bacteriological study of some forty cases of abnormal lymph glands, comes to the conclusion that the theory of a casual relationship between a diphtheroid bacillus and Hodgkin's disease rests upon an insecure basis. Although he found an anaerobic bacillus in twenty-two of the cases examined, he believes that it is merely a parasitic invader and not a disease producer.

The Etiology of Scarlet Fever.—Mallory and Medlar report the microscopic findings in the tissues of a child dying from scarlet fever on the second day after the appearance of the skin eruption. They found Gram positive bacilli in the crypts of the tonsils, in the epithelium of the trachea and in the lungs in areas of bronchopneumonia. Similar organisms were found and isolated from smears made from throat lesions in other cases. From their observations, the authors conclude that "it is reasonable to infer that scarlet fever may be due to a strongly Gram positive bacillus (*B. scarlatinæ*) which is less virulent than the diphtheria bacillus but which infects practically the same parts and in severe cases may extend in the same way to adjoining tissues, especially the larynx, trachea and lungs." This bacillus dies out quickly, not being demonstrable after the second or third following the eruption. On account of the necrosis due to the action of the toxin the tissues are exposed to a streptococcus invasion.

Proceedings of Societies.

WESTERN SURGICAL ASSOCIATION.

Twenty-fifth Annual Meeting, Held at Des Moines, Iowa, December 17 and 18, 1915.

The President, Dr. JOSEPH RILUS EASTMAN, of Indianapolis, in the Chair.

(Continued from page 1054.)

President's Address; the Old Art and the New Science of Surgery.—Dr. JOSEPH RILUS EASTMAN, of Indianapolis, said that art was the application of means and methods to accomplish desired ends. Science was the systematized knowledge of principles and laws. Surgical art was old; surgical science was new. Throughout nearly all of historic time surgical knowledge was purely empiric; it was art, not science. Scientific surgery, according to the modern concept, that is, "formulated knowledge of surgical principles and surgical laws, based on biological facts," might be said to have come into existence during the last century with the birth of the school of physiological medicine founded by Broussais, Bichat, Roser, of Stuttgart, and Wunderlich, who called pathology the physiology of the sick, and the advent of cellular pathology, with the associated new development of the ancillary surgical sciences of cellular pathology and bacteriology. Thus, the pure sciences of cellular pathology and bacteriology of Virchow and Pasteur established and explained causes, principles, and laws which, joined with the older and applied science or art of surgery, and with its knowledge of phenomena and facts and supported by all the rapidly evolving tributary sciences having to do with the origin, structure, development, and function of living things, brought forth the newer group science or compound science of surgery.

They thought of Morgagni, Magendie, Bernard, Recklinghausen, Rokitsansky, Lister, Johannes Mueller, and others of their type and generation among the founders of the modern research science of surgery. Concerning the great surgical architects and artists as well as the philosophers of this important period, it was to be said that, however much they might admire their ingenuity in invention or their virtuosity in technical performances or their fine skill in spinning theories, they could not catalogue them among the fathers of present day science along with Virchow and Pasteur and their sympathetic contemporaries. Thus, Lawson Tait, renowned in the annals of surgical art, could not, if they recalled his polemic to Saenger declaring bacteria to be the products of disease, be grouped with Langenbeck and Billroth, surgical scientists, who were "as expert with the microscope as with the knife and equally great with both."

Recently the most valuable contributions to surgery had come from the laboratories of biology. They needed no priestess upon a tripod to tell them that surgery of the future would look more and more for strength and inspiration to the vigorous sciences of biochemistry and physiology, though it must continue to rest upon its original footing of normal and morbid anatomy, nor that the way to the most complete surgical development for any individual would lie not only through the "blood and sawdust," but also through the "glass and brass."

Surgical art and surgical research science rarely reached their highest development in one individual, and the practical and desirable alternative had been and would be to associate the genius of surgical research in one individual with the gift of surgical art in another in an harmonious working union. The ideal arrangement of the future would be that which included the establishment of special laboratories of surgical research in close association with the theatres of surgical art, and which included the close association of both with large facilities for the study of the broader aspects of disease.

Nails and Screws in Joint Surfaces.—Dr. ARTHUR T. MANN, of Minneapolis, said that nails and screws were tolerated in joint surfaces in the human as in the experimental cases in dogs. They remained firmly imbedded in every specimen. He had lost no case. There was an occasional infection in the skin, but no joint was infected. Gloves were used in most cases, but bare hands in some. All specimens were recovered. In every case where nails and screws had projected out of the joint surface the condyle had overgrown to meet the projection. That was Nature's response to the rigid metal projecting into the joint. The overgrowth in the condyle apparently was entirely of bone. Practically all of the covering of soft tissue over the nails and screws had reverted to the connective tissue type and was not entirely of the cartilaginous type, so that he had some specimens six months old. In each case the groove made by the projecting nail or screw had gradually filled up as the projection had become less and less by the overgrowth of the condyle.

Osteomyelitis Involving the Hipjoint, a Condition Heretofore Designated Acute Epiphysitis.—Dr. JAMES E. MOORE, of Minneapolis, stated that an acute suppurative synovitis occurred in children under four years of age, which Krause had found to be due to the presence of *Streptococcus pyogenes*. It might be excited by injury or it might occur with the exanthemata. It gave the symptoms of a phlegmon and usually yielded to free incision and drainage. It attacked the hip, knee, shoulder, and elbow joints. Another disease usually placed under this heading was of a graver character than that above described, and began at or near the epiphyseal line. It occurred in the hip joint, and had been well described by MacNamara under the name, epiphysitis. It was an acute osteomyelitis. The symptoms all pointed toward an acute inflammation of the hip joint. There was excruciating pain and high temperature, followed by deformity and swelling. The joint was so deeply seated that redness did not occur. The symptoms were much more acute than in tuberculous osteitis of the hip. There was apt to be an early separation of the epiphysis with rapid destruction of the hip joint. The treatment consisted of free incision and drainage. The opening should be made large enough to admit a finger, in order to ascertain whether the epiphysis was separated or not. If separation had taken place, the epiphysis should be removed at once. This was a grave disease, but with prompt treatment the speaker had seen cases end favorably that were seemingly beyond help.

This description was published by the speaker

eighteen years ago, and was just as good now as it was then. It should be noted that at the time he did not accept the commonly accepted term, epiphysitis, but pronounced it acute osteomyelitis. Constant observation since that time had only confirmed the opinion then expressed, that the disease did not begin in the epiphysis, but in the neck of the femur, and one case cited went to prove that it even might begin in the shaft of the femur. The epiphysis was the favorite site for attack by the tubercle bacillus, but there was no evidence that this was even the original point of infection from pyogenic germs. The reason the name, epiphysitis, originally suggested by MacNamara over twenty-five years ago, had been and still was in vogue, was that osteomyelitis was quite rare in this site, and the diagnosis was not made until the joint had become involved and the epiphysis had separated from the neck. The epiphyseal line was the point of least resistance and soon gave way, and the epiphysis became separated. When the joint was opened the floating epiphysis at once attracted the operator's attention and the original opening into the neck of the femur could be easily overlooked. Some reported cases of extremely rapid recovery after the excision of the hip for tuberculosis had not been tuberculosis, but osteomyelitis with separation of an epiphysis. Unfortunately infection in such cases was usually so severe that unless drainage was promptly established the patient lost his life; but in the exceptional case the infection was less virulent and Nature might establish drainage by rupturing the abscess through the skin. The separated epiphysis acted as a foreign body and the sinuses remained open. Deformity took place, and the case assumed the appearance of the common tuberculous hip, so that it might not be possible to make a diagnosis until an operation had been performed and a careful bacteriological examination had been made. Of the many cases of osteomyelitis involving the hip joint seen by the speaker, he presented only four as proof of the correctness of his statements. While he advocated abandonment of the term, epiphysitis, he had no new name to offer. The term, acute suppurative arthritis, was objectionable because there were many cases of acute suppurative synovitis in which the bone was not involved and they were not nearly so serious. Would it not be well to revive the old term, acute osteitis of growing bone?

Experiments with Rubber Gloves.—Dr. CARL E. BLACK, of Jacksonville, Illinois, discussed the use of rubber gloves from the standpoint of how much they interfered with the tactile sense. He had used a unique plan of arriving at this practical question. It was well known that a considerable number of eminent surgeons had steadfastly refused to have their tactile sense blunted by the use of rubber gloves, and had considered it more advantageous to their patients than asepsis. He had had 144 observations on blind pupils who read entirely with their fingers and were entirely dependent on the sense of touch for that purpose. Each observation consisted of reading with the fingers thirteen lines, approximately 100 words, of Braille text printed on both paper and brass plates. The text was new and unfamiliar and new text was used for each experiment. Six people, three boys and three girls, high

school students at the Jacksonville State School for the Blind, were selected for these experiments. A number of tests were made with the bare fingers, which showed the average time in which the pupils could thus read the text was forty-eight seconds, while the average time for reading 100 words when the hands were covered with rubber gloves of medium weight and well fitting, was seventy seconds. With oil inside the gloves, or rather with the hands covered with oil and then the gloves put on, the time was reduced to sixty-eight seconds, while with the gloves put on with the hands wet, the time was still further reduced to sixty-five seconds. The average time for reading with gloves, under all conditions, was seventy seconds.

The observations showed the difference between thin, thick, and medium weight gloves. In one observation an excess of powder was put in the glove, while in another observation very loose fitting gloves were used. With loose, ill fitting gloves the average time for reading 100 words was eighty-six seconds. These observations presented some interesting facts about the gloves and showed the difference between the carefully fitted medium weight gloves and the loose, ill fitting thick gloves. They also emphasized the fact that gloves put on with the hands wet impaired the sense of touch less than gloves put on dry.

A Paradox in Cancer.—Dr. C. E. TENNANT and Dr. CASPER F. HEGNER, of Denver, Colorado, stated that their case presented an interesting sequence of etiological factors with associated carcinoma of the mammary gland. Paradoxically it presented an equally important sequence of etiological factors with which carcinoma at the pylorus was usually associated, but without the carcinoma being demonstrable.

Notwithstanding the long and continued presence of carcinoma extending over a period of ten years, and two operations for recurrence; notwithstanding the possibility of metastasis and a constitutional predisposition to carcinoma, and the coexistence of a chronic ulcer at a site most favorable to a development of carcinoma, and that, too, during the cancer decades of life; carcinoma did not develop. The case was that of a widow, aged fifty-eight years. An elder sister died in 1913. Since the age of sixteen years she had been having attacks of stomach trouble with nausea and vomiting. These had been severe and almost constant since 1905. When twenty-three years of age, while nursing an infant, the nipple of the left breast became sore and an abscess developed, which was lanced through the nipple. In 1900, twenty-one years after the abscess, the same nipple became sore again. This continued until 1907, when the lesion was diagnosed as Paget's disease and treated with x ray without improvement. In March, 1910, there was a superficial pigmented and fibrosed ulceration. The nipple and ulcer area were then excised. In December, 1911, twenty-one months after the nipple excision, she returned with a mass in the upper inner quadrant of the same breast. This was the size of a hen's egg and adherent to the skin and deeper structures. A complete operation was done, removing the breast, muscle, axillary, and supraclavicular lymph glands. Dr. R. C. Whitman examined sections of this tissue and reported scirrhus carcinoma with glandular involve-

ment. Four years after this operation the patient was free from recurrence. In April, 1915, she presented herself for stomach trouble, which had existed since she was sixteen years old. Pain and distress were almost constant, vomiting frequent, and a loss of ten pounds in weight had occurred. At operation, the pyloric end of the stomach, the pylorus, and the first part of the duodenum were found to be fused into a firm mass firmly adherent to the surrounding structures. The stomach (pyloric end) and the first portion of the duodenum were resected. The mass was excised in wide limits and a posterior gastroenterostomy was performed.

The history and the appearance of the tissues strongly indicated carcinoma, and at the time its presence was considered certain. Sections examined by Doctor Hegner proved this last lesion to be one of chronic duodenal ulcer with encroachment on the pyloric end of the stomach.

Thromboangiitis obliterans (Intermittent Claudication).—Dr. LEWIS L. McARTHUR, of Chicago, stated that there occurred in the relatively young of neither diabetic, syphilitic, nor angioneurotic types, a spontaneous gangrene termed thromboangiitis by Buerger and spontaneous gangrene of the young by Koga, a common occurrence among his countrymen, and almost limited in this country to the Jewish race. Mayesima determined the constant high viscosity of the blood in all cases of gangrene. Acting on this Koga confirmed Mayesima's findings and reduced the viscosity by diluting the blood with physiological solution (Ringer's). Cases, which in the past were invariably condemned to high amputation, he succeeded in curing by the simple expedient of hypodermoclysis of sufficient quantity of Ringer's solution and over a sufficient period of time to reduce the viscosity of the patient's blood. The testimony of all those who had faithfully carried out Koga's recommendation verified his assertions.

Dislocation of the Knee.—Dr. JOSEPH RANSOFF, of Cincinnati, presented a paper on this subject with skiagraphs, showing an anterior and external dislocation, with rotation to an angle of 90°. The man had fallen from a height of approximately forty-eight feet, sustaining at the same time a fracture of the lower jaw. The circulation of the leg was interfered with, as shown by sinusitis below the knee, although pulsation could be felt in both dorsalis pedis and posterior tibial arteries. The dislocation was easily reduced and the function at the end of six weeks was practically restored. The x ray interpretation of the slight fracture of the spinous process with detachment of the crucial ligament was somewhat dubious. There was no displacement of the small fragments.

These cases of dislocation were rare, since in a large traumatic service of the Cincinnati General Hospital this was only the third case which had been admitted in the past twenty-seven years. The writer thought the dislocations were perhaps more common than hospital records would indicate, since such dislocations were easy of reduction and were perhaps often reduced by the first aid Samaritans before patients were admitted to the hospital or seen by the surgeon. From the record not more than 250 cases could be collected. These accidents

sometimes occurred to a number of individuals at the same time, as in a remarkable report by Eames, who found five dislocations among eighteen miners who were precipitated down a mine shaft. They were all anterior dislocations. The gravity of the injury depended upon the damage to the popliteal vessels. Of this there was a suspicion in the case presented, but evidently there was only a temporary pressure on the vein. In very many instances gangrene followed upon rupture of the artery or vein, or both.

Further Study of Malignant Disease of the Ovaries.—Dr. MILES F. PORTER, of Fort Wayne, said that his communication was based on a study made in preparation of a paper on Sarcoma of the Ovary presented to the association two years ago, a study of the literature since that paper was written, and three cases recently occurring in his practice.

CASE I. Woman aged thirty-three years, one child, sixteen years old. General health good, complained of enlargement of the abdomen. He operated seven years earlier for nonmalignant papillary cyst of the left ovary with pus tubes. No menses for two years. Abdomen the size of seven months' gestation. Large multilocular ovarian cyst removed, evidently malignant, very adherent. This case illustrated the well recognized tendency to bilaterality of ovarian growths, both benign and malignant. He did not think there was any connection between the first and last tumor. As a result of large experience he was inclined to disagree with those who advised the removal of a healthy ovary because its companion was cystic. This should never be done except perhaps in women near the menopause.

CASE II. Patient was a woman who had been married seventeen years and had had one prematurely born child at seven months. Menses regular. She commenced having abdominal distress two and a half months ago with enlargement of the abdomen. On examination nothing could be found except ascites, for which no cause could be found. Exploratory operation revealed the belly filled with amber colored fluid and a right ovarian cyst, the size of a cocoanut (papillary adenocarcinoma). Fluid in the abdomen, which could not otherwise be accounted for, should lead to exploratory operation.

CASE III. Woman aged forty-eight years, with lump in lower right abdomen. Patient had been flowing slightly every day for more than three months. General health fair. Examination led to a diagnosis of myofibroma occupying the right anterior aspect of the uterus. Three months later, patient was taken suddenly ill with pain in the right lower abdomen, requiring morphine to allay it. After the third attack the writer was consulted. Operation revealed a solid right ovarian tumor, twisted three quarters of a turn on its pedicle clockwise. There was very little fluid in the abdomen. On section the tumor was solid, mottled, yellowish red, and in spots hemorrhagic as a result of the twist. Pathologists reported adenocarcinoma. In this specimen the macroscopic evidence of malignancy was so positive that it should have outweighed a positive diagnosis of malignancy based on the clinical history and examination of the gross

specimen. On the other hand, many tumors showed few or no signs of malignancy clinically, but on microscopic examination were found to be unquestionably malignant.

The speaker had seen several malignant ovarian tumors without ascites. Why some were accompanied by ascites and others were not, could not be explained. Rapidly growing tumors were most likely to cause ascites. Ascites did not mean involvement of the peritoneum. Kline suggested that the appearance of ascites in malignant tumors was to be regarded as a protective procedure designed to destroy the tumor, and that, therefore, the subcutaneous injection of ascitic fluid might be regarded as a rational therapeutic procedure. Malignant ovarian tumors might cause amenorrhea, menorrhagia, or metrorrhagia, or might exist without interfering with the menstrual function. In some cases there was a history of amenorrhea followed by menorrhagia, and vice versa. A bloody vaginal discharge years after the menopause had been noted. It might be said that irregularity of the menses was more common in malignant than in nonmalignant tumors of the ovary. He had found one case supporting Wermuth's statement, that sarcoma in the young might cause premature signs of puberty. This was in a girl of six years with the development of a mature woman, and who menstruated regularly. Operation revealed a vascular sarcoma and a uterus of adult size.

Bleeding Nipples.—Dr. DEAN LEWIS, of Chicago, stated that the clinical significance of secretion from a nonlactating breast had been variously interpreted. It had been stated that a thin, scanty, sanguinolent discharge was certainly suggestive of carcinoma; that a mucoid discharge was evidence of a benign growth, and that a discharge of blood, as markedly bloody fluid, strongly suggested intracanalicular papilloma. Bloodgood stated that discharge from the nipple, except during lactation, might be looked upon as a sign of a benign lesion, and not as a symptom of cancer. If the discharge was blood or serum, this was a positive sign of an intracanalicular papilloma. Seven bleeding nipples had been studied and five operated upon. The youngest patient was thirty-five years of age, the oldest fifty-one. The age at which bleeding took place corresponded to the age at which abnormal involution of the breast occurred. In two instances a cyst was situated superficially about three fourths of an inch from the nipple. When pressure was made upon the cyst, drops or a stream of blood or serum could be expressed. The cysts were the size of a hazel nut. A radical operation was performed in both instances. In one beginning malignant degeneration of an intracanalicular papilloma was found; in the other instance a benign papilloma.

In two cases no definite tumor could be found, but when a plastic resection of the breast was performed an intracanalicular papilloma, not much larger than a barley seed, was located deep in the duct. In two instances the bleeding was associated with a chronic interstitial mastitis. In one of these a plastic resection of both breasts was performed. In the other, cysts had been removed from both breasts five years before the discharge was noticed. This patient had nothing done, and the discharge had prac-

tically ceased for some weeks. In the seventh case the patient noticed some bleeding from the breast. The bleeding soon stopped, being replaced by an occasional watery discharge. No tumor could be palpated. He was apparently dealing in this case with a small intracanalicular papilloma situated deep in the breast. Bleeding from the nipple occurred most frequently with intracanalicular papillomata. It also occurred with the adenocystic type of abnormal involution, with papillary growths in the acini. Both conditions might be grouped together, as they were apparently different manifestations of the same process. Conservative plastic operations could be performed in these cases when they were seen early.

Cancer of the Lip.—Dr. W. W. GRANT, of Denver, said this disease was common in men, uncommon in women. It occurred chiefly in the lower lip, seldom in the upper, and was associated with the habits and vocations of men, and with middle life. They could neither affirm nor deny a specific germ as the cause, now would its existence be inconsistent with the influence of chronic trauma as a predisposing cause. This was the precancerous stage. The disease did not originate in healthy tissue. Persistent chronic ulcers, especially with hard base, were always suspicious. Differential diagnosis of specific, tuberculous, and cancerous ulcerations was not usually difficult. Early diagnosis was of the utmost importance, for the unanswerable reason that it determined the prognosis. Radical excision by the Grant technic was the operation of choice. The first step was the excision of the growth, which was done in one or two minutes. No dissemination of cancer cells, of consequence, was possible in this short time. The reverse procedure was not tenable. Removal of glands was a delicate, slow process, and the danger of dissemination from this manipulation was much greater than with the prompt removal of the focus of infection—the diseased lip. If the lip was ulcerated, he cauterized before proceeding with the operation. The slowly progressive cases were less virulent and due to the basal cell. Gland infection was later in these cases. The cuneiform and semilunar incisions were bad, as were chin flaps for the construction of the mouth. The stationary nonaffected chin tissue was important for stability and fixation of the flaps. Chin flaps did not make so flexible and mobile a mouth as the side cheek flaps. A T drain, with a rubber tube the size of a lead pencil, through the submental space into the mouth under the tip of the tongue, was essential to cleanliness and perfect drainage of the mouth.

Etiology and Prophylaxis of Carcinoma.—Dr. HENRY T. BYFORD, of Chicago, adduced clinical and statistical facts to show that carcinoma was an infection. The germ was found in the surface soil and dirt of populous districts and entered the system in the majority of cases with the food. His recommendations by way of prophylaxis were: 1. Carcinoma should be considered an infectious disease. 2. Precautions against the spread of the infection should be taken by the community as well as by those affected. 3. Foods, particularly fruit and vegetables, should be protected from contamination after their source and in transit. All fruits and vegetables from general sources should be ster-

ilized before being eaten, except such as had a complete covering or a hard external surface that could, after a thorough cleansing, be removed. The use of human excrement as a fertilizer should be prohibited by law. 4. The disposal of human excrement in suburban and populous rural and manufacturing districts should be such as to avoid possible contamination of the surface soil. The feces of patients with carcinoma of the alimentary canal and pelvic organs should receive the same attention as those of patients from typhoid or cholera. Women should be taught the infectious nature of normal stools with particular reference to keeping the perineum free from contamination. They should also be taught to spend time in washing their hands. 5. The number of cats and dogs in populous districts should be restricted, and they should not be allowed to roam about the streets by day and night. The excess should be killed. Means should be taken for the extermination of rats, mice, cockroaches, and other vermin. 6. Persons whose occupations were known to expose them to great risk of infection from carcinoma should be taught that it might get into their systems either through the irritated skin or by way of the alimentary canal. They should be taught also to keep the skin free from chronic lesions and should wash their hands thoroughly before eating; and also wash and disinfect their hands thoroughly and change their working garments when they left their work for the day. All workers in dirt should observe the rules. 7. That all epithelial areas affected with chronic irritation and erosion should be attended to. An attempt might also be made to prevent infection of ulcerated and eroded surfaces in the alimentary canal. Patients with such lesions should avoid all unsterilized food that might be contaminated. 8. Municipal authorities should put carcinoma upon the list of diseases to be reported, in order that the patients might be traced and taught how to take care of themselves and their infected discharges, and that none of those living with them be allowed to handle foodstuffs for the market. 9. The blood of patients with carcinoma should be exhaustively studied with reference to the discovery of something that would increase immunity, for until they learned more about the germ, the establishment of immunity would seem to afford the best hope of preventing infection and recurrence. 10. The time seemed to be ripe for teaching the public something concerning the erroneous notions about diet that were prevalent among the idle rich and prosperous poor in order that they might stop manufacturing the serious forms of gastrointestinal disease that had of late years shown such an alarming increase in frequency, the seeds of which were sown in adolescence and the fruits of which were harvested at maturity and in senescence. In this way the danger of infection by contamination might be greatly diminished. 11. Women who had not borne children for several years should be warned of the danger of carcinoma, and should not only be on the lookout for symptoms, but should submit to a pelvic examination at least twice a year until it was evident that their mucous membranes were healthy and were remaining so.

(To be concluded.)

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Treatise on Medical Practice. Based on the Principles and Therapeutic Applications of the Physical Modes and Methods of Treatment (Non-Medical Therapy). With explanatory notes concerning the nature and technique of the different physical agents and methods employed. By OTTO JUETTNER, A. M., Sc. M., Ph. D., M. D., Author of Modern Physiotherapy, Physical Therapeutic Methods, etc., Surgeon M. R. C., United States Army, Fellow of the Academy of Medicine of Cincinnati, the Chatterton Medical Association, etc. New York: A. L. Chatterton Company, 1916. Pp. viii-519.

This is a book written on the somewhat novel plan of giving a brief practical résumé of different diseases and disorders, with a pretty full consideration of one limited form of treatment, that of so called physical modes and methods, etc. The idea is a good one and deserves to be followed by others. "Let each man at arms use that weapon best fitted to his hand"; let the clinician recommend and employ remedies to which his tastes, training, makeup, point of view and experience impel him. The arrangement of the subjects is alphabetical; a convenient one, which, when amply cross referenced, suffices as well as another till we achieve a rational basis for classification.

The opinions, inferences, and recommendations are replete with common sense and evidences of familiarity with the chosen armamentarium. The style is clear, readable, concise, and in the main consistent with accepted opinion. So called physical methods are becoming uniformly more recognized as effective and reputable. So soon as those whose therapeutic taste or mental make up or primary training was almost wholly biochemical, have become sufficiently open minded to recognize that there are other angles of vision, of approach, both in diagnosis and cure, then will suffering humanity fare vastly better. Mankind is now emerging from the stage of overconfidence in drugs and is passing into one where mechanical, physico-dynamic, and other forms of stimulation from without, are achieving a place in the sun. Such books as this of Doctor Juettner will assist in this emancipation.

A Manual of Surgical Anesthesia. By H. BELLAMY GARDNER, M. R. C. S., L. R. C. P. (London), Honorary Anesthetist to the King George Hospital, Formerly Anesthetist and Instructor in Anesthetics at Charing Cross Hospital, etc. Second Edition. New York: William Wood & Company, 1916. Pp. xii-220. (Price, \$2.25.)

The author of this most interesting book states that he hopes "it may be read from beginning to end in three sittings," but we found the work so fascinating that one sitting late into the night sufficed. The importance of maintaining an open air way is emphasized throughout the whole book. Chapters III, IV, v, on the cardinal principles of anesthetic administration, anoxemia, and asphyxia, and the signs of anesthesia, present in condensed form all that is necessary for the anesthetist to know in order to be thoroughly competent and to avoid mistakes. For surgeons and anesthetists who lay especial stress upon the pupil as a guide, the author states "it is demonstrable that the pupil is affected by too many different stimuli for safe reliance to be placed either upon its size or reaction to light as a guide to the depth of anesthesia."

He refers in a paragraph to some original work that is most interesting to investigators. He gives "a little ether to patients recovering from acute bronchitis, when lying in bed and in a warm room, with the fortunate result that catarrh, cough, and mucous secretion have at once disappeared." He warns us that "this must not be taken as indicating ether for a long operation, nor for hospital out patients who have to return home afterward." The statement on page 58, "very careful sterilization of inhalers must be practised after their use in cases of pulmonary tuberculosis," is somewhat ambiguous, as unquestionably inhalers should be sterilized after every case. The chapters on inhalation anesthetics in common use are unusually clear.

Bellamy's tongue clip is unquestionably one of the best instruments for maintaining an open air way that has yet been devised. For concise, practical information, the book is highly valuable.

Ophthalmologie du Médecin Practicien. Par le Dr. ALBERT TERSON. Avec 347 figures dans le texte et une planche hors texte en couleurs. Paris: Masson et Cie, 1916. Pp. iv-480.

The aim of the writer plainly is to furnish an efficient help to the general practitioner in the management of the eye cases that fall to his lot. Little is said of theory or pathology, much of practical work. First he gives the armamentarium that every physician should have. Probably no two surgeons would agree absolutely in making out such a list of instruments, but the one given is good. How to conduct an examination, how a young child should be held, and how to appreciate subjective and objective signs, are told excellently, though the practitioner may find himself in deep water when he reads about roscopicy, radiography, investigation of the orbit and accessory sinuses, simulation, and some other matters in which he will need the help of the expert; he must not expect to master these with the sole help of so brief a treatise as this.

When the writer comes to speak of the individual diseases of the eye, the seemingly unavoidable faults of a work designed to enable the general practitioner to diagnose and treat diseases of the eye with a minimum of knowledge, become apparent at once. The descriptions are too brief, too comprehensive. It is not enough that they are clear to those who understand diseases of the eye, they should be full enough to enable a nonexpert to differentiate diseases that resemble each other with a reasonable degree of certainty. Granted that this is an ideal very hard to attain, it seems as though if all treatment had been omitted and the space left filled by an elaboration of diagnosis written in Terson's easy style, this book would have been a much greater acquisition than it is in its present form. The market is full of brief compends, clear to the writers and to those of us who are familiar with the subject, but not necessarily clear to others, and this book is a good one of its class.

Interclinical Notes.

The double number of the *Outlook* for May 24th contains much of special interest to the doctor. There is editorial discussion of Anhalonium lewini, or the little cactus known as peyote, of which Gertrude Seymour wrote in the *Survey*: "In Mexico peyote has been of commercial and medicinal importance since long before the Spaniards came, and was included in the Mexican Pharmacopoeia till 1842. It is now used ceremonially and medicinally among practically all the tribes between the Rio Grande and the Pacific, and up to the Dakotas and even to Wisconsin—Sioux, Cheyenne, Arapahoe, Kiowa, Comanche, Osage, Omaha, Kickapoo, Winnebago, and others. As one writer expressed it, 'Peyote has become their religion and hearthside, their physician and their corner drug store—the preserver of their life.' And this is literally true. This cactus they use in an extraordinary variety of cases as medicine; it has become the centre of a religious cult for which its worshippers have earnestly fought and are still fighting." It appears that the intoxication from this cactus far surpasses in attractiveness that from any form of opium or cocaine, and that only the most drastic legislation can separate the idealistic Indian from trial of its effects.

Other items in the May 24th *Outlook* of medical interest are a portrait of our dean and Nestor, Abraham Jacobi, now in his eighty-seventh year; an article on eleemosynary swindling—"There are many forms of graft, but the greatest of these is charity"; a capital paper, *Experiences* in France, by Wilfred T. Grenfell, M.D.; there are also numerous discussions of importance to every citizen.

It is certainly deeply gratifying to see a large New York theatre packed to the doors at every performance of a Shakespeare play, and most unexpected. To be sure, the stage management has been a treat, and a majority of the players are at least competent readers of blank verse. Still, a big audience at the *Merchant of Venice* fails to

recognize the star and producer on his enunciation of the well known words, "Three thousand ducats," until the claque starts the applause. So there has been no previous study of the play, and curiosity must be the chief motive in crowding the house. Now that we have boards of censors for everything, why not have one to prevent players from publicly undertaking Shakespearean roles until they have had one year of study?

* * *

A writer in a popular magazine expresses his admiration for the work of a certain actress by stating that she does not act—she *lives* the part. This is a high tribute, but one of inexcusable ignorance in any one who has the columns of a reputable periodical at his command. It is not often that we see on our stage the art which conceals art, and it is a pity that the actress who possesses it cannot enjoy the privilege of reading the opinion of an educated critic.

* * *

Mr. Paul J. Banker, who, as member of the 1915 class at Yale, won a prize from the *Evening Post* for the best essay on the ideal newspaper, is now, by invitation of Mr. Theodore H. Price, a member of the staff of *Commerce and Finance*. In the issue for April 26th, his prize winning essay appears in full. Medical journalists may learn a few things from it. Mr. Price's address, printed in the *Outlook* for April 26th, appears also in this journal. The four corner stones of the title are self control, a reasonably good education, which may be self acquired, industry, and ambition. The concluding words need study by many of our citizens, among whom, we fear, are several physicians:

"This is a government of the people and by the people, but it will not much longer be a government for the people unless the people, which means you and me, actively concern themselves about the way the government is administered. Every one of you that has a vote or expects to have one should understand the machinery by which the laws are made and administered in both the State and Nation.

He should know who are his representatives in Congress and the State Legislature. How many of you do? He should watch their action upon all public questions, and when he doesn't approve it he should write them and say so, and when it comes to election he should vote intelligently and try to get others to do so. In *The Deserted Village* Goldsmith said:

'Ill fares the land, to hastening ills a prey,

Where wealth accumulates and men decay,'

and the decay of manhood and the disappearance of opportunity in the United States are absolutely certain to follow our present apathy in regard to the action of our elected representatives unless we are soon awakened to the exercise of our political duty and the exertion of our political power."

Meetings of Local Medical Societies.

MONDAY, June 5th.—German Medical Society of the City of New York; Utica Medical Library Association; Niagara Falls Academy of Medicine; Brooklyn Hospital Club; Hornell Medical and Surgical Association.

TUESDAY, June 6th.—Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady.

WEDNESDAY, June 7th.—Society of Alumni of Bellevue Hospital; Harlem Medical Association (annual); Bronx Medical Association; Elmira Academy of Medicine; Medical Society of the County of Rockland; Long Island Society of Anesthetists.

THURSDAY, June 8th.—Gloversville and Johnstown Medical Association; Physicians' Club of Middletown; West Side Clinical Society, New York; Blackwell Medical Society of Rochester (annual); Jamestown Medical Society (annual); Society of Physicians of Village of Canandaigua.

FRIDAY, June 9th.—Society of Ex-Interns of the German Hospital in Brooklyn; Eastern Medical Society of the City of New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending May 24, 1916:

Barnes, Wyatt, Acting Assistant Surgeon. Granted leave of absence for a day and a half, from May 23, 1916. **Corput**, G. M., Surgeon. Directed to report at the Bureau for conference relative to the inspection of Mexican fruit ports. **Currie**, Donald H., Surgeon. Granted one week's leave of absence on account of sickness, from April 25, 1916. **Foster**, M. H., Surgeon. Granted one month's leave of absence, from July 5, 1916. **Grimm**, R. M., Passed Assistant Surgeon. Directed to proceed to Columbia, S. C., for examination of patients in the Epworth Orphanage, as to the incidence or recurrence of pellagra. **Holt**, John M., Surgeon. Bureau letter dater March 29, 1916, granting two days' leave of absence en route to Cleveland, Ohio, revoked. **Hoskins**, J. K., Sanitary Engineer. Granted five days' additional leave of absence. **Lavinder**, C. H., Surgeon. Directed to proceed to Columbia, S. C., Milledgeville, Ga., and Jackson, Miss., for examination of persons to determine the incidence or recurrence of pellagra. **Letton**, H. P., Sanitary Engineer. Directed to proceed to Detroit, Mich., for cooperation in installation of sewage disposal apparatus on lake vessels. **McMullen**, John, Surgeon. Directed to proceed to places in the State of Tennessee, to determine a suitable location for the establishment of a trachoma hospital, and for conference with State health authorities. **Smith**, J. H., Jr., Assistant Surgeon. Granted one month's leave of absence, from June 1, 1916. **Stoner**, James B., Surgeon. Directed to visit the life saving stations on the coast from Delaware to South Carolina, to arrange for the medical treatment of officers and enlisted men. **Warren**, B. S., Surgeon. Detailed to attend the meeting of the American Academy of Medicine, at Detroit, Mich., June 9 to 14, 1916. **Williams**, L. L., Senior Surgeon. Granted one month and fifteen days' leave of absence, from July 1, 1916.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending May 27, 1916:

Brechemin, Louis, Colonel, Medical Corps. By direction of the President, the retirement of Colonel Brechemin from active service on May 25, 1916, under the requirements of the act of Congress, approved June 30, 1882, is accounted; he will proceed to his home. **Craft**, Edgar D., Captain, Medical Corps. Granted leave of absence for three months on surgeon's certificate of disability. **Kean**, Jefferson R., Colonel, Medical Corps. Detail for temporary duty in the office of the surgeon General, Washington, D. C., is extended for a period of one month. **Ketcham**, Clarence S., First Lieutenant, Medical Reserve Corps. Relieved from duty in the Army Medical School, Washington, D. C., to take effect July 1, 1916, and will proceed to Fort Slocum, New York, and report in person to the commanding officers thereof for duty. **Lingenfelter**, George P., First Lieutenant, Medical Reserve Corps. Resignation of his commission has been accepted by the President, effective May 23, 1916. **Offutt**, Harry D., First Lieutenant, Medical Corps. Relieved from duty at Fort Slocum, New York, effective at such time as will enable him to comply with this order, and report to the commanding general, Eastern Department, for assignment to duty with the 2d and 125th Companies Coast Artillery Corps, en route to San Francisco, Cal.; upon arrival at San Francisco and the completion of his duty with those companies, will proceed on the transport to sail from that place on or about July 5, 1916, for the Philippine Islands, and upon arrival at Manila, will report in person to the commanding general, Philippine Department, for assignment to duty. **Riley**, Charles W., First Lieutenant, Medical Reserve Corps. Relieved

from duty at the Army Medical School, Washington, D. C., to take effect July 1, 1916, and will then proceed to Jefferson Barracks, Missouri, and report in person to the commanding officer thereof for duty. **Robertson**, Reuben L., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Totten, New York, and report in person to the commanding officer thereof for duty. **Sharpe**, Herbert H., Captain, Medical Corps. After arrival in the United States, and upon the expiration of such leave of absence as has been or may be granted him, will proceed to Fort Rosecrans, California, and report in person to the commanding officer thereof for duty. **Williams**, Robert P., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, Washington, D. C., to take effect July 1, 1916, and will then proceed to Columbus Barracks, Ohio, and report in person to the commanding officer thereof for duty.

Births, Marriages, and Deaths.

Born.

Burnett.—In Manchester, Mass., on Monday, May 8th, to Dr. and Mrs. Francis Lowell Burnett, a daughter. **Davies**.—In Farnhurst, Del., on Friday, May 19th, to Dr. and Mrs. Taleahin H. Davies, a son. **Dion**.—In Quincy, Mass., on Sunday, May 21st, to Dr. and Mrs. Thomas J. Dion, a son.

Married.

Armstrong-Schulting.—In Passaic, N. J., on Monday, May 22d, Dr. Robert R. Armstrong and Miss Edna Schulting. **Blake-Dewey**.—In Springfield, Mass., on Thursday, June 1st, Dr. Francis Gilman Blake and Miss Dorothy Dewey. **Fletcher-Pischel**.—In Ross, Marin County, Cal., on Saturday, May 20th, Dr. Harold A. Fletcher and Miss Inez D. Pischel. **Grayson-Gordon**.—In New York, on Wednesday, May 24th, Dr. Cary T. Grayson, Passed Assistant Surgeon, United States Navy, and Miss Alice Gertrude Gordon.

Died.

Bles.—In Denver, Colo., on Thursday, May 11th, Dr. Victor Alexander Bles, aged forty-four years. **Bowcock**.—In Anniston, Ala., on Tuesday, May 16th, Dr. Robert Lee Bowcock. **Brown**.—In Tacoma, Wash., on Friday, May 12th, Dr. Elmer M. Brown, aged fifty-nine years. **Bulson**.—In New York, on Thursday, May 18th, Dr. C. Percival Bulson, aged fifty-one years. **Davis**.—In Corydon, Ind., on Thursday, May 18th, Dr. William H. Davis, aged sixty-six years. **Elmes**.—In Derby, Conn., on Saturday, May 20th, Dr. Frank A. Elmes, aged thirty-six years. **Harvey**.—In Detroit, Mich., on Saturday, May 13th, Dr. William M. Harvey, aged fifty-three years. **Higbee**.—In Northampton, Mass., on Sunday, May 21st, Dr. Edwin W. Higbee, aged sixty-six years. **Hilkowitz**.—In Cincinnati, Ohio, on Sunday, May 14th, Dr. William Hilkowitz, aged fifty-one years. **Hulburd**.—In Morris, Minn., on Saturday, May 13th, Dr. Herbert L. Hulburd, aged sixty-five years. **Jordan**.—In Freeport, Ill., on Monday, May 15th, Dr. Frank A. Jordan, of Peconicon, aged seventy-seven years. **Leach**.—In Cape May, N. J., on Thursday, May 25th, Dr. Alonzo Lemuel Leach. **Morris**.—In Denver, Colo., on Friday, May 12th, Dr. Norman K. Morris, aged sixty-four years. **Nichols**.—In Rensselaer, N. Y., on Friday, May 19th, Dr. William R. Nichols, aged forty-one years. **Pettijohn**.—In Hoyt, Kans., on Sunday, May 14th, Dr. Johnson W. Pettijohn, aged eighty-three years. **Reader**.—In Maryhill, Wash., on Tuesday, May 16th, Dr. J. W. Reader. **Reebel**.—In Youngstown, Ohio, on Monday, May 22d, Dr. Arthur Scott Reebel, aged thirty-one years. **Roudiez**.—In Denver, Colo., on Saturday, May 13th, Dr. Pierre V. Doudiez, aged eighty-three years. **Young**.—In Butte, Mont., on Tuesday, May 16th, Dr. Louis Young, of Orleans, Vermont, aged sixty-eight years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 24.

NEW YORK, SATURDAY, JUNE 10, 1916.

WHOLE No. 1958.

Original Communications.

THE THERAPEUTIC RESOURCES OF THE SARATOGA SPRINGS.

BY SIMON BARUCH, M. D.,
New York.

Consulting Physician, Knickerbocker and Montefiore Hospitals;
Hydrotherapeutist, Sea View Hospital; Consulting Hydrother-
apeutist, Bellevue and Allied Hospitals; Professor of
Hydrotherapy (1906-1913), College of Physicians
and Surgeons, Columbia University.

A recent meeting of the State Medical Society in Saratoga Springs gave opportunity for examining its therapeutic facilities. Aside from the scenic advantages, which are not unlike those of Baden-Baden, Kissingen, and Nauheim, the large number of springs, of the capacity of one hundred thousand gallons of water per diem, supersaturated with carbonic acid, furnish therapeutic resources of which I propose to present an outline.

At the present time, the waters of the most active springs are offered to visitors in the Drink Hall in the Park and in three bath houses of the State Reservation. Their purity is guaranteed by the State analyst.

DRINKING WATERS.

All the drinking waters of Saratoga are distinguished for high percentage of carbon dioxide supersaturation and a low temperature (50° to 51.8° F.), which makes them extremely palatable and likely to be used in excess in warm weather. For these reasons, patients suffering from cardiac troubles should be warned against their excessive use. They should be sipped slowly, during a promenade in the park, or, when taken in the Drink Hall, should be followed by a gentle walk, for a half hour or more, as directed by the physician. It is customary at the European spas for the physician to require the patient to describe minutely all he has done in executing the doctor's orders, since the last consultation. This includes, of course, the method pursued in drinking the waters. The waters of the following springs are at present in use for drinking:

Congress spring. The water of this spring may be obtained at the Sunken Garden in the Park and in the Drink Hall. It is pleasant and palatable, resembling the Max Brunnen in Kissingen in its principal constituents and low temperature, but *excels it in carbon dioxide supersaturation*. When carbon dioxide water is drunk, it is warmed in the mouth and the esophagus, free gas is given off, and in the stomach the acid gastric juice frees some of the fixed gas, which is expelled through the mouth and

nose. There is a decided stimulation of the gastric mucous membrane, which facilitates absorption of fluid stomach contents. The hyperemia of the mucous membrane of the digestive introtitus produces more rapid cooling than after drinking ordinary water, all of which enhances the refreshing effect of carbon dioxide water. Penzoldt has shown that the gastric acids are increased by drinking such water, the proportion being 111 after the latter and 55 after drinking ordinary water, and the test meal is expelled one quarter to one half hour earlier after the carbon dioxide water.

Hathorn No. 1. The water of this spring is obtained at the drinking fountain, where it bubbles into a glass bowl, and from outlets in the brass tubing in the Drink Hall. It exceeds the Congress water in sodium chloride and calcium bicarbonate. Being accessible to all the people, it is freely partaken of by persons who are passing the fountain. It were wise to placard a warning against its excessive use without a physician's prescription. It resembles the Ludwig spring in Homburg, in its principal constituents and low temperature, but it excels it in gas supersaturation.

Coesa spring. The water of this spring contains a larger quantity of sodium bicarbonate than Hathorn No. 1. It is dispensed in the Drink Hall.

Orenda spring. The water of this spring contains a larger percentage of sodium chloride and calcium bicarbonate than the last two springs. The magnesium bicarbonate is the same. It may be obtained bottled in the Drink Hall.

The last three springs are useful in gastric and intestinal catarrh, with moderate constipation, and may serve well as a therapeutic approach to

Hathorn No. 2. The water from this spring may be obtained bottled in the Drink Hall. It resembles the celebrated Racoczy and Pandur springs of Kissingen, but has double the quantity of sodium chloride in these and similar Homburg springs. It is a trustworthy laxative when sipped before breakfast in quantities of eight ounces, while the patient is walking slowly; after an interval of half an hour he repeats the dose, drinking it more quickly during another half hour's walk. The effect is usually manifested within an hour after breakfast. It acts usually without griping.

The therapeutic indications for this water are self evident. In gastrointestinal conditions, according to Dapper, saline waters stimulate glandular secretion; increase elimination of urea and other nitrogenous products; cause transudation into the lumen of the digestive organs, and dissolve mucus.

When taken in small quantities, they excite, and in large quantities depress gastric secretion and digestion. The latter is entirely counteracted by the gas of the Hathorn No. 2 water. It increases intestinal peristalsis, therefore it is useful in subacute and chronic gastritis, with diminished hydrochloric acid; in chronic intestinal catarrh and constipation; in biliary catarrh, with jaundice, and in intestinal atony. It is contraindicated in hyperchlorhydria, ulcer, and recent intestinal catarrh (Basch). It is most valuable in dyspepsias with fermentation, especially those of high livers.

Geyser spring. This water "resembles French Vichy in type, being highly diuretic, and may prove useful in reducing high blood pressure in cases of arteriosclerosis" (Gilman Thompson).

Smith spring. The presence of nearly four thousand parts of sodium bicarbonate per million, and the entire absence of sodium chloride, makes the waters of this spring equal to the Grande Grille of

tinct diminution of the mucous secretion is established. At the same time, the motor function of the stomach is improved, appetite returns, and disturbances of various kinds are diminished. For drink cures, there are no more grateful patients than these. These chloride of sodium waters are contraindicated when there is diminution of hydrochloric acid secretion, such as occurs in carcinoma ventriculi and achylia gastrica.

On account of the infinitesimal content of sodium sulphate and the small content of magnesium bicarbonate in the Hathorn No. 2 and similar springs, those who are unaccustomed to the uses of these waters, among whom I formerly belonged, are skeptical of their value as laxatives, until convinced by personal observation. This paradox is explained by Doctor Thelenius, a high authority on biochemistry of mineral waters, who holds that the most important effects of nearly all mineral waters may be attributed to sodium chloride, which, being found in all fluids and tissues of the animal body, is of the greatest significance in tissue change. The natural

ANALYSIS OF REPRESENTATIVE WATERS OF THE RESERVATION—FROM REPORT OF THE COMMISSIONERS FOR 1915.

CHEMICAL COMBINATIONS	BOTTLED WATERS					BATH WATERS				
	Coesa	Orenda	No. 2 Hathorn	Minnonebe	Geyser	Smith	Congress	Lincoln	High Rock	Hathorn, No. 1
Ammonium chloride.....	35.53	22.74	42.82	24.47	22.95	26.75	6.89	11.93	5.73	23.74
Lithium chloride.....	39.64	32.71	44.52	10.80	14.20	17.13	30.71	27.62	31.48	27.55
Potassium chloride.....	609.18	363.17	920.57	195.80	212.23	161.15	161.13	463.52	73.42	593.50
Sodium chloride.....	5,043.53	2,289.58	10,615.75	2,090.45	2,272.07	none	2,046.44	3,130.35	325.63	3,662.99
Potassium bromide.....	29.67	34.90	60.00	7.50	15.00	16.00	7.50	19.50	8.30	22.00
Potassium iodide.....	1.30	2.00	3.50	1.00	1.25	3.00	.50	1.00	2.10	1.50
Sodium sulphate.....	8.37	.97	6.70	12.73	12.13	trace	22.52	trace	45.03	6.54
Sodium metaborate.....	trace	trace	trace	trace	trace	trace	trace	trace	trace	trace
Sodium nitrate.....	trace	trace	trace	trace	trace	trace	trace	trace	3.21	0.12
Sodium nitrite.....	trace	trace	trace	trace	trace	trace	trace	trace	trace	trace
Potassium bicarbonate.....	none	none	none	none	none	1.48	none	none	none	none
Sodium bicarbonate.....	830.34	208.67	344.31	1,864.74	1,607.15	2,974.02	2,138.87	1,368.99	880.13	490.05
Barium bicarbonate.....	1.50	4.11	14.44	8.59	4.28	7.12	10.89	7.12	1.24	10.45
Strontium bicarbonate.....	2.74	trace	4.07	2.98	2.06	trace	trace	trace	trace	trace
Magnesium bicarbonate.....	1,501.22	1,327.04	2,868.07	898.89	785.83	820.43	1,207.69	1,301.02	438.40	1,335.59
Calcium bicarbonate.....	2,786.01	3,190.00	3,093.17	1,574.08	1,849.54	1,070.40	1,832.19	1,889.10	1,226.83	2,288.92
Ferrous bicarbonate.....	25.48	16.38	21.59	20.88	33.85	40.15	39.81	39.81	25.05	27.06
Manganomanganous oxide.....	trace	none	none	none	none	none	none	none	none	none
Alumina.....	1.15	7.64	6.31	4.88	1.17	61.29	8.38	15.12	3.60	1.77
Silica.....	8.50	7.85	9.60	10.88	16.30	32.00	28.30	44.10	25.30	12.75
Total solids.....	10,956.62	11,503.32	18,072.29	6,735.13	6,757.91	6,533.20	5,684.36	8,323.18	3,134.25	8,414.73
Date of sample.....	December, 1915	August, 1914	March, 1915	March, 1915	December, 1914	September, 1914	May, 1915	September, 1914	September, 1914	May, 1914

Vichy. It contains more carbonic acid, which adds to its palatability. This water will prove of great value in rheumatism, gout, diabetes, also when taken in large quantities in recent catarrhal conditions of the mucous membranes of the genitourinary tract. It is best taken near or during meals. It is hoped that this fine water will be bottled soon and placed on the market.

RATIONALE.

Dapper, in his work on the *Pathology of Tissue Change*, written in collaboration with von Noorden writes:

It is a well known fact that in no group of diseases does the drink cure reach such practical importance as in disturbances of digestion. . . . In diminution of the gastric acid secretion, due to remnants of an acute catarrh, chronic catarrh, or alcohol and tobacco abuse, or to severe exhausting diseases of various kinds, the systematic use of weak sodium chloride waters (0.5 to 1.2 per cent.) exerts a distinct influence upon the increase of hydrochloric acid production and the total activity of the peptic glands of the stomach.

The stimulation which the stomach receives through the use of chloride of sodium water, which is mostly taken fasting, appears to be favored by a small carbonic acid content of the mineral water, and the fact is more pronounced when the water is taken cold, rather than warm. . . . In proper cases one may, by systematic lavage, discover that from week to week and sometimes from day to day, a dis-

cold carbonic acid water facilitates the absorption of all mineral constituents of spring waters. Intestinal osmosis is increased, together with the elimination of urea and uric acid. They are not so purgative as waters containing the sodium or magnesium sulphate, because the salines, combined with carbon dioxide, are quickly absorbed from the upper intestinal tract. They are superior to the latter, however, because they do not cause loss of weight by watery stools, and they improve appetite and assimilation.

There is an erroneous idea that increase of urea under the saline water treatment is due to albumin disintegration. This has been disproved by Dapper and others. Hence these strong carbonated sodium chloride waters are efficient in removing stagnation in tissue metamorphosis, even in depreciated individuals.

It has also been regarded as a paradox that in the catarrhal conditions of the stomach, which are frequent sequels of alcoholic and gastronomic indulgence, the sodium chloride waters increase hydrochloric acid, while in the hyperacidity of neurasthenics they appear to diminish it. In the former type the saline waters dissolve and wash out the gastric mucus almost as well as lavage, removing

obstructions from the peptic glands. In the hyperacidity of neurasthenics, on the other hand, they allay irritability of the gastric mucous membranes, while enhancement of appetite and improved circulation, due to favorable environment, remove hyperesthesia.

There is a similar paradox in regard to the vaunted efficacy of carbonated sodium chloride waters in constipation and diarrhea. In the former they may be continued through the entire course, gradually diminishing them, while the patient is taught regularity of habits and dietary rules. Herein lies, principally, the almost universal idea that the beneficial results of a mineral spring cure are more obvious after departure from the spring. This is true if the patient obeys the physician's instructions. In diarrhea, on the contrary, the laxative water should be discontinued after the intestinal canal has been cleared and followed by irrigations of tepid water. Here the Plombières treatment in the Lincoln bath house may be useful. Interdiction of fats, when these waters are taken freely, on the ground that fatty assimilation is diminished by them, is an error. German doctors permit them if they are not otherwise contraindicated.

In the *gouty diathesis*, the sodium chloride and alkaline waters are justly in great repute; also in *obese persons*, to whom they offer reduction of fat without impairing muscular tissues, under proper diet and exercise.

THE SARATOGA BATHHOUSE ON PHILADELPHIA STREET.

This bathhouse is supplied with Hathorn No. 2 water, containing 133 to 138 per cent. supersaturation with carbon dioxide. The house is equipped with complete Turkish baths for each sex; the uses of these baths are familiar. Here may be found also the most complete douche apparatus, with electric and hot air cabinets for neurovascular training, together with facilities for wet packs, hot bath packs, and other hydrotherapeutic procedures for the methodical treatment of rheumatism, gout, and other diseases of metabolism, sciatica, and other neuritides.

In diseases presenting defective appetite, assimilation, and hematoses, whether functional or organic, neurovascular training, which implies the gradual accustoming of the body to slowly reduced temperatures, increased durations and pressures, without "shock," has demonstrated its value in the Vanderbilt Clinic and other public institutions.¹ When reinforced by climatic, dietetic, and other measures in Saratoga Springs, hydrotherapy promises better results in this resort than at home.

Carbon dioxide baths. When on June 18, 1913, it was my privilege to address the Saratoga Springs Medical Society on hydrotherapy, I dwelt upon many of the points referred to above. At that time the only facility for a Nauheim bath (so called) was a tub in the Saratoga bathhouse filled with city water to which carbon dioxide from a cylinder of gas manufactured from Saratoga Springs carbon dioxide water was added.

The supply of carbon dioxide water was at that

time barely sufficient for the small patronage of people using it for drinking. After the improvements introduced by Dr. Paul Haertl, whom I discovered in Kissingen and induced the commissioners to employ, the supply of the water was increased enormously, its quality improved by copper tubing to replace the iron tubing, etc. Today three bathhouses in Saratoga Springs offer ample facilities for many hundreds of baths daily.

The Saratoga bathhouse is especially adapted for the treatment of cardiac diseases by the Nauheim method, by reason of its being easily accessible to physicians and to patients who must avoid exertion after the bath. It has neat, clean, spacious, and well ventilated, comfortable bathrooms, amply supplied with strong carbon dioxide water, to which by the physician's prescription may be added calcium and sodium chloride as the indication in each case demands. In my recent address it was pointed out that the methodical prescription in gradually increasing strength of these baths may be rendered very easy by requesting the manager of the Saratoga bathhouse to have in readiness for prescription packages of sodium chloride twelve pounds and pure calcium chloride one pound dissolved in carbon dioxide water before the requisite quantity of the latter is added to cover the body—about sixty gallons. This would reproduce the average strength of the three springs in use at Nauheim. From this standard all modifications there in vogue may be obtained by dilution of the carbon dioxide water and diminution of the quantity of salines to one fourth, one half, etc., in the prescription. The indications for the latter are considered in my recent address before the State Medical Society (*Medical Record*, May 17, 1915). In organic heart diseases the best results may be obtained only by the addition of these salines which promote absorption and prevent escape of carbon dioxide from the water. The plain carbon dioxide bath is regarded by reliable specialists as a makeshift for the correct Nauheim bath.

Of course the same diseases that will be referred to under the next caption may be treated here by plain carbon dioxide baths.

THE LINCOLN BATHHOUSE.

This building is equipped with thirty-seven bathrooms for carbon dioxide baths, arranged with heating apparatus of steam coils as in Kissingen. The supersaturation is 155 per cent., the largest attainable in Saratoga. Its temperature is about 50° F. It stands adjoining two outdoor pools of plain water and is equipped with a simple apparatus for neurovascular training. The latter begins with a temperature of about 90° F., which is daily lowered, while the duration of one minute and pressure of fifteen pounds are daily increased to prevent so called shocks in sensitive neurotics, dyspeptics, and convalescents, in whom it is valuable for enhancement of appetite, assimilation, and hematosis. During convalescence from exhausting disease and surgical operation these procedures are valuable. Facilities for enteroclysis or the Plombières treatment are installed, also carbon dioxide baths with strong supersaturation, which renders them especially valuable in all depreciated conditions.

Neurasthenics of the excitable type are not good

¹Baruch, *Principles and Practice of Hydrotherapy*, New York, William Wood & Co.

subjects for low temperatures and strong carbon dioxide content, but by increasing the temperature of the first bath to 100° F. and reducing the carbon dioxide content fifty per cent. for six minutes, with duration of bath increasing each time one minute, the depressing effect of heat will be neutralized by the stimulating effect of the carbon dioxide, furnishing a calmative and tonic procedure of great value. These baths may be daily increased in carbonic acid content until the full percentage is reached; then the temperature of the water may be reduced one or two degrees daily until the tonic effect is obtained, without the exciting effect of extreme cold; 90° F. and ten minutes are probably the limit of temperature and duration in such cases; the physician's judgment must be the guide. The great advantage of this method lies in the opportunity for adapting the temperature, carbon dioxide, and duration to individual conditions. For insomnia these baths will be found valuable, if one or two hours' rest may be had in the bathhouse.

Depressed neurasthenics may derive valuable results from the neurovascular training with carbon dioxide baths. Beginning with a full carbon dioxide bath at 90° for five minutes, the temperature may be daily diminished one degree and the duration increased ten seconds, so long as the patient reacts well, until the lowest temperature and longest duration are reached in which the patient's reaction and contentment do not suffer.

In *functional neuroses* the same treatment is indicated.

Goldscheider recommends warm carbon dioxide baths for neuritides; also for paralysis.

Obesity. For reduction of flesh, the carbon dioxide baths have obtained great repute in Marienbad and Kissingen. When combined with scientific and precise directions for diet, exercise, recreation, etc., the latter are rendered more facile of execution by the triweekly use of carbon dioxide baths of agreeable temperature, or, in extreme cases, of high temperature, in which the carbon dioxide counteracts the relaxing and debilitating action of the otherwise useful high temperatures. As I have shown, the carbon dioxide content enhances the temperature effect without depreciating systemic tone, which makes the hot carbon dioxide bath the most efficient reducing agent. The method of heating the carbon dioxide water by steam coils is superior to the diluting by hot water method used in Marienbad. The Lincoln Bath is especially adapted for these reduction cases and for neuroses, because, being not so convenient to the patient's residence, some exertion is demanded to reach the latter. Moreover, the fine pools outside of the bathhouse offer opportunities for swimming that must aid in these conditions.

In *rheumatism and gout* the hot carbon dioxide bath offers great advantages over the plain baths or hot air baths. Since the circulatory depreciation is counteracted by the stimulating influence of the carbon dioxide baths, their duration and temperature may be increased without harm.

In *constipation*, neutral carbon dioxide baths present a favorable therapeutic field, if salines are added. Since the latter promote absorption of car-

bon dioxide and prevent its escape during prolonged bath (fifteen minutes), the involuntary muscular fibres of the intestines may be stimulated to increased activity.

Organic nervous diseases. Goldscheider states that recent cases of hemiplegia or other paralysis must not be subjected to carbon dioxide baths. But in chronic cases of paralysis, anesthesia, paresthesia, secretory and trophic disturbance, connected with spinal troubles, myelitis, or multiple sclerosis, Goldscheider regards the mild saline and carbon dioxide baths, cautiously administered, as of great value.

Tables. For the alleviation of pains and paresthesia, in this disease, the carbon dioxide baths of neutral temperature (95° to 100° F.) are of decided value, according to Leyden. They may begin with five minutes and be prolonged every other day one minute. Temperature must not be lowered or raised. All cold and strong carbon dioxide baths must be avoided.

THE HIGH ROCK BATHHOUSE.

This building is situated near the High Rock Spring, from which it receives its supply of carbon dioxide water of 121 per cent. supersaturation. The water is useful in all the disorders above described.

AUXILIARY RESOURCES.

In my report to the Reservation Commission of the great spas in Europe, it was stated that in all resorts were found laboratories, sanatoriums, hospitals, parks, amusements, etc. These are already installed in Saratoga in small but increasing numbers, offering valuable aid in the management of all types of diseases occurring, not only in patients coming for the cure, but in persons accompanying them. For the sake of brevity a bare outline of the therapeutic resources has been given and no description has been offered of the parks, idyllic paths, groves, drives, and other attractions that lure the health seeker to live in the open in this favored resort. It is a common custom, as mentioned in my first Saratoga address, for physicians practising in the large health resorts of Europe, to visit during the winter the clinics of the university centres, for study and observation. Here they have opportunity of becoming acquainted with prominent colleagues, giving and receiving information and enlarging their circle of professional friends.

The large health resorts of Europe have attracted specialists in all branches during the *Kur* season. Surgeons, eye and ear specialists, and others are needed wherever large numbers seeking health and recreation are congregated.

There are registered in the *Baeder Almanach* for 1913, 376 sanatoriums and other institutions in 305 health resorts. Saratoga Springs offer a wide field for sanatoriums treating gastrointestinal, metabolic, and heart diseases. In Kissingen there were but two sanatoriums before von Dapper opened his now world renowned institution; in 1913 there were eleven in that town. Many of these institutions are known as villas, in Marienbad, Nauheim, Kissingen, and Franzensbad.

Note.—European physicians do not send invalids to Vichy or Baden Baden during the midsummer season of gaiety. The month of August, being devoted to sport in Saratoga, is not favorable for invalids, who at other times may find there the most favorable environment.

51 WEST SEVENTIETH STREET.

SURGERY OF THE HEART.

Its Present Status,

By W. WAYNE BABCOCK, M. D.,
Philadelphia,

Surgeon, Samaritan and Garretson Hospitals.

In the pride of having completed his treatise on surgery, Samuel D. Gross turned to his assistant and said, "Tom, what would the surgeons of twenty years ago say if they could but come back and read my book?" "They would say," replied Andrews, "precisely what you would say, could you but return twenty years hence and read the surgical writings of that day." Professor Gross would find that in no field has surgical genius devised or suggested more daring or startling procedures than those of the last twenty years in connection with the surgery of the vascular system.

Sherman has said (1902) that "The road to the heart is only two or three cm. in length, in a direct line, but it has taken surgery nearly 2,400 years to travel it." We might add that it has taken surgery nearly 2,400 years to start to travel, for the possibility of operating on the human heart was derided by so recent a master as Billroth, and it was not until 1881 that it was forecast as a possibility by John B. Roberts (1), and it was 1882 when first proved by the animal experimentation of Block (2). The twentieth century had nearly dawned (1896) when Farina (3) did the first cardiorrhaphy. Much of the work on cardiac surgery is so recent that many methods and possibilities demonstrated as feasible in the laboratory have not as yet been transferred to the surgical clinic, and the internist, unaware of the possibilities in a resort to surgery, continues to permit patients with certain forms of heart disease to perish without effort at relief. It is quite proper, therefore, that we at this time briefly review the possibilities that open to us in the treatment of cardiac disease or injury.

First of all it should be emphasized that the human heart is more tolerant of surgical manipulation than that of the dog or cat, and apparently any operation that may be performed successfully on these lower animals, may with even greater hope of success, be carried out upon the human heart. Experimentally, the mammalian heart may not only be punctured and sutured, but aided by a special technic different from that employed in abdominal surgery, it has been shown that cardiac pulsations may be restored even after hours of cessation—that the great pedicle of the heart may be temporarily ligatured or clamped, permitting the great vessels or the cavities of the heart to be opened for the removal of clots, the valves to be exposed, sutured, or divided, or for other procedures, or the orifices of the heart to be dilated, divided, or enlarged by the implantation of

tissue. It has also been shown that muscle may be implanted to fill defects in the walls of the heart, that the coronary vessels may be ligatured, or aspirated for air embolism, and that the harmful effects of adhesions upon the heart may be overcome. Some of these procedures already have had a clinical use and there is no reason to doubt that any of them may be employed in human practice.

TECHNICAL CONSIDERATIONS.

Anesthesia. Local anesthesia or paravertebral nerve blocking with a one, one half, or a one quarter per cent. novocaine solution is to be preferred for the chest wall. No anesthetic is required for the heart proper. At times an associated moderate narcotism with scopolamine-morphine is desirable, or a slight ether narcosis, which is also to be preferred where haste is essential. An emergency operation upon a shocked and semiunconscious patient may require no anesthetic. If the pleural cavities are to be invaded, intratracheal insufflation after the method of Meltzer-Auer (4) has advantages.

To restrict the inhibitory action of the vagus, a preliminary injection of atropine may be given subcutaneously, while cardiac massage and the intravascular injection of epinephrine are most valuable methods in starting the arrested heart. An excess of epinephrine, however, is dangerous both from the vascular strain imposed and the danger of pneumogastric exhaustion.

Operative technic. Carrel (5) has shown that a more delicate technic is necessary in handling the pleura and pericardium than the peritoneum. Abandoning the use of petrolatum coated silk, which he formerly employed, he walls off the pleural cavity and the operative field first with towels of Japanese silk, and then with small cotton pads incased in fine silk. Only the field of operation is left exposed to the air and in view of the operator. Ordinary gauze or toweling should not be brought in contact with the delicate serous surfaces. Rubber gloves should be worn. In order to hold the slippery heart, the linen gloves suggested by Sauerbruch may be supplanted by those made of fine silk worn over thin rubber gloves.

Access. The heart is largely overlapped by the edges of the lungs, especially during forced inspiration. Only over a narrow triangular interval is the lower part of the anterior pericardium in contact with the chest wall. For drainage purposes the pericardium may be entered through the left costoxiphoid angle, displacing or dividing the triangularis sterni with or without section of the seventh and sixth left costal cartilages. A more complete exposure may be obtained by splitting or resecting the sternum, or by raising a flap of skin and portion of underlying cartilages, ribs, or possibly the sternum, according to the requirements of the special case. If a flap is used, one hinged on the outer side is usually preferable. The pleura, lungs, internal mammary artery, and diaphragm are to be avoided. Except for the additional time required, there is no objection to dividing the internal mammary artery between ligatures. On opening the heart, the entrance of air into the right ventricle and lungs is less dangerous than into the left ventricle and

coronary arteries. The left ventricle must therefore be carefully aspirated before closing, and if air bubbles are noted in the coronary vessels, they should instantly be removed by aspiration through a No. 16 hypodermic needle. The entrance of air into the coronaries is a cause of the very dangerous cardiac fibrillation.

Pericardium. Werelius (6) found that no special harm resulted when the pericardium was extirpated, the surface of the heart remaining smooth and usually contracting no very marked adhesions. It is important in suturing the pericardium that constricting tension be not brought upon the heart, especially near the base. The entrance of blood into the pericardial sac tends to compress the auricles, and finally to arrest the circulation, through the so called "heart tamponade." Although the blood pressure is lowered, the circulation is not interrupted by injecting air alone into the pericardial sac.

Control of the cardiac circulation. Rehn (7), in 1907, showed that hemorrhage from the heart could be controlled by compressing the venæ cavæ at their entrance into the right auricle. The veins may conveniently be compressed between the little and ring fingers of the left hand, upon the palm of which the heart rests. Partial compression is tolerated by the dog's heart up to four minutes, and total compression up to one and one half minute. The human heart is probably more tolerant. Sauerbruch (8) and von Hacker (9) found that almost complete arrest of heart action could be produced for ten minutes without fatal consequences, while Laewen and Siewers (10), in 1908, occluded the pulmonary artery and aorta without death for six minutes in rabbits, although after one minute evidence of damage to the brain was noted. Compression of the venæ cavæ alone was followed by damage to the brain after nine minutes. It is probable that the circulation of the human heart may be arrested for from three to five minutes without fatal injury. Complete arrest of circulation in the brain is followed by death of the cortical cells after about seven minutes, and this effect upon the brain is the most serious obstacle to the interruption of the heart action. A convenient method of temporarily arresting the circulation is by compressing the great pedicle of the heart by a rubber covered Doyen clamp, as used by Carrel.

Incisions. Incised wounds up to two mm. in length through the left ventricular wall close almost immediately, although similar wounds through the right ventricle or auricles may result in fatal hemorrhage. From the left ventricle the blood is ejected in strong systolic spurts, while the flow from the right ventricle and from the auricles is almost continuous. Ligation of one coronary artery is not necessarily fatal. In Stewart's case (11) the patient lived for several years, and at the autopsy, only a moderate fibrous degeneration near the apex of the heart was found. In several other cases no very serious consequences were observed from injury or ligation of a coronary artery. Much depends, however, upon the point of ligation and the extent and situation of the ischemia produced. An involvement of the sinoauricular node at the ostium of the superior vena cava may be fatal.

CARDIAC RESUSCITATION.

The contractions of the arrested heart may be restored by:

1. *Inversion of the patient.*
2. *Rhythmic compression or percussion of the overlying chest wall, especially in children.*

3. *Needling the heart or aspiration of the over-distended right auricle or ventricle, which is a dangerous procedure.* In Sloane's case, however, in attempting to tap a pericardial effusion, the trocar entered the right ventricle and eight or ten ounces of blood escaped. On withdrawing the trocar, the patient, a girl of nineteen years, supposedly dead, had resumption of heart action and recovered. In a number of instances, however, fatal hemorrhage has followed the aspiration of the heart, and the method in general is to be condemned.

4. *Injection of drugs into the heart wall or cavities.* In a few instances in which other measures had failed, we have injected epinephrine or barium chloride solution directly into the walls or cavities of the heart, but without effect. In animal experimentation these procedures have been found useful.

5. *Electrical stimulation of the heart* by an electrode introduced through the chest wall against the heart, has been found very efficient in lower animals, but is not usually instantly available as it must be for human practice.

6. *Injection of physiological saline, Locke's, Ringer's solution, or especially epinephrine into the blood stream.* By perfusion, Kubliabko (12), in 1902, was able to produce contractions of the extirpated human heart thirty hours after death. The epinephrine becomes effective on entering the coronary vessels and is especially useful when injected against the circulation into the carotids (Crile, 1908). It is more conveniently and safely given, however, by introducing the solution into a vein of the arm. We employ a simple funnel and needle connected by six feet of rubber tubing. The funnel is filled with saline solution and from one to sixty drops or more of a one to 1,000 epinephrine solution added, according to the exigencies of the case. As soon as the pulse returns, the flow of the solution is arrested, to be resumed only in case the heart action again fails. An overdose of epinephrine is dangerous, as has been mentioned, and several times we have felt the patient's body and even the operating table vibrate from the violent contractions of the overstimulated heart. The duration of the epinephrine stimulation rarely exceeds one half hour. In about twenty cases, in only one did I find the intravenous injection inefficient, and in this case the injection into the carotid likewise failed.

7. *Cardiac massage* (Schiff, 1874). This may be carried out in one of four ways:

- a. *Abdominosubdiaphragmatic massage.* The hand is introduced through an abdominal incision carried above the left lobe of the liver, the heart grasped through the diaphragm and compressed twenty to forty times a minute. The procedure is favored by using the opposite hand externally for counter pressure. This method has given the best results clinically, especially when associated with the intravascular injection of epinephrine. In three of our cases in which there was complete arrest of

heart action for ten minutes or more, it was found that the cardiac massage was insufficient without the intravascular injection of epinephrine or vice versa. In one case the cessation of the heart and respiratory action occurred in a woman of about forty years, during the administration of nitrous oxide-oxygen. About ten minutes elapsed owing to delay in introducing the epinephrine before the resumption of cardiac contractions. Later the respiration was resumed, but the patient developed repeated clonic spasms, did not regain consciousness, and died about sixteen hours later.

Cardiac massage may fail apparently from an imperfect technic. Thus in a second case I entered an operating room in time to observe a sudden cessation of respiration and circulation under ether. The operation was a simple abdominal one, upon an apparently robust woman of twenty-eight years. At the request of the operator, we started artificial respiration, had an assistant to practise cardiac massage through the abdominal incision, and injected epinephrine solution into a vein in the arm. Ten minutes having passed without cardiac pulsation, I disregarded an insufficient aseptic preparation, introduced a hand into the abdominal cavity and started cardiac massage. Only two or three compressions of the heart were required to start contractions, and after working about thirty minutes with artificial respiration, including a final tracheotomy and forced insufflation, the patient started to breathe spontaneously. This patient died with pulmonary edema about seven hours later, with regaining consciousness. Cardiac massage and the intravascular use of adrenaline should not fail to restore cardiac pulsations if used within twenty minutes after somatic death, unless the patient is exsanguinated or has markedly degenerated organs.

A third patient previously reported (13), an obese colored woman, had cessation of circulation and respiration during an operation under spinal and narcotic anesthesia, for a very large fibroid tumor. Owing to repeated failures properly to introduce epinephrine solution into the veins, twenty-five minutes elapsed before the cardiac massage produced any response, and about thirty-five minutes before the respiratory function was resumed. This patient lived about two days, but did not regain consciousness, and finally died of pulmonary edema. In a patient prepared for Cesarean section first seen about thirty minutes after circulatory failure, and in one exsanguinated patient, I was unable to start pulsations. On the other hand, we have had several successful resuscitations where the somatic death had existed less than seven minutes. These experiences emphasize the importance of accuracy and haste in restoring the cardiac contractions, and bear out the belief that the cortex of the brain does not survive complete anemia for over seven minutes, and even though patients who have had complete arrest of heart action for longer periods of time may be partially revived, they do not regain consciousness and always die. It is important, therefore, that well trained assistants and sufficient apparatus be instantly available whenever general or spinal anesthesia is induced, or whenever a serious operation is undertaken.

b. Extraperitoneal subdiaphragmatic massage.

Suggested by Tomaselli, this is a modification of the abdominosubdiaphragmatic method mentioned above. As a rule, it is not to be considered, as other methods may be employed more conveniently, and are equally effective.

c. Transdiaphragmatic massage, in which the hand is carried from below through the diaphragm, is never necessary, and should not be employed.

d. Transthoracic massage. As usually employed, several costal cartilages or ribs are resected, the hand is introduced into the chest cavity, the heart grasped between the thumb and fingers and rhythmically compressed. The opening of the thorax, the possible production of pneumothorax, the irritation of the pericardium and pleura, and the time consumed are serious objections to this method, although it is to be employed when the heart has already been exposed. In most other cases, the abdominosubdiaphragmatic method is preferable. In several instances I have been able temporarily to restore cardiac action by introducing a finger through a stab wound in the fourth intercostal space, two inches to the left of the sternum, hooking the finger about the left ventricle, and intermittently compressing the heart against the overlying chest wall. In no case did permanent recovery follow, however, and care must be taken that the stab does not involve the wall of the heart. In a case of sudden death during the evacuation of an enormous empyema, cardiac massage by a finger through the fourth left intercostal space failed. A puncture was then made at the right border of the enormously dilated heart, and with fingers simultaneously compressing each side of the heart, pulsation was restored. Unfortunately the pulmonary complications were such that we were unable to produce artificial respiration and the heart action gradually failed.

Cardiac massage is useful: First by mechanically stimulating the heart; second, by relieving the paralysis of the heart, due to overdistention; third, by maintaining at least a partial circulation, especially to the cerebral cortex, which is so important for the preservation of life; and, fourth, by aiding the entrance of epinephrine or other stimulant into the coronary circulation. While cessation of the heart is tolerated for only a few moments, cessation of respiration may continue for a much longer period, and is usually less serious. In operating upon the heart, when about to arrest the heart action artificially, it is wise first to overoxygenate the blood.

Sutures. In suturing the heart, although catgut has been employed, fine china silk is more permanent and less likely to untie, and as a rule, is to be preferred. Continuous sutures may be more rapidly introduced, and distribute the tension more evenly than do interrupted sutures. In introducing the sutures the heart may be supported on the hand, or given a measure of fixation by traction on the suture ends or upon special guide sutures. It is difficult in the presence of the usually associated tachycardia, to time the introduction of the needle with systole or diastole.

In suturing care should be taken to avoid the coronary arteries, and the suture should be carried down to the endocardium, but not through it. Hemorrhage may be lessened during the operation by

pressure over the wound and by lifting the heart through the opening of the chest wall. A preliminary aspiration of the pericardium may be desirable to relieve "heart tamponade." Excessive traction of the pedicle of the heart or rough manipulation is, however, dangerous. Injury to the auriculoventricular band of His is specially dangerous and this region should be carefully avoided in operations. Laotta (26), in 236 patients in whom the heart was sutured, found that 44.91 per cent. recovered. Single wounds and wounds of the left ventricle gave better results than wounds of the right ventricle or of the auricles.

Drainage should be employed only in the presence of sepsis. Antiseptics should never be used in the pericardium. Sudden death has followed their use.

Congenital anomalies. We are approaching a time when certain congenital anomalies of the heart may be considered from a surgical viewpoint. Although it does not seem feasible to operate for persistent foramen ovale, it would seem possible to ligate or occlude a persistent ductus arteriosus.

Kirmisson has reported a case in which a child was born with the apex of the heart protruding through a defect in the left upper part of the sternum and overlying skin. The heart was replaced in the thoracic cavity, the gap covered by a large skin flap, and the patient has since reached adult life and borne children without evidence of harm from the absence of the pericardium. For the rather unusual condition of abnormally mobile, movable, or wandering heart, where serious symptoms are produced by change of posture, surgical methods of support or fixation may be considered. The base of the heart may be fixed by sutures, the pericardium fastened to the overlying chest wall, or strips of pericardium used for suspension. We may also consider the support of the heart by the subserous transplantation of masses of fat. There is experimental evidence showing the feasibility of using strips of pericardium.

Paracentesis pericardii. In puncturing the pericardial sac, an endeavor is made to avoid injury to the internal mammary artery, the pleura, lungs, and heart, and to secure the most efficient evacuation of the fluid. The best area is through the costoxiphoid notch, close to the ensiform cartilage or the fifth or sixth left interspace outside the mammillary line. To the left of the sternum, the third, fourth, fifth, sixth, and seventh intercostal spaces have been suggested, and to the right of the sternum, the fourth and fifth intercostal spaces have also been advised. To avoid the internal mammary artery, the puncture is made close to the sternum, or at least one inch distant from it. There seems to be little danger from injury to the pleura or lungs. Local anesthesia is to be preferred. For septic accumulations pericardiectomy is to be preferred.

Pericardiectomy. This is employed chiefly to provide drainage in cases of purulent pericarditis. The operation may be performed, as first suggested, by a trephine opening through the lower part of the sternum, or a resection may be made of the lower end of the sternum and ensiform. The best incision is in the costoxiphoid angle and may or may not include a resection of the seventh, or seventh and sixth left costal cartilages. Tubular drainage by

one or more soft tubes introduced into the lower part of the pericardial cavity is usually preferred. If irrigation of the pericardium is employed, which is rarely desirable, only nonirritating solutions should be used. In twenty-two cases reported by Elliott there was a mortality of about thirty-two per cent., which is not excessive considering the very high mortality of purulent pericarditis. In two cases of tuberculous pericarditis reported by Jacob and Rochard (14), pericardiectomy without drainage was followed by recovery.

Adhesive pericarditis, cardiosymphysis, adhesive pericardiomediatinitis. Pericarditis may be of an external or internal type. When of advanced degree, the chest wall, heart, and mediastinum are bound together by fibrous tissue. In some cases calcification of the newly formed connective tissue, *concretio pericardii* also occurs. The fibrous tissue often invades the muscular walls of the heart, and the organ is so bound and restricted as to be greatly hampered in its work. The descent of the diaphragm may be prevented and respiratory movements limited. Hypertrophy of the heart and circulatory insufficiency are present and are indicated by an increased area of cardiac dullness, great edema, especially of the upper part of the body, enlargement of the liver, and ascites.

In children ascites, increase in the area of liver dullness, puffiness of the face, cyanosis of the face and ears, with slight diminution in the pulse rate, and nearly normal heart sounds have been mentioned as almost pathognomonic. Invariability of the area of cardiac dullness, systolic retraction about the apex, diastolic shock, and Broadbent's sign, or a systolic retraction about the eleventh and twelfth ribs posteriorly, may be elicited. Systolic retraction of the lower costal and epigastric regions may be noted, with gallop rhythm, duplication of second sound, paradoxical pulse, and respiratory swelling of the jugulars.

In treating the condition DeLorme (15) suggested that the pericardium be opened and the adhesions separated by the finger or scissors. On the post mortem table Kocher has shown that separation of adhesions usually produces serious injury to the walls of the heart, and it is evident that the divided adhesions may later reform. The best method of treatment consists in mobilizing the overlying chest wall, or cardiolysis, suggested by Brauer (16), in 1902. The operation may be carried out under local anesthesia, and consists in raising a flap of skin, and excising portions of the third, fourth, and fifth costal cartilages and ribs that overlie the enlarged heart. To avoid injury to the pleura, the posterior layer of perichondrium is left. Some operators consider a subperiosteal resection of three ribs or cartilages sufficient. The operative mortality is about five per cent. and the reported results of the operation are exceedingly good. Lacheme (17) collected twenty cases of cardiolysis without mortality, and found that dyspnea, edema, pains, and hyperemia of the viscera, were relieved by the operation. In thirty-eight cases (Delagenière, 18) there were thirty-one successes, six failures, and one operative death. It is evident that the operation should be done more frequently.

Alexander Morrison (19) has reported great

improvement to follow this operation in a case of marked cardiac hypertrophy from aortic valvular disease, in which there were no adhesions, and advocates the operation for similar conditions. The operation has also been successful for uncontrollable asystole (20).

Wounds of the heart. In rather rare instances serious hemorrhage has occurred from wounds of the pericardium alone. As a rule marked hemorrhage after a penetrating wound of the chest indicates injury of the internal mammary artery, the heart, the great vessels, or the lungs. Myocardial wounds may cause death by hemorrhage and surgical anemia, or by producing cardiac compression in a closed pericardium. Corresponding wounds of the right ventricle bleed more profusely and are more dangerous than those of the left ventricle, because of the greater thickness of the walls and the greater size of the columnæ carneæ of the left ventricle, favoring thrombus formation. Likewise wounds of the auricles are more dangerous than those of the ventricles. Wounds of the interventricular septum are not so dangerous as those that open the cavities, provided that they are not complicated by wounds of the coronary arteries. When the larger branches of the coronary artery are involved, secondary myocardial degeneration may be expected, although this does not invariably occur. Wounds of the auriculoventricular septum involving the bundle of His may cause sudden death.

Gunshot wounds are more dangerous than incised wounds. Fischer (21), in 1867, from a study of 452 heart wounds, found that from seven to ten per cent. are followed by spontaneous recovery. Loyson (22) has reported nine recoveries after twenty-three needle punctures, eleven recoveries after nineteen stab wounds, and three recoveries after 110 unsutured gunshot wounds of the heart.

Of operations for wounds of the heart, Vaughan (23) has collected 150 cases, with thirty-five per cent. of recoveries (23), compared with fifteen per cent. of recoveries without operative treatment. Miller found fifty-three per cent. of recoveries in fifty-one more recent operative cases that he collected. Of the last ten of these patients, nine recovered. Bullets or other foreign bodies may remain imbedded in the pericardium for years. In Ticque's case, the bullet remained encysted in the pericardium for fifty-two years.

Beaussanat (24) removed a metal fragment weighing 1.5 gram that had entered the right ventricle four months before from the explosion of a grenade. There was marked dyspnea and precordial distress, aggravated by movement or speaking. The heart was fixed by two silk sutures, the ventricle incised, and the foreign body removed, with recovery. Suppurative pericarditis demanding drainage often results from the presence of foreign bodies.

DIAGNOSIS.

The diagnosis of wounds of the heart may be difficult. In seven of Stewart's (25) twelve cases, on exposing the heart no injury was found. The symptoms vary from instant death to a disability so slight that the patient continues to walk about, ultimately recovering or dying after several hours or

days, with the pericardium and possibly also the pleura filled with blood. Usually there is marked precordial anguish, pallor, shock, collapse, and at times unconsciousness. The patient may show great restlessness and anxiety and develop convulsions. Vomiting, which may be repeated and suggest abdominal injury, and involuntary dejections frequently occur, or hemoptysis from an associated wound of the lung. There is usually marked dyspnea, with rapid shallow respirations, and the development of cyanosis. The blood pressure rapidly falls, the pulse is weak and irregular, or lost. Locally, there may or may not be hemorrhage from the wound. The area of cardiac dullness is increased, the apex beat often cannot be felt, and there may be signs of free fluid, or free fluid and air in the pleural cavity. On auscultation the heart sounds may be clear, altered, or imperceptible. The heart action is often intermittent or irregular, and splashing, blowing, or metallic ringing sounds may be heard. The symptoms may improve for a time to recur with increased severity, or are followed by sudden death from a return of the hemorrhage.

If recovery occurs, weakness, vertigo, and irritability may persist for weeks and months, or the patient may yet face the danger of pyopericardium, pericardial adhesions, hypertrophy, softening, and aneurysmal dilatation of the ventricular walls, or endocardial disease.

Rupture of the heart or its valves may occur from blows or falls upon the chest without an open wound, as well as from disease. Missiles entering the chest wall, but not the pericardium, may rupture the heart. In thirty-eight cases of rupture of the valves collected by Barie, ten were traumatic. The aortic and mitral valves are most frequently torn. Rupture of the heart without an external wound gives a very high mortality, a correct diagnosis being rare during life, and surgical intervention almost never considered. Operation should be invoked for these otherwise fatal injuries. Progressive dilatation or aneurysmal distention of the walls of the heart may be combated by suturing reinforcing strips of fascia or excised bloodvessel wall over the weakened area. It is to be regretted that these measures are not more frequently considered.

Operations on the valves and orifices of the heart. Experiments in lower animals have proved the feasibility of the following operations for stenotic conditions: 1. Introduction of a fine hook shaped knife through the aorta and incision of the aortic valves or ring, as performed by Cushing. 2. Incision into the right or left ventricle and the division of the mitral or tricuspid orifice by introducing and opening a hemostatic forceps, as successfully performed by Werelius. 3. Suture of three sides of a rectangular patch taken from another bloodvessel over a section of the aortic ring and adjacent portions of aorta and left ventricle. Introduction of a special pair of scissors under the free edge of the patch, puncture of the ventricle with one blade, and division of the aortic ring, with final suture of the remaining edge of the patch. This operation has been carried out successfully in animals by Carrel (27) without arresting the circulation. In two cases of advanced mitral stenosis I suggested introducing a fine curved probe pointed

knife through the left ventricle for division of the contracted mitral ring. In both instances, however, the operation was refused, the first patient dying a few days later from the progress of the disease. As incompetency is much less serious than stenosis, such a relatively simple procedure seems well worthy of consideration.

Other operations upon the valves of the heart have been successfully performed upon animals by Carrel, after temporarily clamping the pedicle of the heart by a Doyen clamp, the blades of which were covered by rubber tubing. The circulation was arrested up to about three minutes, which was a sufficient time for the performance of the following operations:

1. Incision from without of the valvular ring with secondary suture.

2. Division and suture with fine silk of a pulmonary valve leaflet.

3. Exposure and cauterization of a valve leaflet, as might be desirable in ulcerative endocarditis.

Tumors of the heart. These include lipomas, myxomas, sarcomas, and carcinomas. The malignant tumors are usually secondary. Cysts, especially the parasitic echinococcus cysts, also involve the heart. Of seventy-seven cases of cardiac tumor collected by Karrenstein, thirty-eight were myxomas and twenty-seven involved the left heart. Secondary tumors more frequently involve the right heart than the left. Twenty-nine of the myxomas involved the tricuspid valve, producing irregular obstructive symptoms that only surgical measures could relieve. A positive diagnosis has heretofore not been made during life. The symptoms include marked wasting, asthenia, marked dyspnea, fainting attacks, arrhythmia, increased area of cardiac dullness, irregularities of the skiagraphic shadow, and certain peculiarities in the polygraphic tracings. The graphic record of the esophageal pulsations is important. With modern methods of diagnosis it should now be possible to recognize certain of these tumors and give the patient the benefit of surgical relief.

Pulmonary embolism. Trendelenburg has pointed out that between the time of formation of a pulmonary embolism and death, about a quarter of an hour usually intervenes, and that this is sufficient in the well prepared clinic for the operative removal of the clot. The symptoms are sudden dyspnea, fainting, cyanosis, and collapse, usually occurring during the convalescence from an abdominal operation.

METHOD OF OPERATING.

1. Dry shaving of the skin and disinfection by tincture of iodine.

2. The skin incision is carried along the left sternal edge from first to third rib, and from this a horizontal incision is made along the second rib. The skin and muscle flap is raised with a resection of the second and at times the third rib to a point well beyond the costochondral junction. Avoiding the internal mammary vessels, the pericardium is opened through the pleura in front of the phrenic nerve, which is to be avoided.

3. A rigid knobbed hook is curved around the

aortic and pulmonary artery, a strong rubber tube affixed, and instrument withdrawn, leaving the rubber in place.

4. By the rubber tube both vessels are pulled forward and controlled. The visceral layer of pericardium and fat over pulmonary vessels is excised, so the vessel cannot later slip back into its serous covering.

5. Through an incision in the axis of the pulmonary artery two fifths of an inch long, a fine curved dressing or polypus forceps is introduced into the branches of the pulmonary artery and the clots are extracted. The aorta and pulmonary artery must not be constricted over three quarters of a minute. If uncertain as to complete removal of all clots, the incision should be temporarily closed with a special narrow clamp, the constriction relieved, and later the procedure repeated. In suturing, a small forceps springing outward and having a small hook projecting outward at each tip is introduced between the ends of the slit, the vessel drawn forward and a flat hemostatic clamp is so applied behind the forceps that the edges of the incision project a little between the branches of the forceps. The blood stream then travels behind the occluded slit and the latter may be quickly closed by interrupted silk stitches. The removal of blood from the pericardium and suture of external parts without drainage complete the operation.

In about fifteen cases no recovery has as yet followed this operation, but in one case the patient survived to the fourth day.

Aortic aneurysm. We are rapidly approaching the time when methods of direct surgical attack will be considered in most cases of thoracic aneurysm. It is now possible to reduce the blood pressure within the sac, while the walls of the sac may be infolded or reinforced from without or within, and even a ruptured sac has been closed by suture. Tuffier (28) found it possible to pinch the sac of an aneurysm with pressure forceps and narrow the lumen with a double suture. Kummell (29), in a desperate case, attacked a ruptured aneurysm of the lower thoracic aorta, by resecting the ribs outside the pleura, reduced the calibre of the vessel to the normal size, and closed the opening by suture. The circulation of the legs was restored, the patient dying later.

Experimentally it has been found possible to reinforce the aorta by sewing about it strips of prepared aorta, or to reduce the blood pressure by encircling the vessel with thin aluminum bands, as used by Halstead and Gatsch (30). Henschen, of Zurich, has used experimentally broad strips of costal fascia to strengthen the vessel wall and also tubes of galatolith, introduced within the vessel to support its wall. Jeger (31) has even considered the operative exclusion of the arch of the aorta:

Ligation of the branches of the pulmonary artery was suggested for bronchiectasis before the third international congress at Brussels, September, 1911, by Sauerbruch. This has been done from without the pericardium and experimentally from within the pericardium by Willy Meyer (32). In one dog killed ten weeks after operation the right pulmonary artery was firmly closed by the ligature, the upper and mid-

dle pulmonary lobes were tightly adherent to the costal pleura, and there was a marked increase in connective tissue in the two upper lobes. Three operations by Meyer for bronchiectasis by ligation of pulmonary branches were followed by marked improvement. In animals the main trunk of the left and right pulmonary artery may be ligated without harm; the left branch is accessible within the pericardium, the right less so.

Unquestionably there is a rapidly widening field for the surgical relief of forms of cardiac disease hitherto considered beyond the resources of the art. Are our internists prepared to take advantage of it?

REFERENCES.

1. *Annales de Anatomie et d'Histologie*, December, 1911. 2. *Les indications de la digitale dans les maladies du cœur*, p. 182. 3. *Chir. Chir.*, xi, 361, 1903. 4. *Journal A. M. A.*, August 12, 1911, also 18, 1911. 5. *Surgery, Gynecology and Obstetrics*, xiv, 229, 1914. 6. *Journal A. M. A.*, lxiii, 1338, 1914. 7. *Zur Chirurgie des Herzens und Herzbeutels*, *Verhandl. d. deutsch. Gesellsch. f. chir.*, xxxvi, 2, 1907. 8. *Archiv. f. klin. Chir.*, lxxxiii, 1907. 9. *Die Verwendbarkeit des Unterdruckverfahrens in der Herzchirurgie*, *Archiv. f. Chir.*, lxxxii, 1907. 10. *Verhandl. d. deutsch. Gesellsch. f. chir.*, xxxvi, 2, 1907. 11. *Experimentelle Studien zur Pathologie und Chirurgie des Herzens*, *Archiv. f. klin. Chir.*, lxxxiv, 1907. 12. *Ztschr. f. Chir.*, xiv, 1, 580-590, 1908. 13. *American Journal of Surgery*, lviii, pp. 67-85, 12. 14. *Pflügers Archiv*, xlvii, 1902. 15. *Monthly Cyclo. & Med. Bull.*, December, 1912. 16. *Bull. et mém. Soc. de Chir. de Paris*, xxxix, 752, 1913. 17. *Gaz. des hôp.*, 125, 1908. 18. *Archiv. f. klin. Chir.*, lxxi, 238, 1902. 19. *La cardiolyse on opération de Brauer; ses indications et ses résultats*, *Arch. d. mal. du cœur*, etc., ii, 673-683, 1909. 20. *Arch. prov. de Chir.*, 317, 1913. 21. *Proc. Roy. Soc. of Med.*, viii, 21, 1914-15. 22. *Lyon méd.*, 246, 1914. 23. *Archiv. f. klin. Chir.*, x, 1968, 22. 24. *Revue de Chir.*, 1889, p. 774. 25. *Journal A. M. A.*, February 6, 1909. 26. *Bull. acad. de méd.*, lxxiii, 554, 1915. 27. *American Journal of Surgery*, lviii, pp. 67-85, 26. 28. *Policlinic*, xx, 1913. 29. *Annals of Surgery*, lxi, 1914. 30. *Bull. et mém. de la soc. de Chir.*, 14, 1907. 31. *U. S.*, xxxiii, 406. 32. *Chirurgie des Aortenaneurysms*, *Deutsche med. Wochenschr.*, xl, 731, 1914. 33. *Journal A. M. A.*, December 20, 1906. 34. *Zeitschr. f. klin. Chir.*, 641, 1914. 35. *Transactions of Amer. Surg. Assoc.*, 1913.

2033 WALNUT STREET.

DELAYED GASTRIC DIGESTION.

By MARTIN E. REHFUSS, M. D.,
Philadelphia.

(From the Department of Medicine and the Department of Physiological Chemistry, Jefferson Medical College.)

The recognition of many of the obscure gastric conditions depends upon a precise study of the pathological physiology of the stomach. The x ray affords a method for the accurate delimitation of motility, but it gives no information regarding gastric secretion or the changes incident to disturbed gastric chemistry. This very fact accounts for the absence of information regarding a condition which I have found to be very common, namely, delayed secretory digestion. Some time ago, at a meeting of the Jefferson Clinical Society, I read a paper on this subject. Since then I have received a paper from my friend, Doctor Pollock, of San Diego, California, on the Slowly Elaborating Stomach (*Southern California Practitioner*, August, 1915), in which he reviews clearly seven cases in which this phenomenon was present. Our analyses, comprehending over two thousand cases, show that the conditions are extremely common and emphasize a condition which as yet has received practically no attention in the literature.

A delay in evacuation due to muscular atony, whether due to a disturbance in innervation or to an actual loss of tone in the musculature itself, is well known. This accounts for the various slight delays in motility which are found on testing the

stomach. At least in a large proportion of cases in which there is a delay in the evacuation of the stomach of a minor grade, the cause is functional and can be found in an atonic condition of the musculature. This condition is well known, and merits no attention here. The point that I am about to discuss is a delay in the elaboration of the gastric secretion in which, instead of a perfectly normal curve made up of psychic and chemical secretion forming a perfect curve and reaching figures of 60 or 70 total acidity in one hour and then gradually declining, there is a marked displacement of this high point for one half, three quarters, or one hour or more before that point is attained. In other words, instead of the gastric cycle performing its evolution in a normal manner, such as we have described in previous communications, a glance at the type of material removed and the results of the chemical analysis will demonstrate that the first

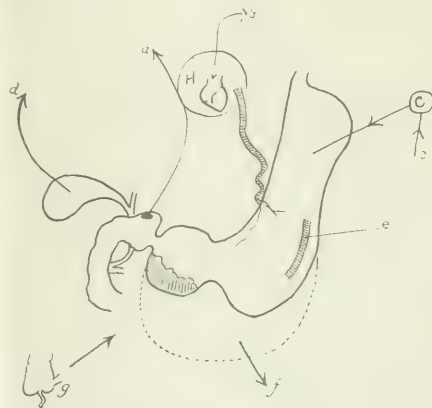


FIG. 1.—a, Duodenal ulcer; early hyposecretion followed by pronounced hypersecretion and hyperacidity in late phases fairly common; b, vascular toxemias, congestion due to cardiac decompensation, portal congestion; c, psychic or as a sympatheticotonic manifestation; d, chronic cholecystitis and cholelithiasis, hypo type with late high point not uncommon; e, mucosal infections, achlorhydria, f, hemorrhagic gastritis of Pilcher; chronic gastritis (type low secretion throughout); g, gastropathy, atony hypo and hyper types; h, appendicitis; practically always hyper type, both as to quantity and quality of secretion. Chronic nephritis occurs in a certain proportion.

stage of digestion seems enormously prolonged and the whole chemistry of digestion is definitely retarded. Nearly always there is in these cases some slight delay in motility, but the reverse, a delay in motility, is, even in functional cases, by no means always accompanied by a delay in the appearance of the gastric secretion or a disturbance in gastric chemistry. A glance at some of the cases selected for presentation in this paper represents this slow evolution in secretion, and it is evident that the point normally reached in one hour is not attained for one and one half and even two hours.

The question arises as to the interpretation of these phenomena. Does this delay in secretion represent a perverted psychic phase, or does it represent almost an absence of the psychic secretion such as I have detailed in certain cases of achylia gastrica? If it is a disturbance of the psychic mechanism, the

question naturally arises, whether the trouble is in the afferent or efferent conducting paths. Disturbances in the sense of taste or smell are by no means uncommon; in others, however, they are entirely absent, suggesting that if the psychic mechanism is impaired the trouble must be in the efferent paths. One thing has impressed me in these cases, namely, the frequency of autonomic symptoms. But I am not convinced that they are more frequent than in

question of whether or not this phenomenon is not purely a glandular one. That this is so must be evident from the presence of this form of curve in a certain proportion of cases of chronic gastritis. A number, however, are absolutely unaccompanied by the phenomena of chronic gastritis.

I believe that this condition is always pathological because in many hundreds of complete analyses of healthy medical students with various substances,

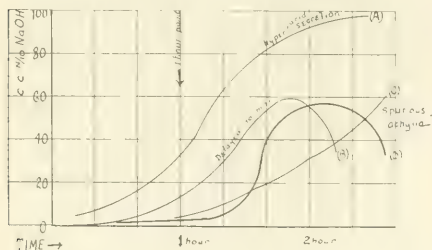


Fig. 3. Schematic types of delayed digestion.

other forms, and particularly the reverse of this condition, namely, an accelerated gastric secretory digestion. Another point can be determined in a certain proportion of cases, that there is not merely in the early stages of digestion hypacidity but hyposecretion as well, a point which is demonstrated by the character of the material removed. This is not always the case, in fact there are many cases where there seems to be considerable fluid in the stomach, but not of the proper acid strength. The question naturally arises, whether the liquid is the water or tea retained or simply a form of *verdunnungs* fluid, such as occurs when hypertonic solutions are put into the stomach. In our experiments on water we obtained rather definite evidence that water left the stomach, at least the bulk of it, in the

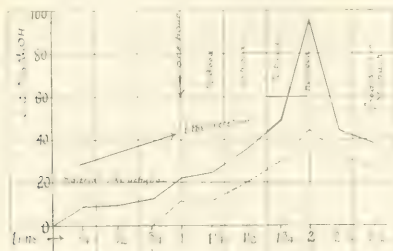


Fig. 4. Case IV.

first twenty minutes. X ray findings seem to indicate the same thing, although there is always a fluid present in the stomach which is not the liquid ingested, but the secretion formed in response to the liquid, a point which greatly complicates the question. I am convinced, however, that in a certain proportion of these cases there is not merely a hypacidity, but an actual hyposecretion, as was demonstrated in two cases after the administration of a dry meal. A second point enters, namely, the ques-

tion of whether or not this phenomenon is not purely a glandular one. In several instances where it was found, careful investigation disclosed gastric disturbances, and the individual was rejected for further study.

Another point of considerable interest is the fact that this condition occurs in both the hypacid and hyperacid states, that is to say, that the ultimate evolution of the secretion may be either hypacid or hyperacid. It is not confined to either type, and I have seen many cases, several of which are given here, where an extremely slow digestion in the first hour was followed by hyperacidity, and a vicious hypersecretion. This has not been an uncommon finding in ulcer, particularly duodenal, showing that the study of the first hour would give rise to entirely erroneous conclusions. A fractional study,

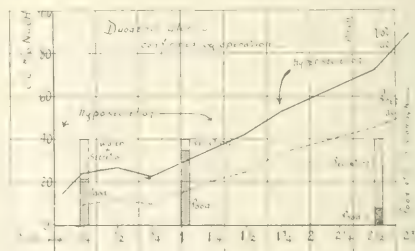


Fig. 5. Case V.

however, shows distinctly the trend of the secretion. In pathological cases, ulcer with beginning stenosis, or pylorospasm, studies may be continued with profit for three and four hours or more.

A point which has occurred to me in looking over a certain number of these cases is the question whether reflex irritation, such as appendicitis, cholelithiasis, adhesions, toxic absorption from the bowel, or the products of disturbed metabolism, cannot produce inhibitory as well as irritative phenomena.

There can be no question that in gallbladder disease as many cases are found with an inhibition as with an acceleration of secretion. The statement is made that early, acute, and subacute gallbladder lesions induce as a rule the irritative phenomena, and old chronic lesions the reverse. This point has always interested me and will be the subject of a later communication.

Individuals suffering from delayed digestion present symptoms. Probably the most common are a sense of fullness, discomfort some time after eating, together with phenomena of aerophagia similar to those seen in atony. In those seen with a late hyperacidity, frequently these symptoms are followed by epigastric pain unquestionably due to pylorospasm. In cases in which there is an organic lesion the symptoms of the latter are found in the foreground.

Again, improvement in symptoms is attended by an improvement in the secretory phenomena recorded. This would seem to indicate that this type of secretory anomaly is capable of giving symptoms.

The real importance of the condition comes into play when we realize exactly what occurs. It is almost universally accepted that as a rule low gastric acidities predispose to a patulous pylorus and higher acidities to a tonic contraction of that orifice. It is equally true, however, so far as we can ascertain, that the control of that portion of the stomach is vested in the duodenum and probably even lower down in the small intestinal tract. It is therefore evident that, as in achylia and in subacidities two important phenomena occur, giving rise to the term pyloric insufficiency: 1. Considerable material escapes through the pylorus which should be retained for further digestion in the stomach; and, 2, the material evacuated is both incompletely elaborated and insufficiently treated for intestinal digestion. It therefore contributes both directly and indirectly to establish a disturbance in the great compensatory medium for gastric disturbances, the intestinal tract. A little thought on the possibilities of these cases demonstrates how complex this question is.

Experimentally we can throw some light on the phenomena of delayed gastric digestion. In our unpublished experiments on the psychic secretion as well as on the effect of atropine, we have been able to demonstrate the very important influence of this secretion, but the atropine studies, as well as our studies by means of the administration of substances administered through the tube (independent of psychic stimuli), serve to demonstrate that the chemical secretion, while not pronounced through the first hour of digestion, nevertheless runs throughout the entire period.

We can produce an experimental delayed digestion by means of atropine in large doses, and by means of the administration of hypertonic solutions such as those of dextrose and salt (10 per cent.) in the stomach. This was reported before the American Society of Biological Chemistry, at Boston, by Professor Hawk, Doctor Fowler, and myself, and the data will shortly be published. Psychic inhibition can undoubtedly produce it as well as a definite inflammation of the glandular structure such

as is seen in the various forms of chronic gastritis. It is held that organic extracts from the pituitary and adrenals (Rogers, Rahe, Fawcett, and Hackett, *Amer. J. Physiology*, xxxix, 3, 1916, p. 345) can inhibit the gastric secretion, and it is extremely probable that anomalies in the thyroid and parathyroid are capable of inducing these disturbances. Whether reflex stimuli from other abdominal viscera are capable of inhibiting as well as stimulating gastric secretion evolution, we are in no position to state, but all these possibilities, as well as the question of the role of the stomach in the elimination of various toxemias, merely suggest the complexity of the problem.

That this delayed evolution is a constant and not a variable phenomenon, is evident when one realizes how rebellious some of these cases may prove. I have repeatedly examined cases of this type at long intervals and found a curve practically similar or with only slight variation. Some of these cases improve rapidly under treatment, others associated with undoubted glandular disturbance and an impairment of motility may prove exceedingly resistant to treatment.

In a previous communication I pointed out the frequency of "spurious achylia" with practically no evidence of gastric secretion at the one hour point and the definite, easily demonstrable secretion later in digestion. These cases are undoubtedly cases of delayed digestion of the most pronounced type, and it is noteworthy that in two cases administration of parathyroid extract apparently induced a return of the secretion.

CASE I. K. Ewald Meal:

Time	T. A.	Ewald Meal		Definite delay in evacuation. Ewald meal not evacuated in three hours; no hypersecretion, but delay in digestion so that 22.7 total acidity represented the one hour finding; the height of digestion was only attained in two hours, for the first hour—scarcity of secretion gave the specimen removed the appearance of a dry achylia. No blood and no pus.
		T. A.	F. A.	
15	8.5	n.	n.	
30	8.0	n.	n.	
45	12.4	n.	n.	
1	22.7	12.0		
1 $\frac{1}{2}$	24.7	13.0		
1 $\frac{1}{2}$	36.6	20.8		
1 $\frac{3}{4}$	47.5	31.7		
2	96.4	43.5		
2 $\frac{1}{4}$	44.4	33.0		
2 $\frac{1}{2}$	38.6	24.6		
3	32.0	.....	

CASE II. Mr. Ax. Ewald Meal:

Time	Quant.	T. A.	F. A.	Marked delay in appearance of secretion with coincident delay in evacuation. With this an excess of gastric mucus in every sample indicative of an actual inflammation of the mucosa as an explanation for delayed digestion. Note the proportionate delay in the appearance of free acid.
Time	Quant.	T. A.	F. A.	
3.22	15.0	5.5	.....
3.32	12.0	5.5	.....
3.47	15.0	7.0	.....
4.02	15.0	16.5	n.	
4.17	13.0	26.5	6.0	
4.32	18.0	30.0	10.0	
4.47	16.0	30.5	11.0	
5.02	16.0	33.0	11.5	
5.17	16.0	35.0	16.5	

Still 17.5 c.c. in stomach

CASE III. Mrs. S.:

Time	T. A.	F. A.	Pronounced autonomic symptoms. Digestive delay three hours on Ewald meal, no organic lesion, some mucus, but the whole response repeated on different occasions is indicative of a definite delay in the gastric secretion.
Time	T. A.	F. A.	
15	10.0	.....
30	13.0	2.0	
45	28.5	18.5	
1	34.5	18.5	
1 $\frac{1}{2}$	37.0	22.0	
2	44.0	26.0	

CASE IV. Miss C.:

Time	T. A.	F. A.
15	12.0	...
30	14.0	...
45	27.7	...
1	42.5	n.
1 1/2	31.9	19.7
2	33.8	33.0
2 1/2	32.2	29.8
3	27.9	43.2
Food gone, continued secretion.		
2 1/2	25.5	11.3

Digestion over in normal time, but there is a definite delay in secretion in a patient with viscerotoposis, and clinical discomfort, fullness, eructation of gas after meals.

Time	Total Acidity	Free Acid	Blood	Mucus	Notes
15	13.0	13.0	neg.		
30	17.0	26.0			
45	37.0	37.0	neg.		hypersecretion
1	42.0	42.0			hypersecretion
1 1/2	51.0	48.0	neg.		hypersecretion
2	53.0	30.0		sl. ght.	less normal
2 1/2	47.0				

This is a typical case of functional delayed digestion, both secretory and motor. It will be noted that gradually as digestion proceeds the secretion evolves, and reaches its height two hours after the beginning of the meal instead of one hour. There is also distinct alimentary hypersecretion, which is apparent not merely by the marked excess of secretion through the periods from one half to one and one half hour during digestion, but also, as will be seen by reference to the figures, an approach of free and total acidity. There is no bleeding, either macroscopic or occult, no bacteria, no evidence of an organic lesion, nor is there evidence of a terminal hypersecretion more or less characteristic of ulcer. Mucus in small amounts late in digestion.

CONCLUSIONS.

1. There is a pathological deviation from the normal gastric secretory output in which there is either a delay in the appearance of the secretion, in reality delayed gastric secretion, or a delay in the evolution of the normal acid content, delayed gastric acidity resulting in delayed gastric digestion.

2. In a large series of studies on normal subjects, this phenomenon was never encountered, indicating therefore that its appearance is unquestionably pathological.

3. It is not characteristic of any one type of gastric disturbance, being found in atony, gastritis, ulcer, carcinoma, and many of the functional disturbances, but its manner of evolution and the concomitant findings throw light on the disturbance.

4. The condition, in the absence of organic disturbance, is fairly frequent and can be adequately demonstrated by the fractional method.

5. It can be experimentally produced by the administration of hypertonic solutions, such as those of dextrose and sugar.

6. It may or may not be associated with motility disturbances.

7. In many of the extrinsic affections producing gastric disturbances, such as appendicitis, cholecystitis, intestinal adhesions, phenomena of delayed digestion with the ultimate evolution of high acid values and hypersecretion are found, although the initial period of gastric digestion indicates no such tendency.

8. The explanation of delayed digestion must be found in either a disturbance of the psychic or chemical factors dominating gastric digestion, although it is probable that mucosal changes (gastritis), the elimination of toxic substances (toxemias), a disturbance in autonomic balance (nervous), a disturbance in certain internal secretions, as well as an actual disturbance in chemical equilibrium, is capable of inducing gastric secretory disturbances. Concerning these points we shall have some data to present in the future.¹

9. Many of these cases are rebellious to treatment, others can be relieved by treatment of the underlying cause.

117 SOUTH BROAD STREET.

¹ A paper presented by Professor Hoad, Professor C. Fowler, and the author, and to be published in the near future.

CASE V. F.:

Time	T. A.	F. A.
5	10.0	n.
10	7.0	n.
15	7.0	n.
30	17.0	n.
45	44.8	19.0
60	54.8	21.0
1 1/4	58.4	27.0
1 1/2	58.7	23.6 hyper.
1 3/4	72.2	43.1
2	66.9	37.5
2 1/2	....	....

Delayed secretory digestion with hypomotility—small residuum, no food retention, all food gone in one and a half hour, then a continued secretion appears with some mucus. Hypomotility, continued secretion, no bleeding in stomach, blood in stools in a patient with pain and discomfort on empty stomach. Diagnosis: Duodenal ulcer.

CASE VI. Pr.:

Time	T. A.	F. A.
5	16.8	....
10	21.8	9.9
15	23.9	9.3
30	27.3	12.2
45	22.4	10.0
1	....	....
1 1/4	35.5	21.0
1 1/2	42.4	25.7
1 3/4	53.4	34.5
2	....	....
2 1/2	72.5	46.6
2 3/4	89.5	51.5

Delayed digestion, delayed motility, bleeding ulcer duodenum, x ray deformity of head of duodenum; occult blood constantly in stools and in duodenal extracts. Markedly in excess of food ingested, changing character of specimen and elevating during next hour very perceptibly the total and free acid. Duodenal ulcer, confirmed by operation.

CASE VII. Miss P.:

Time	T. A.	F. A.
15	30.5	....
30	32.0	17.0
45	33.9	10.0
1	37.7	38.0
1 1/4	41.0	33.0
1 1/2	44.0	30.0
1 3/4	50.0	....
2	54.85	48.5
2 1/2	61.7	50.5

Delayed digestion, delayed motility, bleeding ulcer duodenum, x ray deformity of head of duodenum; occult blood constantly in stools and in duodenal extracts.

Ptois, delay in evacuation, and very slow evolution of secretion. In fact, for first hour and one quarter, hypersecretion followed very late in digestion by hypersecretion.

CASE VIII:

Time	T. A.	F. A.
1/2	35.0	28.0
1	36.0	26.0
1 1/2	62.0	30.0
2	64.0	44.0
2 1/2	57.0	36.0
3	80.0	....
3 1/2	52.0	22.0
4	61.0	....
4 1/2	60.0	27.0
5	30.0	....

Delayed secretory digestion with enormous delay in motility; no bleeding in stomach, but diagnosis of stenosing ulcer at pylorus made. Operation by Doctor LeConte disclosed pylorospasm and thickening of pylorus, nature of which was not evident at operation. This case showed persistent retention of food, but on no occasion bleeding in stomach; findings consistent with those disclosed by operation.

CASE IX. Mr. G. An examination of the empty stomach was first made six hours after breakfast. There was absolutely nothing in the stomach except a small residuum of normal type and quantity. There was no food retention, no intragastric bleeding, no excess of mucus.

The patient was then given an Ewald meal and the whole course of digestion studied, with the following results:

THE DEFINITE MANAGEMENT OF PNEUMONIA.

By SOLOMON SOLIS-COHEN, M. D.,
Philadelphia,

Professor of Clinical Medicine, Jefferson Medical College.

(Concluded from page 1067.)

2. ANTAGONISTS TO TOXICS.

The chart of Louis K. and some of the other charts now shown, exhibit also the use, and the phenomena guiding the use, of our second series of tactical measures—the antagonists to toxics. The discussion of them may be brief.

Allusion has been made to certain analogies between pneumonia and diphtheria. Years ago, before the discovery of antitoxin, I learned a lesson I have never forgotten, from the lips of that "grand old man" of American medicine—Abraham Jacobi. Talking to the Philadelphia County Medical Society concerning diphtheria, he said: "The great danger in diphtheria is heart failure. The time to treat heart failure is before it happens." So with pneumonia. Our antitoxic agent—quinine or another—diminishes the danger of heart failure, but does not always completely avert it; and, moreover, the quinine itself, when given in very large doses, has a certain tendency to lower blood pressure. The necessity for discretion in this respect has already been pointed out.

Some years ago, G. A. Gibson, of Edinburgh, called attention to the accidental relation between the numerals representing systolic blood pressure in mm. Hg. and those representing the pulse rate. Assuming in round numbers that 140 mm. is the average normal systolic pressure, and seventy beats a minute an average normal pulse rate, the relation is 1:2. Charted on the same vertical as in this diagrammatic chart (Fig. 7), there is a comfortable distance between them. This we mark *safety*. Gibson pointed out an important prognostic relation between these curves and pneumonia. His observations, it is true, have been disputed by able observers, and his rule is incorrect, if stated absolutely. But I do not hesitate to reaffirm its correctness if stated, as Gibson himself stated it, conditionally. Other things being equal, in all cases the tendency to maintain this gap (marked *safety* on the diagram) justifies a favorable prognosis; and conversely, in the vast majority of cases, but not in all, rise of the pulse rate curve above the systolic pressure curve, or sinking of the systolic pressure curve below that of pulse frequency—and both tendencies are always present in lobar pneumonia—warns that the prognosis is becoming unfavorable. This condition (a ratio of 1:—*n*) is shown in the diagrammatic chart and marked *danger*. Where the two curves cross, and hover about one another, the ratio being approximately 1:1, the chart is marked *doubt*.

Now, while the *safety*—except in cases of abnormally high pressure from arteriosclerosis or other affection—is pretty nearly absolute; and while *doubt* is so real as to give one much anxiety, the *danger* does not necessarily mean a lethal termina-

tion. The unfavorable indication may be overcome by appropriate means, and it may not always be so grave as it appears. But in any event the practical therapeutic indication is to pay close attention to the heart and vessels; and, if it seems necessary upon a survey of the case as a whole, to intervene judiciously for the support of the circulation.

Again we are confronted by the necessity for giving interns and nurses a guide for the application of remedies that are not to be prescribed for routine use at fixed intervals, and under any and all circumstances. Hence two rules have been adopted: First, to inject the pressor agent, commonly *cocaine hydrochloride* one half grain (0.03 gram) or more, or a preparation of the *posterior pituitary body* (puitritin, infundibulin, pituitary liquid, hypophysin, etc., one c. c.) *with the initial dose of quinine*; and, second, to repeat the injection every third hour, *whenever the systolic pressure curve falls five points below the numeral of the pulse curve*, or hovers around ninety mm. or less, irrespective of the pulse curve. Sometimes the indications may be urgent for more frequent repetition. Sometimes six hours or more may elapse between successive doses. In some instances cocaine and puitritin are alternated—in a severe case, for example, one or the other may be given every two hours. If more active intervention appears to be necessary, camphor is added. The twenty per cent. solution in sterilized olive oil is used by preference; and of this two c. c. or more may be injected, and repeated as necessary—say every third hour; the routine, in that case, being camphor, one hour, puitritin the next, cocaine the next, and so on. Or camphor alone might be used, if the heart rather than the peripheral circulation seemed chiefly at fault. I see no reason to fear large doses of camphor, and I can understand why some physicians depend chiefly on this drug. (Fig. 2, Fig. 4, and Fig. 5.)

Or we may use the remedy advocated by A. Jacobi in preventing, by anticipation, the heart failure of diphtheria—namely, a trustworthy, clean tincture of Siberian musk. This may become either a fourth string to the bow, or a substitute, for the time being, for one or all of the others. The dose by mouth or under the skin is one c. c., more or less. Whether we use musk, puitritin, camphor, or cocaine, however, we must not continue that use beyond the limits of discretion.

In connection with the Gibson pulse pressure ratio, I will mention an interesting case observed three years ago, in which the pressor medication was a negative rather than a positive quantity.

CASE. A woman, aged seventy-three years, with diabetes and arteriosclerosis, had a systolic pressure tending toward 260, with a pulse rate tending toward 90, and was liable to attacks of recurring pulmonary edema unless the pressure was kept below 200. This necessitated the continuous use of nitroglycerin, aconite, and veratrum viride in rather large doses, which, of course, brought the pulse rate down to between 70 and 80. She had an attack of lobar pneumonia, in the course of which the pulse frequency rose to 110, and the systolic blood pressure fell to 150. The depressor medication was withdrawn, quinine and strychnine were given by mouth, with occasional small doses of digitalin. Recovery took place, and for nearly a year thereafter the systolic pressure remained below 160 without medication. It then began to rise gradually, and

in the course of six months more was up to 200. Since then the tendency to excessive pressure has again been shown, necessitating a return to depressor medication.

Would it not seem that the pneumonia toxin had in this case a profound and continuing influence? Also the chart given as Fig. 6 exhibits the influence of arteriosclerosis on the pneumonic blood pressure, and of the pneumonia toxin on the sclerotic pressure. Perhaps, one of these days, that influence may be available in general therapeutics.

In the use of the agents to support circulation we have come upon the most difficult part of the definite tactics. Experience in the application of drugs, knowledge of their clinical effects under various conditions, judgment and skill in the adaptation of means to end, are all called for. No one can pretend to be perfect in all of these—at least, not I. But we must use our best and calmest judgment. We must not steer from the Scylla of toxic heart failure into the Charybdis of heart failure through exhaustion from overstimulation. We must not disturb too greatly the balance of circulation, as between possible heart effort and peripheral resistance in the vessels. Once more be it said, remedies are to be used fearlessly, but not recklessly. The dose is, indeed, *enough*; but not *too much*.

Still other remedies are here applicable in alternation with, in place of, or in occasional substitution for, those discussed. First must be mentioned *digitalis*.

We are again confronted by the familiar difficulties as to preparations. By the mouth, I prefer a mixture of a dependable tincture, and a recent infusion from good leaves; say ten minims of the tincture to two fluidrams of the infusion. This dose is given according to circumstances—and bearing in mind the relatively slow absorption and elimination of the drug—every second to sixth hour. Or more or less pure digitoxin—either the digalen of Cloetta, or the so called Germanic digitalin of Merck—or even the tincture—may be given hypodermically in what seems to be the indicated dose. Those who prefer other digitalis preparations, whether fluidextract, glucoside or special form of the leaves, should employ the one they commonly depend on.

Possibly strophanthine might be available. Frankly, I am afraid of it and have not used it in pneumonia. I have seen persistent good results from its use in the auricular flutter and even the auricular fibrillation of mitral stenosis—also I have seen death occur so suddenly, after apparent improvement in such cases, that I have wondered whether the drug might not be, in part at least, responsible. I leave it therefore to those who are more skilled than I in its application.

But digitalis has yet another value—and another method of use. Some practitioners, not only in Roumania, but also in the United States, regard it much as I regard quinine in pneumonia—as a main dependence. It is a commonplace of clinical teaching that the toxic effect of digitalis—the so called physiological action of the drug—is not manifested during fever. I am not so sure that this is true in general. It is not invariably true of febrile tuberculosis, or of typhoid fever, for example. It

is true of lung fever, however, up to a certain point—namely, the point of apparent saturation of the pneumonia toxin. What I mean is this. Digitalis used in small doses in pneumonia is ordinarily without apparent effect. There is a significant exception to the rule, to be made shortly. But digitalis used in enormous doses in pneumonia lowers the temperature, reduces the pulse rate, strengthens the heart beats, and sometimes raises the blood pressure.

This is at times more apparent in the diastolic than in the systolic pressure curve (Fig. 1 and Fig. 5). Let me digress here for a moment to call attention to a relation between the diastolic pressure curve and the curve of the frequency of respiration, analogous to the Gibson pulse pressure relation (Fig. 7).

Charted upon the same vertical, the respiration curve tends to rise toward the level of the diastolic pressure curve, while the latter tends to fall toward the respiration level. Absolutely, without exception, a persistence of respiration frequency above the level of diastolic pressure is of grave import. It is of unfavorable import when less than ten points separate the curves. That is to say, for example, a respiration of forty a minute, with a diastolic pressure of less than fifty mm. Hg., is significant of danger. In one case, despite the fact that the patient seemed, and professed to be comfortable with a double lobar pneumonia engrafted upon lungs that had some eight years earlier been affected with tuberculosis, the fall of diastolic pressure to 30, with a respiration rate of 35, was the signal of oncoming cardiac death, which could only be delayed forty-eight hours.

If such a fall occurred during the use of quinine, I should at once discontinue the use of the drug, irrespective of the other indications; not because I attributed the fall to the quinine, but because our knowledge of the whole subject is as yet too limited to be sure that its continued use would not be harmful. And I still hold to the Hippocratic maxim—"Do good—or do no harm." In the case mentioned, the quinine had not been used for forty-eight hours, because the temperature index had not called for it, and we were almost beginning to let ourselves hope that, despite the unfavorable conditions in general, the patient might recover.

Irrespective of respiration, if the diastolic pressure is less than 70, care is called for, and if less than 50, the outlook is disquieting.

To return to *digitalis*, whenever there is an unduly diastolic pressure, the drug should be given; and provided that quinine has been administered with the result here regarded as antitoxic, digitalis will—to some degree at least—produce its characteristic effects upon heart, pulse, and blood pressure; and will also tend to diminish the frequency of respiration.

Place this observation, which I have repeatedly made, in apposition with the experience of those observers who find definite benefit in pneumonia from enormous doses of digitalis, and what seems to be the almost irresistible inference? Is it not that digitalis neutralizes and is neutralized by the pneumonia poison, and that up to the point of complete neutralization of the latter, the drug is with-

out influence upon function? But, that point passed, it produces its ordinary effects. Hence the necessity for large doses. The only rule is *dose enough*—for only by the effect can the sufficiency of the dose be determined.

But if quinine has been used in advance of digitalis, the neutralization would appear to have been effected—at least in part—and a smaller quantity of the foxglove preparation seems to produce results.

This may seem unduly speculative. I am under the impression, however, that some experiments

DaCosta laud *veratrum viride*, if it could be given before the stage of consolidation, that is, before disappearance of the crepitus indur. I have seen cases go on to recovery, so treated by him. I have had a few such recoveries in my own experience. But unfortunately, we rarely see our patients so early, especially in hospital and consulting practice. The old theory, and the one still held by eclectics, and by the dosimetric practitioners who believe themselves to "jugulate" pneumonia with *veratrum* or *aconite*, and by the so called alkaloidal school who advocate *aconitine*, etc., is that the con-

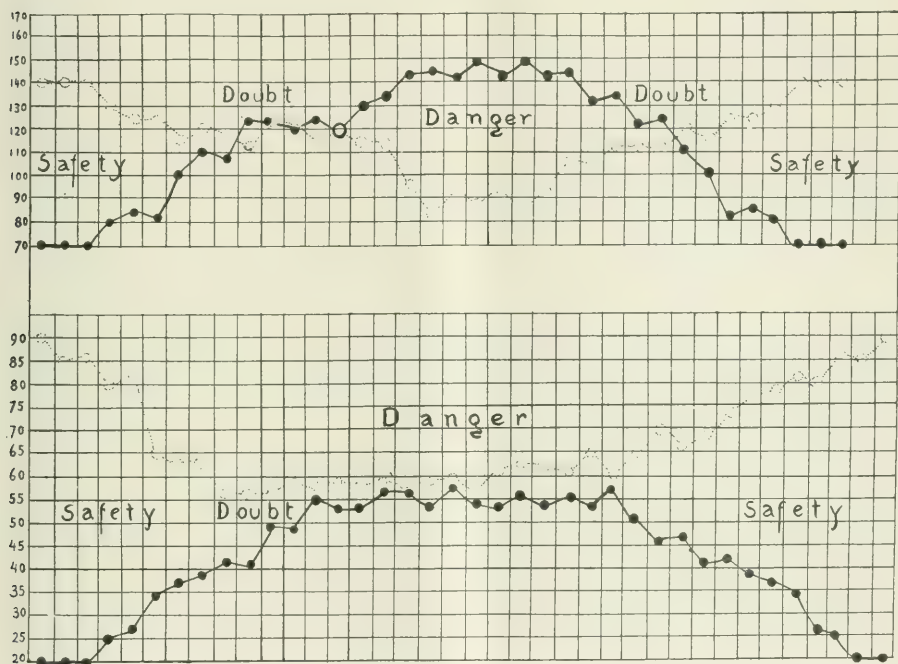


FIG. 7. Diagram showing the prognostic and therapeutic significance of, upper chart, pulse frequency and systolic blood pressure, and lower chart, respiration frequency and diastolic blood pressure relations.

were made that seemed to bear out the theory. Unfortunately I have mislaid the reference and do not recall the observer's name. I hope, however, to be able to confirm or disprove the speculation, in the research now under way. Meanwhile, if we may for the sake of discussion assume the theory to be sound, we do not know which digitalis principle, if any, acts as an antitoxic in pneumonia; or if one is more effective than another. Hence the whole drug should be used if possible, and the mixture of tincture and infusion is therefore preferred.

Still another drug, harmful only if used at the stage of pneumonia under discussion—namely, when cardiovascular failure seems to be impending—is unquestionably, on empirical evidence, of great service if used early. I have frequently heard

gestion of the lung is removed by the effect of the medicaments upon the circulation, and thus the inflammation is aborted or diminished.

The same view, namely that the strategical point of defensive attack is the local inflammatory process, and that this can be controlled through the circulation, dictated the old practice of early blood-letting. And I am not prepared to say that venesection in a young, robust adult in the first stage of what the elders termed a sthenic pneumonia, is not still good treatment. Only, we do not, in Philadelphia at least, see such cases very often, and the explanation of the benefit may be other than the mechanical one given.

But to discuss this now would take us too far afield. It may be that *veratrum viride* is useful because it reduces congestion and thus restricts infec-

tion and intoxication—or it may be that it has what I have here termed an “antitoxic” virtue as well. I do not know. I hope to find out.

So, too, the good influence of camphor—an influence so marked that the use of this drug in large, repeated doses has been urged as a definite method—may depend on other qualities, in addition to its power as a cardiovascular stimulant and tonic. Before we can determine any of these points we shall have to obtain new data, both clinical and experimental, in conjunction with a determination of the type of infective organism we are dealing with.

3. AGENTS OF COUNTERACTION.

The distinction between antagonism and counteraction—that is, between opposition to the untoward action of a poison, and correction of its effects—is important in a scientific study of therapeutic tactics. But as everywhere, there are border line cases, and at times it is difficult to say whether a given drug has functioned as an antagonist or an agent of counteraction. Thus atropine, strychnine, and caffeine, which are applicable at times in lobar pneumonia in the presence of certain symptoms, might with some show of reason be included in either category. Atropine is useful to control symptoms of circulatory paralysis, especially when accompanied with pulmonary edema; strychnine is a general tonic and stimulant, not especially to the heart, but to the distressed vital powers in general, possibly through its influence upon the spinal cord, possibly through other properties not yet pharmacologically discerned, although clinically quite evident; caffeine is used as a diuretic and pressor agent and as a cardiac tonic (Fig. 4).

What is particularly meant by counteraction, however, is the attempt to overcome the ill effects of certain accidents which we have failed to prevent, especially abdominal distention and dilatation of the right heart with consequent pulmonary edema.

In the latter instance, the best measure is blood-letting, the quantity taken, either by wet cupping or from a vein, depending upon the necessities of the case. Pulse weakness and low blood pressure are not contraindications to bloodletting, but rather emphasize its necessity under the conditions stated; that is, when the heart is dilated and there is increasing pulmonary congestion, with a tendency to edema, in the late stages of pneumonia, before the crisis.

As already stated, atropine or atropine and strychnine, or these with caffeine, may sometimes be used successfully at this point also, especially if bloodletting is impracticable. But after bleeding, it will usually be found that digitalis and camphor have regained their efficacy.

Oxygen also is useful after venesection. It is likewise useful at any time during the progress of the case when increasing cyanosis or increasing difficulty of respiration indicates extensive mechanical encroachment upon the air space in the lungs, or failure on the part of the blood to take up sufficient oxygen from the atmospheric air. Under these circumstances, increase of the partial pressure of oxygen in the alveoli has been experimentally demonstrated to increase oxygen absorption, and the symptomatic relief afforded is confirmatory

clinical evidence of the fact. When oxygen is used, it must be used generously—extravagantly. Inhalation for a few minutes at a time, with long intervals between, is useless; the gas must be given continuously, for hours together. This is a wasteful method, as to gas, but it sometimes saves life.

Dilatation of the stomach is a somewhat rare accident, and yet perhaps occurs more frequently than is recognized, since it is not always easily discriminated from general tympanites. The use of pituitrin, which was originally incorporated into the definite plan of treatment as a pressor agent, tends to reduce the frequency of tympanites, and the drug would be valuable for that reason, if for no other. Sometimes, however, tympanites occurs notwithstanding the occasional or regular administration of pituitrin, and in that case the symptom must be counteracted. Usually the best measure is the increased frequency of administration of pituitrin. As soon as the first indication of distention of the abdomen is observed, the pituitrin injections are repeated hourly for at least three hours, and thereafter the abdominal as well as the pulse conditions are taken into account as guides for its repetition.

Camphor also has some value in repressing tympanites, and seems to act better in this respect when given by the mouth. Musk is of considerable advantage; the familiar expedients of the rectal tube, or the asafetida and alum enemas are also useful.

Turpentine stupes, turpentine by the mouth, and turpentine enemas are familiar measures frequently used.

From ordinary intestinal distention, recovery is frequent, indeed is the rule; its occurrence, as already stated, being quite uncommon when pituitrin is used.

Recovery from dilatation of the stomach is exceptional, but may occur if the accident is early recognized, lavage or siphonage performed promptly, and pituitrin or pituitrin and eserine given under the skin in sufficient doses.

4. MEASURES OF ELIMINATION.

Except for the fact that it is necessary to impress upon nurses and interns the necessity for keeping up free elimination by way of the kidneys, this subject hardly calls for more than mention, and we may be very brief.

Empirically, we know that all febrile patients, and pneumonia patients in particular, do better when the urine is kept alkaline as well as free. It is therefore an essential part of the tactics of the definite treatment of pneumonia to force upon the patient large quantities of water containing an alkaline diuretic, such as sodium or potassium citrate, usually in association with sodium phosphate and sodium chloride. Sometimes sodium bicarbonate is used and citric acid in the form of lemon juice, added to produce effervescence, or a capsule containing a mixture of chloride or other salts may be given and followed with a large draught of water, after the method of Quimby. In addition to a sufficient quantity of the alkaline saline beverage or diuretic, the patient is also given as much plain water as he will take. The chief contraindications to the administration of large quantities of fluid by the mouth are tendency to distention of the stomach, re-

luctance to take sufficient liquid nourishment, and dilatation of the heart, with or without pulmonary edema. Here, too, the rule is *enough and no more*—liberality tempered with discretion. Elimination is peculiarly important in alcoholic cases. In my service, all cases of acute alcoholism are put upon large doses of solution of ammonium acetate, from one half to one fluid ounce every hour or two, and as a rule get along very well without much other interference. Alcohol is withdrawn, as a rule. Sometimes, however, it is used cautiously, for special reasons. This active, stimulant, eliminative treatment is continued in cases in which pneumonia is present.

In some cases, both of alcoholics and nonalcoholics, especially when there is profound toxemia and delirium, with insufficient urination, or in the absence of these conditions, when there is difficulty in getting the patient to drink sufficient water, saline infusion is given under the skin once or twice daily, 300 to 500 c. c. being injected at a time and rather slowly.

My friend, F. P. Henry, who introduced the use of saline infusion in the treatment of pneumonia some twenty-five years or more ago, still employs it as a routine measure in every case; conjoining with it the subcutaneous use of quinine (the chlorhydro-sulphate), but in smaller doses than I am accustomed to use. He reports excellent results from these associated measures.

I have spoken of these and other familiar and obvious measures because the treatment advocated, while special, is not specific. It incorporates many expedients, in all of which attention to detail is highly important.

Even the lowly rectum must not be neglected. As regards the fecal evacuations, it is desirable to have the bowel thoroughly emptied at least twice daily. This also tends to diminish the liability to intestinal distention. Calomel is usually given at the beginning, and magnesia or a saline laxative as needed from time to time, with a hot saline irrigation of the bowel once daily.

SPECIFIC STIMULATION. BACTERINS.

I shall not speak of bacterins in general, but merely of their use as part of the definite treatment. I have not yet brought myself to employ them early, chiefly from theoretical considerations; namely that until the organism begins to show some signs of reacting to the stimulus of the infecting bacteria by the production of antibodies, the addition of the toxic matter contained even in a small dose of killed bacteria may be simply the addition of flame to the fuel.

There is another side to the question, of course; namely, that we appeal to other tissues than those originally attacked. But clinical evidence is conflicting, and, especially in the absence of identification of the strain, caution, for the present, seems best.

In the late stages, however, that is to say, from about the fourth or fifth day onward, I have felt warranted in a certain number of cases in using a personal bacterin (the so called autogenous vaccine) for one of two purposes: 1. In the endeavor to restrict an alarming spread of lesions; or, 2, in cases in which quinine or digitalis has not mani-

fested its influence by a sufficiently great or continuous effect upon the temperature index to arouse the production—or rather to increase the production probably already under way—of antibodies.

In a few cases the result has seemed to justify the tactics; in others there has been no result ascertainable; in none has there been evidence of untoward action.

Our chief resort to specific stimulation is, however—as already illustrated by the case of Louis K.—in instances of markedly delayed resolution, after the subsidence of fever, when general intoxication has been overcome and what is virtually a local affection alone remains. Here the success has been invariable. We begin with about fifty million or 100 million killed bacteria and increase the dose by fifty million or 100 million at each subsequent injection. The repetitions are timed according to the absence, or the presence and severity, of toxic reaction, and may thus be given after three or five or seven days (Fig. 1 and Fig. 5).

Also, in cases of delayed convalescence from fever and general symptoms, or in cases exhibiting suppurative complications, personal mixed bacterins, containing all the organisms present, are used by injection or by the mouth, and sometimes appear to have a favorable influence. Of course, in cases susceptible to operation, surgical measures are not neglected.

AUXILIARY MEASURES.

Creosotal is a useful adjuvant in a minority of cases showing marked pulmonary symptoms—cough, expectoration, and the like, despite quinine and fresh air, and in which nasal applications or inhalations are not feasible, or fail to give relief. It is valuable also in cases, probably of mixed infection, which tend to show an intermittent type of temperature, and in patients who have, or have had tuberculosis, or in whom the possibility of a tuberculous pneumonia is suspected. When quinine is inapplicable because of idiosyncrasy on the part of the patient, creosotal may be used as a main agent. It is usually given in pretty full doses (twenty to thirty minims) at intervals of two or three hours. Expectorant medication is seldom needed; opiates almost never.

A word may be said regarding colloidal iodine, which has been urged as a definite remedy. It has been employed by me as an adjuvant to quinine, after the withdrawal of the latter, in eight cases, all of them severe, all attended with spreading lesions, and all of them showing undue prolongation of fever. Three of these patients died and five recovered. Six were expected to die.

Upon this limited experience, I am not prepared to formulate an opinion concerning the value of the drug. It did no harm, and I think it was of service in the conditions stated. For the purpose of determining its real value, if possible, I shall continue to use it in selected cases, partly as a possible bactericide or antitoxic, partly for restraining influence upon morbid tissue change.

Colloidal silver has proved helpful in about the same class of cases, and had I not found a superior agent in quinine, I might have developed a systematic method for its use. It is a good and proved

auxiliary. Iodine may prove equal, better, or not so good.

I have already spoken of the use of antiseptic, preferably oily, sprays in the nose. These, followed by applications with cotton pledget of hydrogen dioxide, and then of a twenty-five per cent. solution of argyrol, or a solution of iodine (three grains), potassium iodide (five grains), and phenol (three grains) in glycerin (one ounce) always increase comfort, and sometimes appear to diminish the persistence of infection. For continuous inhalation by the Yeo respirator, I prefer ethyl iodide or a mixture of equal parts of creosote, ethyl iodide, chloroform, and eucalyptol. This is especially useful to restrain cough that interferes with sleep. Ten or twenty drops of the medicament are placed on the sponge of the instrument, and renewed as necessary, once or twice daily. The mask is worn for several hours, or all day (or night).

A word must be said as to convalescence. Adopting a hint of Galbraith's, I now employ iron regularly, after quinine is withdrawn—either as the tincture of ferric chloride or in Basham's mixture, and in rather full doses. A small dose of strychnine may be added, when necessary.

My readers have gone over patiently a somewhat lengthy paper, traversing in part, familiar ground. It has been necessary, however, to show wherein the tactics of the definite treatment coincides with ordinary tactics, in order to emphasize the differences and to bring out the underlying strategic reasons. It is not any agent or combination of agents that I advocate so much as using a method; a method combining at times many measures, at others fulfilled by very few, or even by one. But it is always systematic, definite, coordinate; and to me at least it has given better results than I have been able to obtain by any other plan of management. I formerly taught and practised armed expectancy; and in many of the milder cases the tactics adopted after the initial dose of quinine are virtually the tactics of that method; but for the great mass of cases the full definite plan seems better. I commend it to earnest consideration.

EXTERNAL DISLOCATION OF THE KNEE.

A Report of a Case,

By ROYALE H. FOWLER, M. D.,

New York,

Associate Surgeon, Greenpoint Hospital.

CASE. W. H., aged forty-seven years, widower, laborer, was admitted to the Greenpoint Hospital, October 12, 1915, complaining of disability of left lower extremity. Just before admission the patient fell a distance of about twelve feet from a fire escape. He was unable to rise and was brought to the hospital in an ambulance. Examination showed a lacerated wound of scalp. The patient lay in bed with the knee flexed and the foot everted. There was abduction of the thigh, external rotation of the hip. The knee joint was fixed. The inner condyle of the femur was unduly prominent. The patella was dislocated and lay over the inner condyle. The internal tuberosity of the tibia occupied a position between the condyles of the femur. The external tuberosity of the tibia was unduly prominent and protruded two fingers' breadth beyond the external condyle.

Reduction was easily accomplished under ether anesthesia, by traction, and the limb encased in plaster. Cast removed after four weeks. There was marked lateral motion at the joint at this time. Radiograph showed no fracture and complete satisfactory reduction. A lighter cast was then applied and the patient discharged December 5th. He was instructed to report in two weeks, but he failed to do so and repeated letters of inquiry brought forth no response.

This is a case similar in many respects to one previously reported by the writer (*Journal A. M. A.*, December 30, 1911). Except for the comminution of the head of the tibia and the position of the patella, the photograph of this case (Fig. 1) fulfills the bony conditions found in the foregoing case report.

Dislocation at the tibiofemoral joint constitutes about one per cent. of all dislocations. Reports of not more than 250 cases can be collected from the literature. Three cases only have been observed in twenty-seven years in the large traumatic service of Ranzhoff at the Cincinnati General Hospital. In order of frequency it occurs backward, forward, outward, and inward. External dislocation occurs in five per cent. of these displacements. It is rare in childhood and very rare in its complete form. When it is complete, it is compound.

In the case reported elsewhere by the writer the patient was pulled from a wagon a distance of a yard or more, landing upon the feet. A case is said to have occurred as the result of carrying a heavy weight upon the shoulders, when the patient suddenly "doubled up" and fell to the ground. A case is reported in which a robust young man received this injury after springing to the sidewalk from an overturning wagon. The common cause is violence by outward flexion of the knee and abduction. A rare cause may be direct violence, acting transversely upon the lower end of the femur or upper end of the tibia (Annandale). The mode of production seems to be rupture of the internal, external, and probably the crucial ligaments by abduction of the leg, followed by a lateral gliding of the articular surfaces.

Pathology. In the writer's case (previously reported), which permitted post mortem examination of the joint after reduction, the limb showed no circulatory disturbance (ten days after, death from lobar pneumonia). There was an effusion of blood in the joint and a comminuted fracture of the head of the tibia. The external, lateral, and anterior ligaments were completely ruptured; the internal was partly torn. The anterior crucial ligaments were torn, the posterior was intact. The popliteal vessels and nerves were not injured. Satisfactory examinations of the injured joint have been made in but few instances. Malgaigne quotes the records of Hargrave and Bonn. Hargrave's patient died on the fifty-third day. Suppuration was present. The internal lateral ligament was completely ruptured, the external partly torn, the anterior crucial ligaments torn across the posterior crucial ligaments, and the ligament of the patella was intact. In Bonn's case of old unreduced dislocation, all the ligaments were said to be intact. The external condyle of the femur rested upon the crest of the tibia. The displacement may be somewhat backward or forward, in addition to being outward. The leg

may be flexed or extended. The patella may be dislocated outward, placed obliquely or almost transversely. Wells reports a case in which a large scale of bone was torn from the inner aspect of the internal condyle. The patient died on the fourth day, from gangrene. When compound, the wound has always been on the inside. In one case reported by Notta,

which was compound, the popliteal artery was ruptured and the patient died after amputation. In the incomplete form only a part of the head of the tibia, usually the outer half, projects beyond the side of the external condyle of the femur.

Prognosis. Because of the size of the joint this injury is of exceptional gravity; the popliteal vessels may be injured. Even after a simple dislocation which has been satisfactorily reduced, there is ordinarily some limitation of motion. The prognosis is very grave in open cases and in those in which the artery is injured. Gangrene may delay its appearance until the second or third week, and in simple cases which have done well for a week or two, suppuration has ultimately occurred. Prognosis should always be guarded. A permanent abduction

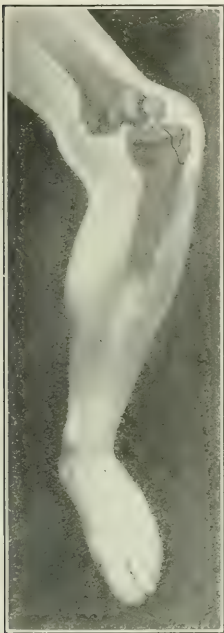


FIG. Case of external dislocation of the knee.

of 45° has been observed six years after the accident by Desormeaux, presumably on account of the failure of repair of the internal lateral ligament. Morgan reports a case in which the dislocation had remained unreduced for three and a half years. The limb could be flexed to a right angle, but could not be extended voluntarily, so that the patient fell when he stood upon the foot whenever the leg became at all bent. Ranzohoff reports a recent case of anterior and external dislocation, in which the circulation of the leg was at first disturbed, but which cleared up following reduction and showed restored function in six weeks. (Proceedings of the Western Surgical Association, *Journal A. M. A.*, January 15, 1916, p. 217).

TREATMENT.

Most cases of a simple nature have been usually reduced easily by traction and suitable pressure. Immobilization may be necessary for three or four months. Massage and passive motion should be instituted at the earliest possible moment and systematically carried out. In certain cases arthrotomy must be performed. Braun had such a case which had proved irreducible in a man of forty-four years.

The leg was rotated inward and abducted to an angle of 45° . The internal condyle of the femur was prominent and a small movable piece of bone could be felt below its inner side. Upon incision the piece of detached bone proved to be the internal tuberosity. A rent in the capsule was found through which the internal condyle protruded. The opening was slightly enlarged and reduction was easily effected.

280 JEFFERSON AVENUE, BROOKLYN.

EPIDEMIC PNEUMONIA IN THE TROPICS.

By J. HOBART EGBERT, M. D.,

New York.

To many, pneumonia is associated with low temperatures, with ice and snow, and with high latitudes. That the disease is not infrequent in equatorial regions, may never have occurred to the practitioner in the north. Yet pneumonia is not limited to any particular climate, latitude, or altitude. It is of almost, if not quite as frequent occurrence, in proportion to the number of inhabitants, in our own southern States as it is in New England. The writer has personally observed and studied it from the equator to the arctic circle; has seen it of more frequent occurrence, and relatively more fatal, in tropical America than in Alaska; while his only personal contact with the disease in well developed epidemic form has been within the tropics.

In the spring of 1913, while the writer was serving as superintendent of the medical department of a large fruit company, at Santa Marta, Republic of Colombia, South America, pneumonia occurred, in virulent, epidemic form, among the Colombian soldiers in the Santa Marta barracks. It appeared about the middle of March and at the end of that month had occasioned the death of nine soldiers. Seven more died in April, two in May, and one in June. Several cases proved rapidly fatal from mixed infection, with lung suppuration; in others the pneumococcus invaded the meninges, inducing pneumococcal meningitis, and was found in the cerebrospinal fluid. In a number of cases the pneumococcus was demonstrated in the general circulation. Post mortem examination in two rapidly fatal cases revealed extensive pyothorax. The mortality was high, death occurring in 57.9 per cent. of all the soldiers stricken with the disease between March 11th and April 24th. Nearly all the cases that ended in recovery had a somewhat classic course, terminating, as a rule, through crisis, with but few important sequelae.

Santa Marta is a seaport on the northwestern coast of the Republic of Colombia, in latitude $11^\circ 15' N.$ and longitude $74^\circ 14' W.$, or, in other words, is 675 miles north of the equator and due south of the city of New York. The town is low lying and is situated upon the seaward portion of a circumscribed plain, surrounded, except to seaward, by the foothills of the Sierra Nevada, or Snowclad Mountains—one of the most northern reaches of the Andes range. It has a population of about 8,000, and a dry, even tropical climate. During the year

1913, the maximum temperature recorded by a standardized thermometer kept in the shaded portico of the office of the superintendent of the medical department, was 92° F., and the minimum, 79° F.—a variation of only 13° F. throughout the year. The maximum temperature was closely approximated shortly after midday during many months, and the lowest temperature recorded during the month of November. The street levels of the town are only about thirty inches above mean high water. The soil is very sandy. The tidal variations in the bay are small, averaging only about thirteen inches, except during the months of October and November, when twenty-four inch tides occur. During the latter month, a storm, making in from the sea, occasionally drives the waters of the bay over the *playa* and into the streets of the town, and marks the close of the tropical *invierno*. The familiar breezes of Santa Marta are, however, the trade winds, known locally as *las brisas*, which, during the afternoons and evenings of the six months from December to May, blow fresh from north northeast. During the remaining six months of the year the winds are variable, both in force and direction, light airs and calms prevailing. The annual rainfall in the town of Santa Marta is usually very small, though years during which considerable rain fell are reported.

As soon as it became known to the writer that cases of serious illness existed among the soldiers in the local barracks, personal investigation was made at once. It was soon reported that pneumonic plague had broken out at Santa Marta, and extensive quarantine was threatened. Even the U. S. Public Health Service accepted—and published—a report to the State Department that plague was actually epidemic at Santa Marta. Perhaps the most sensible view of the situation was that taken by the health officer of the port of New York, who cabled the U. S. Consular Agent at Santa Marta as follows: "Has the existence of plague at Santa Marta been confirmed bacteriologically?" A negative answer was promptly returned. In due time the nonexistence of plague was demonstrated by the negative results of inoculations practised upon both guinea pigs and rats.

In the early period of the epidemic, two cases occurred among the soldiers which tended materially to complicate the situation, in that, while both were serious and important cases, neither presented characteristic signs of pneumonia, but in both the general symptoms corresponded closely to those observed in the first stage of yellow fever. In addition to this, one patient was found to have an enlarged inguinal gland. The histories of these two cases were, briefly, as follows:

CASE I. Private J. de D. P., admitted to hospital March 23d, at which time condition was: Temperature, 40° C.; pulse, 120; respiration labored and accelerated; epistaxis; hemorrhagic patches on lips and gums; conjunctivæ congested; vomiting of bile; constipation; abundance of albumin in urine. Examination of chest negative. General condition extremely bad. This patient was given Sternberg's yellow fever treatment; remained in a typhoid state, with temperature fluctuating between 38° and 39° C. for twelve days, when temperature dropped to normal, and a slow tedious convalescence began. An enlarged inguinal gland, about the size of a small pecan nut, firm, painless,

and uninflamed, was found. Being pronounced suspicious of bubonic infection, this gland was carefully enucleated and, in the laboratory, found by the writer to be sterile.

CASE II. Private A. M. General symptoms identical with those of preceding case. Prognosis decidedly unfavorable. No manifest pulmonary involvement upon admission. After being in the hospital one week, bronchopneumonia developed, followed, in a few days, by symptoms of meningitis—characteristic coma, rhythmic spasm of the muscles of the face, Kernig's sign—and subsequent death. At autopsy, in addition to the meningeal involvement, pus was found in the thorax, the kidneys were greatly enlarged, and the spleen was moderately so.

One case of evident infection occurring in the hospital may be cited, that of a private—a practically pure Goajira Indian—who had been detailed as attendant to the hospitalized soldiers. After serving in this capacity, and in close contact with the sick, for about one month, he suddenly presented symptoms similar to those in the two patients just noted, and rapidly succumbed to pneumococcic meningitis.

Cooperating with Dr. Manuel A. Valencia, the medical officer of the troops, and with General Antonio Gómez, the commandant, prompt hospitalization and segregation of the sick was secured; the troops were temporarily removed from the town; and the barracks fumigated, cleaned, and disinfected.

During the month of April, 1913, six cases of uncomplicated lobar pneumonia, four of which were double pneumonias, occurred among civilians in different parts of the town of Santa Marta, all of which terminated favorably. During the same month, seven cases of pneumonia, three of which proved fatal, occurred among plantation laborers at a settlement about thirty miles inland from Santa Marta. The camps where these cases occurred were found to be in bad condition and unsanitary, and were promptly cleaned and improved.

The cause of the outbreak among the soldiers was at least partly due to overcrowding and to improper accommodations in the local barracks. There were at that time 380 soldiers and about twenty officers quartered in a building that could not well afford proper accommodations for more than half that number. Many of the soldiers were raw recruits from the interior, and although the routine drills, etc., were, especially in view of the warmer climate on the coast, somewhat strenuous for these, all were well fed and under good, wholesome discipline. Local meteorological conditions also apparently favored the spread and virulence of the infection. The season was dry, and there had been no rain for some months. The trade winds blew fresh, and the surface currents were freighted with the polluted dust and sand of the town.

Two years previously, and at about the same time of the year, a similar epidemic occurred at the neighboring coast settlement of Gaira—a village of but a few hundred inhabitants—occasioning, according to report, twenty-eight deaths. During the months of April and May, 1911, a number of cases of pneumonia were reported from Barranquilla, and from various coastal towns between that city and Santa Marta.

AN APPARATUS FOR INTRAVENOUS SALVARSAN INJECTION.*

BY LOUIS RENÉ KAUFMAN, M. D., F. A. C. S.,
New York,

Assisting Attending Surgeon, Flower Hospital; Professor of Surgery, New York Medical College and Hospital for Women.

(From the Department of Surgery, Flower Hospital.)

The intravenous administration of salvarsan is almost universally performed by the introduction of a needle directly into a vein; after a gush of blood from its lumen the needle is connected by a metal tip with a rubber tube leading to a glass salvarsan container. Only in exceptional circumstances we may inject through anatomical dissection of the vein by a cannula; in this method each treatment becomes more and more difficult, as veins previously accessible to dissection become obliterated, scars remain, and the procedure is cumbersome to both patient and operator. On the other hand, there is no difficulty in the direct needle puncture of a vein in patients whose veins are readily distended by suitable pressure above the elbow.

In patients, however, with poor venous circulation, whose arms are fat and in whose whole extremity the vein may not appear in any way except as a soft cord to the finger not actually visible to the eye, there is great difficulty in finding a vein to stab, and when it is found, very great difficulty in keeping the needle

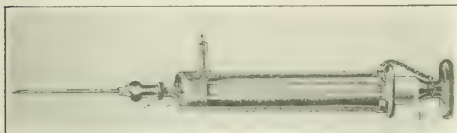


FIG. 1.—Syringe and needle; arrows indicate flow of blood as needle enters vein, and of solution as plunger is withdrawn; chain prevents forcible expulsion of plunger by pressure of solution.

in it. It has become the custom to administer neosalvarsan in concentrated solution ten to twenty c. c. directly by a syringe, while salvarsan is regularly administered in such dilution (100 to 200 c. c.) as to make this procedure impracticable. The ease of its administration, with its ease of preparation, has undoubtedly been no small factor in the popularity of neosalvarsan over the older preparation. But with the present war shutting off our supply of the German products, we shall have to rely on the American arsenobenzol compound, and in all events salvarsan will always remain a necessity in the treatment of syphilis.

In estimating the functional activity of the kidney by the phenolsulphonaphthalein test in a number of cases of syphilis, I was impressed by the ease with which I was able to give an intravenous administration by an ordinary 1.5 c. c. Luer syringe to patients in whose subsequent salvarsan treatments I had difficulty either in penetrating the vein by the usual salvarsan needle or in maintaining the needle in the vein during the course of the injection. The apparatus herewith presented suggested itself.

It is essentially an ordinary Luer syringe, on which at right angles is connected a short glass spout one quarter inch from the middle neck of the

syringe. A small size soft rubber tube, eighteen inches long, is connected to this spout, terminating at the other end in a glass connecting tube which joins the rubber tube leading to the glass salvarsan cylinder; the cylinder is suspended so that the whole apparatus is essentially a gravity flow. An ordinary slip-on large hypodermic needle is attached to the syringe; its bore may be adapted to the vein; I prefer a needle five eighths of an inch long.

The method of use is evident from the illustrations. In beginning an injection the salvarsan cylinder is first filled with sterile distilled water; by pulling up the plunger of the syringe the solution flows

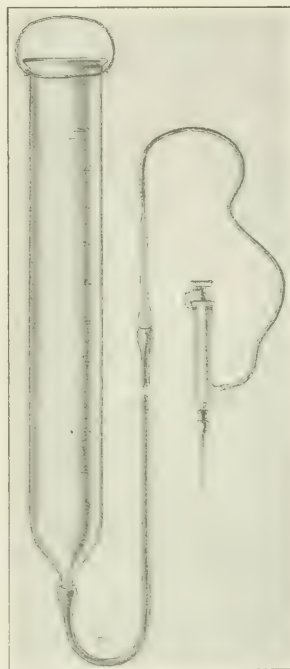


FIG. 2.—Apparatus assembled, ready for use.

through the syringe and expels air in the whole circuit; after which the flow is stopped by pressing the plunger home; for subsequent injections one need not repeat this. The needle is attached, and the manipulation is that of an ordinary Luer hypodermic syringe. It is important to use a soft small rubber tube in connecting the syringe to the salvarsan cylinder to avoid any unwieldy "pull" from the tubing. When the plunger is pulled out gently, blood fills the part of the syringe in front of the glass tube at the side of the syringe if the vein is properly entered; as soon as blood appears, filling the syringe, the plunger is pulled out further and at once the salvarsan enters by the side tube by gravity, driving the blood back into the vein, so that in a moment the syringe becomes filled with salvarsan solution. The injection may be stopped by forcing the plunger back, thus shutting off the side inlet; to prevent any

*Presented before the Academy of Pathological Sciences, February 25, 1916.

salvarsan solution remaining in the needle as it is withdrawn from the vein, the plunger may again be pulled very slowly till blood appears again in the barrel of the syringe. There is no danger of air entering the vein, for practical use shows that one always has a closed circuit.

Beside ease in technic certain advantages are derived from this apparatus:

1. The operator has perfect control of the flow of salvarsan, which is plainly in sight.

2. There is no soiling whatever of the field by blood, usually highly infectious in salvarsan cases, or by solution.

3. Asepsis is assured, for the needle need not be handled after sterilization; it is manipulated and controlled by the syringe.

4. Avoidance of clot formation in the needle, for as soon as the vein is penetrated the salvarsan flows in almost automatically.

5. While the technic is the same as for any intravenous hypodermic or syringe administration, salvarsan is administered by gravity flow; the syringe is nothing more than a handle for the needle and a cutoff for the flow of the solution.

156 WEST EIGHTIETH STREET.

Our Prize Discussions.

Questions for discussion in this department are announced at frequent intervals. So far as they have been decided upon, the further questions are as follows:

CLXX.—How do you prevent laceration of the perineum in childbirth? (Closed.)

CLXXI.—How do you treat a sprained ankle? (Answers due not later than June 15th.)

CLXXII.—What are your methods of resuscitation and aftercare of persons apparently drowned? (Answers due not later than July 15th.)

Whoever answers one of these questions in the manner most satisfactory to the editors will receive a prize of \$25. No importance whatever will be attached to literary style, but the award will be based solely on the value of the substance of the answer. It is requested (but not required) that the answers be short, if practicable no answer to contain more than six hundred words, typewritten when possible; and our friends are urged to write on one side of the paper only.

All persons will be entitled to compete for the prize whether subscribers or not. This prize will not be awarded to any one person more than once within one year. Every answer must be accompanied by the writer's full name and address, both of which we must be at liberty to publish. All papers contributed become the property of the JOURNAL. OUR READERS ARE ASKED TO SUGGEST TOPICS FOR DISCUSSION.

The Prize of \$25 for the best paper submitted in answer to Question CLXIX has been awarded to Dr. Herman Louis Fuerstman, of Newark, N. J., whose article appears below.

PRIZE QUESTION CLXIX.

HOW TO PROCEED IN POST PARTUM HEMORRHAGE.

(Included from page 1084.)

Dr. Gilbert Parker, M. B., of Toronto, observes:

After the child is born, a hand is placed over the fundus and determines its condition. If it contracts well and the slight flow usually present ceases, occasional massage will in most cases keep it in this state. If bleeding continues and the uterus is firm, we naturally look to the vagina and perineum, which

if torn can be readily repaired. Severe hemorrhage from a cervical tear is rare.

Before extrusion of the placenta profuse hemorrhage may suddenly occur, or a moderate flow may begin and continue. In either case the uterus is grasped and firmly kneaded, when the bleeding may cease. If not, expression of the placenta is indicated, and, if possible, get a good contraction before using force, so as to minimize the danger of inversion. When strong regular contractions do not follow this maneuver, and the afterbirth has been expelled completely, the uterus is pressed firmly into the pelvis, against the pubic bone, and one c. c. of pituitary extract given hypodermically. The latter usually acts in a couple of minutes, but if not then one c. c. of aseptic ergot should be given intramuscularly. There is no objection to using both.

When part or all of the placenta has been retained in the presence of hemorrhage, it should be removed manually, and the operating hand, if possible, covered with a sterile glove. Rubbing the uterus at this time between the internal and external hands usually causes a firm contraction. Compression of the bleeding organ between one clenched hand pushed into the anterior vaginal fornix and the other over the fundus may be practised.

At any time, if one hand is free, or if sufficient assistance is at hand, the abdominal aorta may be compressed. This can readily be done by pushing it against the spine, using the ends of the thumb and forefinger on either side of the vessel. This is a good procedure.

At any time, when abnormal bleeding occurs, the foot of the bed should be elevated, the nearer to the assumption of the Trendelenburg position the better. This certainly helps the patient and possibly has a direct effect on the bleeding part.

When compression of the uterus is of no avail, or only so long as practised, an intrauterine douche, at 120° F., or uncomfortably hot for the skin, should be given, and a couple of quarts used. This measure usually suffices. If not, the only thing to do is to pack, using sterile material if possible, and filling the vagina also. An abdominal binder applied firmly over a thick pad should be of use after this.

When called to a patient after completion of labor and she is found ensanguinated, the fundus may be high up and the uterus baggy and full of clot. Expression of the clots, administration of ergot intramuscularly, massage of the uterus, catheterization, if necessary, and a pint of saline per rectum, are the measures successful in most cases.

Post partum hemorrhage in a bleeder might be completely relieved by the use of normal horse serum.

Treatment of the patient goes hand in hand with that of the hemorrhage. Raising the foot of the bed has been mentioned. Heat should be applied to limbs and body where indicated, and plenty of fresh air in the room is beneficial. In very severe cases, where it is necessary to enter the uterus, ether should be given, if possible, to lessen the shock.

Moderate degrees of blood loss are well treated by warm rectal saline, given a pint at a time, rather quickly, and repeated as absorption indicates. This measure can be easily used anywhere, and its effect is rapid and gratifying in many instances. Where the need is urgent and apparatus available, hypo-

dermoclysis to the extent of 500 c. c. under each breast and toward the axilla should be practised. Saline by the intravenous route can be quickly given in hospitals, and is at times life saving. Morphine hypodermically, at the discretion of the attendant, aids recovery from shock.

Dr. Jesse D. Friedman, of New Kensington, Pa., observes:

Hemorrhage from any portion of the parturient canal after delivery of the child, either from the placental site, cervix, vagina, or perineum, constitutes post partum hemorrhage. Our treatment therefore depends upon the site of the bleeding.

It will not be out of place to mention our efforts to prevent this condition. The general health of the pregnant woman should be toned up and the musculature of the uterus strengthened by tonics, fresh air, nourishing food, and moderate exercise. Bleeders should be treated before labor. Strict observance of the proper management of the second and third stage of labor should be followed; the fundus of the uterus should be held after the birth of the child till the placenta is expressed and then the uterus should be watched. Examine carefully the expelled placenta and membranes. Ergot after the third stage adds to the safety of the woman. Place the child to the breast within three hours to excite reflexly uterine contractions.

Post partum hemorrhage being present, what is our procedure? First ascertain the site of the bleeding.

If from a lacerated vessel in the vagina or perineum, all that is necessary is the proper application of a ligature on a needle or its inclusion when repairing the lacerated pelvic floor.

Examine the cervix with a speculum to see whether the bleeding arises from a torn cervical vessel. If so, here again the application of a ligature on a curved needle to constrict the vessel will usually stop the hemorrhage. Or the application of a tampon against the cervix, plain or saturated with adrenaline one in 1,000, will often check the bleeding. However if hemorrhage does not occur within ten to fifteen minutes of the birth of the child, it is not usually due to cervical or vaginal tear.

Having eliminated the cervix and vagina as the source of the hemorrhage, we are then certain the bleeding is uterine in origin. To check this hemorrhage, I have found most efficacious, the grasping of the uterus as in doing a Cr  de, pressing down and back and at the same time producing a slight ante flexion of the body of the uterus. This method will expel clots, membranes, or pieces of placenta, bring pressure to bear on the aorta, and at the same time constrict the uterine vessels by the ante flexion. I administer or have administered ergot subcutaneously and also a douche of hot water, plain or with one per cent. acetic acid, vaginal or intrauterine, as the indications call for. In most cases this will stop the hemorrhage. If not, the uterus is tightly packed with gauze, to be removed in six hours.

If the hemorrhage has been severe and anemia or shock is present, the foot of the bed is raised, the limbs are bandaged, saline is given either per rectum or underneath the breasts, and opium if restlessness is present. Stimulants are to be given with caution, as they may increase the bleeding. The after-

treatment is that of any posthemorrhagic condition, namely, the treatment of the anemia by iron, strychnine, good nourishing food, and fresh air.

Dr. Leo Fiske, of Brooklyn, states:

When a hemorrhage follows the immediate delivery of the child, the uterus should be firmly grasped and vigorously massaged and at the same time the genitals examined, to determine the presence of any tear which may be a factor of the hemorrhage. Do not forget that when a uterus contracts, the hemorrhage usually ceases, and if it does not stop when the uterus is contracted, it indicates a laceration.

If the hemorrhage persists, remove the placenta whether or not a tear has been found. Massage the uterus vigorously at the acme of contraction and perform a Cr  de expression. The next step is a manual delivery of the placenta under absolutely aseptic conditions.

Treatment after the expulsion of the placenta includes: 1. Vigorous massage of the uterus; start with slow and even movements, and if there is no immediate response, the movements should be more vigorous. Massage the entire organ. For atony of the uterus, use an injection of one c. c. of pituitrin. 2. Sometimes by lifting the entire uterus out of the pelvis, the hemorrhage will be checked. This is done by external manipulation, using both hands. 3. Ergot, one dram by mouth; or a hypodermic injection of twenty minims of ergotole, repeated in a short while if necessary. 4. Hot uterine douches; the best is a one to two per cent. solution of acetic acid, using from one to two quarts at a temperature of 118   F. If this does not arrest the hemorrhage, stop the douche. Exclude all air bubbles. The bag should be held about four feet above the level of the bed. 5. Compress the aorta against the spine. 6. Compress the uterus between the two hands. The cervix is grasped by the entire hand in the vagina and is folded together, while the external hand forces the uterus down firmly against the pubis and the internal hand, thus producing a marked ante flexion of the uterus. 7. The next step is the uterovaginal pack. It is always best to moisten the pack or make it wet and rinse it out thoroughly, because in this way more gauze may be poked into the uterus, as the gauze will absorb less blood than a dry pack and therefore causes less shrinking of the pack and a better filling up of the uterus with the wet pack. Remove in twenty-four hours.

If the bleeding is due to lacerations, the first thing is to expel the placenta and get a firmly contracted as well as a retracted uterus. Two things may be done; suture the lacerations or insert a uterovaginal pack; the suture is best. In suturing, begin at the highest point of the tear and get perfect coaptation of the torn muscles and perineum and work downward. Leave sutures in place for at least ten days, if there is no fever from infection.

If there is a fear of sepsis, use the pack, but be careful not to increase the tear by manipulation.

If the hemorrhage is due to retained secundines or subinvolution, the bleeding will come late in the puerperium. Here we use ergot, hydrastis, uterine massage, ice bag, hot vaginal douches. If the hemorrhage persists a uterovaginal pack may be

used. For the removal of the secundines, it is best to wait about six weeks and then the placental forceps and finger are used.

For a retroverted uterus the knee chest position is used three times a day for about five or ten minutes at a time; later, a well fitting pessary may be used, provided that there are no lacerations of perineum or inflammatory pelvic conditions.

For shock and anemia, a hypodermic injection of morphine sulphate grain one quarter and of atropine sulphate grain one one hundredth may be given. Put patient in a warm bed in the Trendelenburg position, give hypodermoclysis of about thirty-two ounces of normal saline solution. Also give a Murphy drip, two hours on, one hour off. Administer a little of the aromatic spirits of ammonia for the faintness. Keep the patient absolutely quiet in bed. A little hot coffee is good, or even hot water.

Light, nourishing diet may be given the first week. As a tonic, try iron, quinine, and strychnine.

Dr. Robert E. Coughlin, of Brooklyn, New York, writes:

I give no consideration to anything except the prompt and effectual control of the hemorrhage. To accomplish this I proceed at once to determine if the uterus is in a state of contraction by grasping the fundus in my left hand. If it is relaxed, I decide that this is the cause of the bleeding and proceed to encourage contraction by massage of the uterus, grasping it as I would in using the Cr  d   method of extracting the placenta. While using the massage, I bear down as firmly as possible on the aorta.

If the contraction of the uterus is good and the placenta has not been expelled entire or only in part, I have no hesitation in passing my aseptic gloved hand up into the uterus above the implantation of the placenta. My next man  uvre is to peel the placental tissue away from the uterine wall in a downward direction until all has been detached. It is my experience that no matter how severe the bleeding may have been, the hemorrhage will stop promptly as soon as I have completed this procedure. As a matter of fact I have had such a case in my hospital service within the last twenty-four hours.

If the uterus is contracted and I am positive that the placenta has come away entire, immediately I place my aseptic gloved hand (right) into the vagina and proceed to grasp the cervix. Holding and pinching the cervix, at the same time crowding it against the pubic bones, will compress the bleeding points sufficiently to control the hemorrhage as a rule. When this is unsuccessful (which is seldom the case), I tie off the bleeding points and in any case pack the cervix and vagina firmly with aseptic pieces of gauze. In twenty-four hours' time this gauze I remove and as a rule no other packing is necessary.

In any of the foregoing contingencies I order hypodermoclysis followed later by the Murphy drip. Fluid extract of ergot in fifteen minim doses every four hours, I believe, favors contraction when continued for about twenty-four hours. This is for continued contraction after the manual means resorted to have brought about control of the bleed-

ing. At the time of the bleeding I give hypodermically one ampoule of the extract of the pituitary body. I believe, however, that all drugs are secondary in importance to the manual means outlined.

In my hands these procedures have been eminently successful, and no obstetrician need fear postpartum hemorrhage if he proceeds promptly and unhesitatingly along the lines I have indicated.

[Excellent essays were received also from Dr. C. C. Henin, of Springfield, Mass., Dr. J. Otis Carrington, of Malden, Mass., Dr. George Wood, of Indianapolis, and others. We regret not having the space to spare for the publication of these papers, but all the therapeutic information they contain is embodied in the contributions already published.—Eds.]

Contemporary Notes.

The Treatment of Alcoholics and Drug Addicts, in the Province of Ontario.—This has long been a serious problem, according to the *Dominion Medical Monthly* for May, 1916. By new legislation arrangements are to be made whereby these people may enter the hospitals for the insane. Provisions are to be such that physicians and guardians may make application for confinement and treatment of their patients and wards; and patients may voluntarily seek admission when they are in a condition fully to understand the obligations and bargain they are undertaking and making. While to some the arrangements to admit such people into the hospitals for the insane may not appear ideal, there can be no doubt of the fact that a half loaf is better than no bread. Possibly there may arrive a time when separate institutions may be provided. In the meantime the hospitals for the insane have about lost that unwarranted stigma which too long attached to them as asylums for "lunatics," and have appeared in right and proper light as hospitals for people of unsound mind. In that respect they are parallel with all general hospitals; for a person with a brain sickness is no more blameworthy than a person with diabetes or a broken leg.

Operating Room Illumination.—According to the *Journal of the Indiana State Medical Association* for May 15th, the tendency to have an operating room lighted on two or more sides in addition to having a skylight, may prove objectionable if there is considerable sunlight or considerable reflection. The softest light is that from a northern exposure, and when it comes to artificial illumination, the powerful light from numerous high power tungsten lamps is quite sufficient to tire even the strongest eyes. Theoretically, it is far better to have less light and have it properly directed and subdued than to be annoyed by the discomforts from undue brilliancy. In fact, all of our ideas concerning illumination are undergoing a change and our efforts to secure uniform and sufficient illumination in our offices and residences by using indirect illumination are beginning to be used in operating rooms, and with no little success. Brilliancy of illumination does not mean possibilities for better work, and it does mean discomfort for the operator.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

A RATIONAL PLAN OF FEEDING IN GASTRIC ULCER.

BY EDWARD E. CORNWALL, M. D.,
New York,

Attending Physician, Williamsburgh and Norwegian Hospitals; Consulting Physician, Bethany Deaconess Hospital.

In a paper published in the *NEW YORK MEDICAL JOURNAL* for April 19, 1913, the writer described a plan of feeding in gastric ulcer which experience and study up to that time had led him to adopt. Study and experience since then have suggested some improvements, which are described in the present paper.

The special dietetic indications in gastric ulcer have to do with keeping the stomach (and ulcer) as quiet as possible, exciting as little as possible the secretion of acid gastric juice, avoiding articles of food which directly introduce substances irritating to the ulcer or which indirectly bring about the production of such substances, and excluding from the diet as much as possible culture media favorable for the multiplication of the pathogenic bacteria responsible for the ulcer and other injurious bacteria.

The most effective way to keep the stomach quiet is to keep it empty, which may be done by starvation or rectal feeding. The stomach can be kept approximately quiet, however, by giving small meals at short intervals, so that it is at no time distended; and by making these meals of such a character that they will not remain long in the stomach or markedly stimulate gastric peristalsis.

To keep down the secretion of gastric juice it is necessary to exclude from the diet articles which are known particularly to excite it, among which flesh and meat extractives are the most important.

To prevent direct irritation of the ulcer, spices, strong acids, and alcohol should be excluded from the diet; also cane sugar, which in strong solution irritates, and is especially prone to ferment in the stomach; and anything which intrinsically or by reason of its slowness of digestion facilitates the production of irritants.

The culture media favorable for the multiplication of the pathogenic and other injurious bacteria which most call for exclusion are flesh and broths and eggs.

For convenience of dietetic management, cases of gastric ulcer can be divided into two groups, the severe and the mild. The former show serious and continuous, or nearly continuous, or long continued symptoms, or have recently been complicated by hemorrhage; and the latter show less distressing symptoms and periods of freedom from symptoms. The plan of dietetic treatment here outlined is intended for the first group of cases, although it is effective in the second, and can easily be modified to suit that group. Rest in bed in the horizontal position for a period of at least four weeks is regularly insisted on while the treatment is being carried out.

The treatment usually begins with a course of rectal feeding.

In view of the lack of evidence of capacity on the part of the lower bowel to digest protein, carbohydrate, or fat, it is necessary, in devising prescriptions for rectal feeding, to provide for the complete predigestion of those food elements. Fat may be disregarded during the comparatively short periods for which nutritive enemas are usually required, but protein must be in the form of aminoacids and carbohydrate in the form of dextrose, or, in part, perhaps, levulose. The other food substances, viz., salts, vitamins, and water, present no difficulties, as they can be absorbed from the lower bowel in the forms in which they appear in nature.

For securing the aminoacids required protein of milk can be employed, inasmuch as it readily splits up into all the different aminoacids needed by the body. Furthermore, milk is free from certain objectionable qualities found in many protein-containing articles, particularly purins, and susceptibility to putrefaction in the alimentary tract. It also has the added advantage of being rich in the food salts; and its carbohydrate, although not in an assimilable form, is in a form particularly susceptible to lactic acid fermentation, which may be an advantage; and its fat can be omitted from consideration.

In preparing milk for use in rectal feeding, it should be skimmed, thoroughly peptonized, and then pancreatized with addition of intestinal extract.

Carbohydrate can be given conveniently in the form of pure dextrose, which is a commercial product.

Carbohydrate in the form of levulose can be given in strained orange juice, which also supplies salts and vitamins.

Sodium chloride can be given in solution in water, also sodium bicarbonate.

In accordance with the facts and principles above referred to, the following dietetic prescriptions for gastric ulcer have been devised:

GASTRIC ULCER I. FOR RECTAL FEEDING.

At 6 a. m., the following mixture: Dextrose, one ounce; strained juice of one half orange; sodium bicarbonate, thirty grains; normal saline solution to make ten ounces.

At 8 a. m., skimmed milk, thoroughly peptonized and pancreatized, five ounces.

At 12 m., same as at 8 a. m.

At 4 p. m., same as at 6 a. m.

At 6 p. m., same as at 8 a. m.

At 10 p. m., same as at 6 a. m.

At 12 m., same as at 8 a. m.

Every second day, a colonic irrigation with normal saline solution may be given at 4 a. m. and the enema at 6 a. m. omitted.

All enemas and irrigations should be introduced as high up as possible, slowly, at a temperature of 100° F. After the injection of a nutritive enema a towel should be held firmly to the anus, for fifteen minutes if necessary, for its retention, and a few

drops of tincture of opium should be added to the enema if the rectum is particularly irritable, or an occasional hypodermic injection of morphine given. In cases with severe hematemesis, in which it is necessary to continue the rectal feeding for a long time, the regular administration of morphine may be advisable, not only for the retention of the enemas, but also for the purpose of quieting gastric peristalsis and slowing metabolism. With this plan of rectal feeding irritation of the rectum does not commonly occur.

This prescription supplies daily about twenty grams of protein, presumably all predigested, fuel of the value of about 500 calories, salts and vitamins in reasonable quantity, and about sixty ounces of water.

Gastric ulcer 1a. The same as 1, with reduction in quantity of the dextrose enemas to eight ounces each.

Gastric ulcer 1b. The same as 1 or 1a, with reduction of the dextrose in each enema to one half ounce.

Gastric ulcer 1c. The same as 1, with increase in the quantity of water in each dextrose enema to sixteen ounces.

Gastric ulcer 1d. The same as 1, with omission of the dextrose enemas.

Gastric ulcer 1e. The same as 1, with addition of one half ounce of dextrose to each predigested milk enema.

Gastric ulcer 1f. The same as 1d, with addition of one half ounce of dextrose to each predigested milk enema.

Gastric ulcer 1g. The same as 1, with omission of the predigested milk enemas, and addition of a dextrose enema at 11 a. m.

GASTRIC ULCER 2. TOP ORDINARY FEEDING.

At 7 a. m., the following mixture: Milk, three ounces; normal saline solution, barley water, or ten per cent. solution of a predigested cereal, two ounces.

At 8 a. m., lactacidized milk (or peptonized milk), five ounces.

At 9 a. m., the following mixture: Juice of one orange, strained; lactose or dextrose, one ounce; water to make seven ounces.

At 10 a. m., same as at 7 a. m.

At 11 a. m., same as at 8 a. m.

At 12 m., same as at 9 a. m.

At 1 p. m., same as at 7 a. m.

At 2 p. m., same as at 8 a. m.

At 3 p. m., same as at 9 a. m.

At 4 p. m., same as at 7 a. m.

At 5 p. m., same as at 8 a. m.

At 6 p. m., same as at 9 a. m.

At 7 p. m., same as at 7 a. m.

At 8 p. m., same as at 8 a. m.

At 9 p. m., same as at 9 a. m.

At 10 p. m., olive oil, one ounce.

The various milk preparations may be interchanged freely, and plain milk may be given in place of the 8 a. m. feeding, if agreeable. During the night more of the orangeade or similar fruit juice preparation may be given as wanted.

This prescription supplies daily about forty-five grams of protein and fuel of the value of about 1,500 calories.

Gastric ulcer 2a. The same as 2, with omission of the feedings at 8 a. m., 11 a. m., 2 p. m., 5 p. m., and 8 p. m., and addition of *Gastric ulcer 1c*.

Gastric ulcer 2b. The same as 2, with substitution of moist cooked cereal, five ounces, with milk, two ounces, or cream, one ounce, for three of the feedings of the milk preparations.

Gastric ulcer 2c. The same as 2, with substitution of peptonized milk for all other forms or mixtures of milk in the prescription.

GASTRIC ULCER 3.

At 7 a. m., the following mixture: Milk, five ounces; normal saline solution, barley water, or ten per cent. solution of a predigested cereal, three ounces.

At 9 a. m., cream of wheat or other acceptable cereal, cooked, six ounces, with milk, four ounces, or cream, two ounces (or toast, two ounces, with milk, six ounces).

At 10 a. m., the following mixture: Juice of one orange, strained; lactose or dextrose, one ounce; water to make seven ounces.

At 11 a. m., same as at 7 a. m. (or lactacidized milk, eight ounces).

At 1 p. m., same as at 9 a. m.

At 2 p. m., same as at 10 a. m.

At 3 p. m., same as at 7 a. m.

At 5 p. m., same as at 9 a. m.

At 6 p. m., same as at 10 a. m.

At 7 p. m., same as at 7 a. m.

At 9 p. m., same as at 7 a. m.

At 10 p. m., olive oil, one ounce.

Gastric ulcer 3a. The same as 3, with substitution of the milk mixture or lactacidized milk, or plain milk, or peptonized milk, for the three cereal and toast feedings.

GASTRIC ULCER 4.

Breakfast: 1. Orange, baked apple, or half a grapefruit.

2. Moist cooked cereal, six ounces, with milk, four ounces, or cream, two ounces, or butter, ordinary portion.

The following mixture: Milk, five ounces; barley water, ten per cent; solution of predigested cereal food, or weak tea, three ounces.

At 10 a. m. The same milk mixture as at breakfast (or lactacidized milk, eight ounces).

Dinner: 1. Soup made from milk, vegetables and a little flour, viz., cream of corn, celery, potato, carrot, spinach, asparagus or oyster plant, eight ounces (or the same milk preparations as at 10 a. m.).

2. Cream or cottage cheese, two ounces.

3. Toast or old bread, two ounces, with butter, ordinary portion.

4. Macaroni, spaghetti, or boiled rice, six ounces, with butter or grated cheese, ordinary portion.

5. Spinach or lettuce, small portion.

At 4 p. m., same as at 10 a. m.

Supper: 1. Toast, three ounces, with milk, eight ounces, or cereal as at breakfast, or boiled rice as at dinner.

2. Cream cheese, one and one half ounce.

3. Baked apple.

At 10 p. m., same as at 10 a. m.

Gastric ulcer 4a. The same as 4, with addition of a poached or soft boiled egg with dinner.

Gastric ulcer 4b. The same as 4a, with addition of four ounces of baked or mashed potato with dinner.

Gastric ulcer 4c. The same as 4b, with substitution of either string beans, asparagus, or carrot for the spinach in the prescription.

These four prescriptions, with their modifications, are graduated so as to meet improved conditions in the stomach as they appear. Prescription No. 1, for rectal feeding, need not, in most cases, be given for more than four days, although, if there is persistent hemorrhage or great irritability of the stomach, it may be given for longer periods. The writer has given it for a continuous period of twenty-four days, with satisfactory results and final recovery of the patient. Prescription No. 2 should usually be given for about a week; exceptionally it may be followed by Prescription 3 after four or five days; but if tenderness in the epigastrium persists without abatement, it should be continued for a longer period than a week. Prescription No. 3 can usually be given some time in the third week. Prescription No. 4 can usually be given some time in the fourth week, and should be continued until after the patient is out of bed. Resumption of the ordinary diet should be gradual, and perhaps should never be quite complete; for a moderate restriction of diet along the lines suggested above is to a certain extent a safeguard against relapse of the ulcer.

1215 PACIFIC STREET, BROOKLYN.

VITAMINES; A NEW FACTOR IN NUTRITION.*

Dr. Casimer Funk, of Cornell University Medical College, at a meeting at the Academy of Medicine on April 20, 1916, read this paper in which he said that recently sufficient evidence had accumulated to warrant the statement that beside the ordinary food constituents, such as proteins, fats, carbohydrates, lipoids, and other inorganic salts to the presence of which, with the exception of salts, the caloric value of food was due, a number of substances could be found in very small quantities which were as indispensable to life as the former constituents. These substances were elaborated in both the higher and lower plants, but could not be synthesized by the animal organism, and this was one of the reasons why animal life depended on plants. These products were present in all food, in all organs and in all vital parts of the plant without a single exception. Their presence had been revealed by the modern technic of cooking and by the refinement of food due to the introduction of machinery for the industrial preparation of foodstuffs on a large scale.

After referring to the existence of beriberi as due to polished rice, the speaker stated that another origin of the same disease was in other refined foods like sago, tapioca, or white bread (especially when cooked with baking powder) consumed in disproportionately large quantities, or if subjected to prolonged boiling, as sometimes happened when food was prepared in large quantities, as in the army, and in prisons and other institutions. The insufficiency of these substances had also been noted in cases of mental disturbance in which a fancy was taken to one particular food. Without going into the detail of the extraction and preparation of these substances, it might be stated that they were dealing with products showing a good deal of instability under ordinary laboratory conditions. This point might be best illustrated by referring to the time it took to isolate adrenaline from the suprarenal glands, which was partially due to the fact that this base was present in small quantities, and that an insufficient amount of starting material was taken for fractionation, and also to the fact that adrenaline was easily oxidizable in alkaline solution. When precautions were taken to eliminate these two factors the isolation of adrenaline was successfully accomplished. It then took a number of years to learn its chemical properties and constitution, and then further time for its successful synthesis.

It would take even longer to ascertain the constitution and composition of the vitamins since as yet the difficulties of the first stage had not been overcome and this had limited the value of the investigations with reference to the second stage to some extent. However, sufficient evidence had been accumulated to warrant the designation of these substances by the term "vitamines" and the diseases which arose from their lack or insufficiency as deficiency diseases or "avitaminoses." Doctor Funk expressed surprise that the introduction of his term had aroused so much animosity, since it was quite customary to give a name to a substance the presence of which was merely assumed before its actual

isolation, and such terms were usually accepted until further evidence disputed their presence. The evidence for the existence of the vitamins was many times stronger than in most cases where similar terms had been introduced. The chemical evidence for the existence of these substances could be seen from the method of their detection.

After calling attention to the difficulties of fractionating and acidifying substances obtained in such small quantities, the speaker said that the vitamins were sometimes stable at higher temperatures in the presence of strong acids and could be thrown down by phosphotungstic acid or analogous reagents which were so largely used for the isolation of nitrogenous substances, and afterward could be fractionated by means of mercuric chloride and silver nitrate and baryta. From this fluid precipitate a crystalline fraction could be obtained which in relatively small quantities cured beriberi in pigeons. This precipitate was specific for vitamins and they were not merely carried down as was supposed by some investigators. Other precipitating agents which also yielded heavy precipitates did not carry down the vitamins. While this work had been confirmed by many observers, it must be admitted that further chemical evidence was desirable, especially as regards the mode of combination of the vitamins in the tissues.

With reference to the action of the vitamins, nothing very definite was known except that they bore a certain relationship to the carbohydrate metabolism. Doctor Funk found that giving animals food composed largely of carbohydrates brought on an earlier appearance of the symptoms of deficiency diseases. For instance, if a pigeon was fed on polished rice it was possible to estimate approximately when the symptoms of beriberi would appear after a given quantity of rice was metabolized. The speaker had confirmed this with an artificial diet composed of variable amounts of carbohydrates, and it was also found that the blood sugar content in avian beriberi was greatly increased. The fact had a practical bearing in infant feeding; it must be borne in mind that a certain amount of vitamin could only take care of a limited amount of carbohydrates and when the starch was increased in the diet the amount of vitamin-containing foodstuffs must be increased in proportion.

A second fact which had been established in connection with the metabolism in deficiency diseases was that in the absence of vitamins they obtained not only negative nitrogen balance, but the whole metabolism went wrong; this was particularly noticed in the negative balance of inorganic constituents like calcium, phosphorus, and sulphur. Schauman had recently shown that the addition of vitamin put the whole metabolism again on a normal basis and this fact was of special importance for the understanding of certain conditions like rickets in children. It was found further that vitamin, when properly prepared and added in sufficient amount to polished rice, would make the latter diet complete. The speaker had shown, in addition, that no animal was yet found able to live more than a short time on a vitamin-free food and that an artificial diet composed of casein, starch, fat,

*For a discussion of this abstract, see *Proceedings of Societies*, p. 1148.

sugar, and all the necessary salts would produce a deficiency disease of some kind according to the animal chosen, provided that sufficient care was taken to purify the ingredients. To this diet all known lipoids, cholesterol, various proteins, and all sorts of salts could be added and nothing could save the animal or man from certain death unless vitamine was added.

Doctor Funk then proceeded to discuss certain points in reference to the relation of the vitamins to the deficiency diseases, calling special attention to the experiments of Morgen and Beger, who found that rabbits fed on oats—a diet supposed to produce scurvy in them—could remain in good health when sodium bicarbonate was added. They considered, therefore, that the condition produced was an acidosis and certain experiments which the speaker had made seemed to confirm this statement to some extent. However, the same experiments in guinea-pigs produced a condition that was possibly scurvy.

As to pellagra, when the author had first expressed the opinion that this was a deficiency disease, he had met with great opposition; but now the etiology of this disease as a deficiency disease seemed to be clearly established. It seemed possible that pellagra was nothing but a common scurvy, whereas what had been known as scurvy was the acute form of the same disease.

The vitamine theory as to the etiology of rickets was at present a mere working hypothesis. The results of animal experiments suggested that they were dealing with a deficiency disease due to a deficiency of the vitamine which was not essential for life, or to a partial deficiency of the ordinary vitamine. The opinion of certain workers that rickets had its cause in a lack of calcium was due largely to a misinterpretation of their experiments. From the point of view of the vitamine hypothesis there was no objection, theoretically, to congenital rickets when the mother's diet was deficient, and there was no objection to rickets in breast-fed babies, to osteomalacia in adults, and in old age, to perhaps another name.

The speaker next considered the problem of growth and referred to the work of McCollum and Osborne and Mendel, who had tried to demonstrate that butter had a very decided effect on the growth of rats and had stated that butter fat did not contain nitrogen, and said that he was now able to demonstrate that rats could grow very well without butter when a sufficient amount of vitamine was added to the diet of the rats; hence he was utterly unable to confirm the results of McCollum. When working with yeast, it had been noticed that rats on dried yeast grew well, but showed slight symptoms of scurvy, which, however, disappeared when autolyzed (wet) yeast was used. This possibly showed that rats required for their well being both the beriberi and the scurvy vitamins. Successful growth was also obtained by using phosphotungstate precipitate decomposed from autolyzed yeast, in difference to the filtrate, which had no action whatsoever. The fraction used was entirely free from material which could be extracted with lipoidal solvents, and this alone proved that the water soluble portion of yeast was the only one responsible for the growth of rats in direct contradiction with the

recent statement of McCollum. Experiments which the speaker had conducted in association with Dr. Morris Stark, showed also that McCollum's assumption that casein lost its nutritive value when heated with alcohol, was baseless. At present it was not possible to say whether autoclaved casein heated to a higher temperature had a full nutritive value or not, and it was possible that the latter casein would require an addition of tryptophan and cystin. However, by means of a suitable diet, rats were made to grow twice as fast as on a diet regarded hitherto as normal. At the same time, animals were stunted on a diet that might be designated as normal; this result had been obtained in chickens fed on unpolished rice and, still better, by feeding unpolished rice and codliver oil. The same result could be accomplished with rats on a diet of oats. These results could also be applied to the growth of children. It was of further interest that they had been able to show that tumors in mice did not grow so extensively on such a diet as on a rich diet, and also that the tumor had a greater affinity to those substances than somatic cells. While cancer had nothing in common with the deficiency diseases and was, if anything, a disease entirely opposed to avitaminosis, it seemed extremely probable that cancer was not of infectious origin, but was due to a chemical cause, and the study of diet in cancer would be in the future one of the most important lines of research.

Diet in Diabetes.—In the course of a paper on certain of the phases of the diabetic problem, Frederick M. Allen (*Journal A. M. A.*, May 13, 1916) gives a tentative definition of the disease as a specific deficiency in the power of assimilating food. In this condition any form of food, except alcohol, which does not have a storage form, reduces the power of assimilating other foods. Ketonuria may result from the addition of carbohydrate to the diet of a diabetic, which is a contradiction of the common view. The addition of fat may lead to the production of glycosuria. These facts seem to support the tentative hypothesis of the presence of binding substances which anchor certain food constituents. The fasting treatment has given splendid results in many cases, and even some of the severest have been made and kept free from glycosuria and ketonuria by its use. It is quite in harmony with the recognized benefits of restriction of carbohydrates and of undernutrition as practised in the past. E. E. Cornwall (*Medical Record*, May 25, 1916) insists that diabetic dietaries must regulate definitely the protein ration both in quality and quantity. Regulation of the quantity has been advocated by Allen, but he does not take up the necessity of limiting the quality which has for its object the protection of the body from injurious split proteins. It is accomplished by excluding or restricting protein foods of animal origin (except milk and its products) and certain vegetables containing purins in notable quantity, since their proteins are especially susceptible to the action of the saprophytic bacteria in the alimentary canal. Cornwall relies largely on the proteins of milk, especially in cream cheese and cottage cheese and those of the cereals.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.

A Weekly Review of Medicine.

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.
CLAUDE L. WHEELER, A.B., M.D.,

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,
66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 10, 1916.

THE THERAPEUTIC RESOURCES OF OUR SPAS.

It is gratifying to learn that Commissioner Pratt has decided to maintain the purity of the waters of the Saratoga Reservation without, however, limiting their prescription in any form by properly qualified physicians, the latter assuming all responsibility for the desired modifications. The commission will administer baths, therefore, strictly according to the physician's requirements. Since the war began, it has not been possible to obtain the Nauheim bath. Many sufferers from chronic heart disease, who formerly made regular pilgrimages to Nauheim, where they obtained, as it were, a renewal of life, have been cut off from this privilege, while a much larger number of patients, unable on account of financial reasons to make such a trip, have been compelled to resort to artificial Nauheim baths. While useful, these do not compare in efficacy with the genuine nor even with the best substitute, viz., a bath in a strong natural carbon dioxide water fortified with the salines which are so valuable a feature at Nauheim. Fortunately in the Saratoga springs we possess an abundance of natural carbon dioxide water, with which we can almost exactly reproduce the therapeutic effects of the bath at the renowned German spa. As pointed out in Dr. Simon Baruch's communication in this issue of the New York Med-

ICAL JOURNAL, by the use of removable steam coils the temperature of the bath may be raised to any degree prescribed, while the manager of the bathhouse needs only to have on hand in readiness for prescription twelve pound packages of sodium chloride and one pound packages of pure calcium chloride, to be dissolved in carbon dioxide water before the requisite quantity of the latter is added to cover the body—about sixty gallons.

We see, therefore, that Commissioner Pratt's statement that water would be furnished "only as it comes out of the ground" has been misinterpreted, and physicians will find on application that the required packages of chlorides are in readiness and that all other necessary conditions have been complied with to enable them to prescribe for individual cases. This does away with the substitution of "a bath just as good," suffering humanity will be benefited, and the State will reap a well merited harvest from its judicious expenditure of the people's money in the development of Saratoga Springs.

CLEAN FOOD IN HOTELS.

Not long since, a distressing incident was brought to our personal attention, involving the problem of serving only safe foods in public hotels and restaurants. Eight men gathered at luncheon in a well known hostelry, where the first course consisted of clams on the half shell. Subsequently four of these men were taken down with typhoid fever and three of those attacked died; the disease was traced without difficulty to the clams. We relate this little history as apropos to the news that the local department of health has undertaken a campaign against unsanitary kitchens in hotels and restaurants, because it shows that part of the problem at least goes deeper and involves not only the cook and his assistants, but the steward who does the marketing. Another factor depends on the waiters, some of whom are guilty of almost unbelievably nasty practices, intended to circumvent the "checker" who inspects each order as it passes from kitchen to dining room. One checker told us of a waiter who concealed a large beefsteak between his "dickey" or false shirt front and his naked chest in order to prevent its being marked on the guest's check. This waiter intended subsequently to enter the steak in his own handwriting in order to exact payment, after which he would erase the item and pocket the price.

Here then are two ways in which food might become infected, although the kitchen had passed the most rigorous inspection. The health department's plan, however, of certifying the kitchens, is an excellent one, as it will put under control at least

one important factor in the possible dissemination of disease. We understand that a series of colored cards is to be used, red for danger, and probably white for reasonable safety. According to the *New York Times* for June 6th, it is not intended to have these cards conspicuously placed for public observation. They will be attached to the usual sanitary inspection paper of the health department, but patrons may exercise their right to ask to see the grade cards and then eat in safety or go elsewhere.

Most of the inspection will have to do with the sanitary arrangements in and around the kitchens and the cleanliness of the culinary staff. To obtain the "good" card it will be necessary for an eating place to show that it employs no one in preparing or handling food who has any communicable disease, that food utensils are immediately cleansed by hot water after using, and the kitchens are well ventilated and lighted, that no rubbish is piled in corners of rooms where food and drink are prepared or sold, that those preparing and serving food wear washable outer garments, and that "no animal except a cat shall be housed or kept in any room where food or drink is prepared or offered for sale."

MEDICAL PREPAREDNESS.

A bill has been introduced into the House of Representatives by Mr. Hay, chairman of the Committee on Military Affairs, providing for the creation of a Council of Executive Information for the Coordination of Industries and Resources for National Security and Welfare, etc. This council is expected to collate all the information necessary for the mobilization of civil, military, and naval resources for defense, and among its functions will be the furnishing of information to producers and manufacturers as to the classes of supplies needed by the government, and the creation of relations which will render possible in time of need the immediate concentration and utilization of the resources of the nation.

It is to be hoped that this measure will be promptly enacted and energetically acted upon; it might possibly do away with the public scandal which has invariably attended the outfitting of our forces at the outbreak of war. We are convinced that arrangements can be made which will remove army contracts of all sorts from the realm of speculation and put them on a sound business basis. The majority of the manufacturers in every line are quite willing to serve the government to their fullest capacity without exacting excessive profits. But in order to do this the manufacturer must know in advance what is required. It has long been the custom to close contracts for large

engineering undertakings on the basis of cost plus a certain proportion of net profit to the contractor. Similar contracts can be arranged for in practically every line of supplies and such contracts could be let long before war became imminent with advantage alike to the government and to the contractor. Even if it was not deemed expedient to take this advanced step the collation of information by the council provided for in the bill will go a long way toward accelerating the making of contracts in case of war and toward insuring both the government and the contractor a fair deal.

In the matter of medical supplies in particular the collation of such information would prove most helpful. Indeed, a proposal was laid before the government some months ago that the manufacturer of medical and surgical supplies should be conferred with and tentative arrangements made regarding medical supplies which would place the manufacturer in a position to do all the necessary planning, but without committing the government to any outlay of money. If the measure becomes a law it is to be hoped that the importance of collating data regarding the sources of medical and surgical supplies will not be lost sight of. Are not medical supplies more important than ammunition? Without ammunition men cannot fight; but without medical supplies and proper medical supervision men cannot even exist.

MERCURIC CHLORIDE POISONING AND ITS TREATMENT.

It is well known what an epidemic of accidental and purposive poisoning by mercury bichloride we have had in the past few years. It is but natural that this should have led to clinical and laboratory tests to determine the best antidotes and treatment for this condition.

Recently an interesting discussion of this subject was held by the Chicago Medical Society (see official bulletin for April 8, 1916). Fantus reported his research experiments along this line with rabbits. He used various substances as antidotes with the following results: Milk and serum albumin solution gave negative results. Egg albumin given with the poison permitted the majority of the rabbits to survive, but when egg albumin was given immediately after the poison without removing the stomach tube, the animals died after an average of a little over nineteen days; when given five, ten and fifteen minutes after the mercury bichloride, the effects were negative. Since the latter state of affairs is what obtains in actual practice, it is probable that egg albumin is of little value in these cases. Hall's suggestion of reversing

Mayer's reagent for the precipitation of mercury also proved of no antidotal value. Sodium bicarbonate was negative, sodium bitartrate had a moderate antidotal effect, while sodium acetate was decidedly antidotal, being more valuable than sodium bicarbonate or egg albumin. Potassium bitartrate was practically valueless, and sodium sulphate yielded negative findings. Calcium sulphide was too toxic. Experimenting with a combination of sodium phosphate and sodium acetate, recommended by Carter, good results were obtained, the best being with the proportions of six parts of the former to four parts of the latter. But the best antidote of all was sodium hypophosphite combined with five times as much hydrogen peroxide, which gave an average lethal period of 43.4 days, the antidote being given after the poison.

Sampson experimented with the intravenous method, and found that the animal could not be helped in the least with any sort of intravenous treatment, be it sterile glucose solution, Fisher's alkaline solution, glucose in Ringer's solution, or glucose with sodium phosphate. The important thing is to prevent the mercury bichloride from entering the circulation, thus emphasizing the time element in these cases.

The treatment recommended by Fantus is summarized as follows: Immediate administration of Carter's antidote, which is a tablet composed of sodium hypophosphite 0.36 gram and sodium acetate 0.24 gram, if this is obtainable; or, in its stead, sodium hypophosphite one gram, water ten mils, and hydrogen peroxide five mils. In case the amount of mercury bichloride taken is known, he advises the administration of ten times as much hypophosphite as poison taken. The antidote should be at once followed by copious gastric lavage with three per cent. sodium bicarbonate solution, to which one may add 0.5 gram sodium hypophosphite. Another dose of antidote may be given, and the entire procedure should be repeated every eight hours, until, by Vogel's test, the gastric contents are found to contain absolutely no mercury. In addition one tumblerful of egg albumin water every two hours, and sodium acetate in the dose of two grams in a tumblerful of water with a tablespoonful of lactose every two hours, should be employed, alternate tumblerfuls being used every hour. Besides, there should be continuous drop by drop irrigation of the colon with sodium acetate, in the proportion of eight grams to the litre, with high colonic flushing with several gallons of three per cent. sodium bicarbonate solution twice a day. A hot pack should be employed once a day. Fantus advises continuation of this treatment until the urine has remained free from mercury for several days.

Carter lays stress on the fact that he believes care of the stomach and intestines to be more important than regard for the action of the kidneys. Hemorrhage from the bowels is to be guarded against by withholding food for several days, the period depending upon the amount of poison taken.

THE TREATMENT OF HAY FEVER.

The subject of hay fever and its treatment is literally of perennial interest to a large number of persons. A voluminous literature and extensive experimentation have been devoted to it. Hitchens and Brown (*Journal of Laboratory and Clinical Medicine*, April, 1916) have added a recent contribution containing their own experience and clinical confirmation of earlier work, and summarizing the principles of treatment in the light of our present knowledge.

They divide the active treatment into measures to be taken two to three months previous to the hay fever season and the control of the acute attack. For the former a survey should be made of all flowering plants within the patient's habitual surroundings in order to determine what particular pollens are responsible. Then skin tests are to be made with the pollens of each to determine its specificity. The method of preparation of the pollen extract for treatment, as recommended by Hitchens and Brown, is as follows. The flowers are gathered and dried when pollination has just started. The pollen is collected on fine sieves and thoroughly dried for preservation. When the extract is to be prepared, the dried pollen is made up into a paste with physiological saline, and this is ground in a porcelain ball mill until the pollen grains are completely broken up. After centrifugation, the extracted protein is precipitated with acetone and the precipitate dried for future use. When ready to be used, the precipitate is redissolved in saline and the protein nitrogen is determined. The solution is then diluted so that each cubic centimetre will contain a certain definite fraction of protein nitrogen. This gives a fairly exact and satisfactory standardization of strength. These dilutions are preserved with tricresol, sterilized by filtration, and the sterility is tested.

Hitchens and Brown report sixty-two cases treated with such vaccines, of which eighteen were complicated with asthma. Of these eighteen, eleven were entirely relieved, three were considerably relieved, one was not relieved, and three were not reported. Of the remaining forty-four cases, seventeen were entirely relieved, eighteen were considerably relieved, four were slightly relieved, two were not relieved, and three were not reported. One

patient who was treated in summer and autumn for two years was apparently cured. The two vaccines used by the authors were, in the spring, a mixture of pollens from red top, timothy, rye, and orchard grass, and in the fall, the pollen of ragweed alone. They call attention to the fact that in every case the possibility of a concurrent bacterial infection must be taken into account.

In regard to the treatment of acute attacks, Hitchens and Brown have recommended immediate use of the vaccine which seems most likely to be efficacious, and at the same time a determination of the exact diagnosis as if there were no immediate symptoms. They condemn without reservation the practice of putting pollen extracts into the conjunctivæ for diagnostic purposes, and believe that the skin reaction, while perhaps not so delicate, is sufficient for clinical use and less dangerous.

These authors point out that many persons who died from injections of horse serum were found later to have had an anaphylactic asthma whenever they came near horses. There is no doubt that many persons are sensitized to animal odors and to the dust from animal fur; this is sometimes seen as asthmatic attacks after handling guineapigs in the laboratory.

Hay fever has joined the class of anaphylactic phenomena which includes certain types of asthma and very likely many as yet undifferentiated forms of coryza. Immunization as well as a specific cure is certainly to be hoped for as a result of the manifold investigations being made along the lines on which we have commented.

CURIOUS ACCIDENT TO THE THUMB.

Robert Scott, M. B., temporary lieutenant R. A. M. C., communicates to the *British Medical Journal* for May 6, 1916, the singular results of an accident to a mule driver. A driver of the A. S. C. was exercising a mule when the animal bolted, and the man was thrown off his feet and dragged, owing to the fact that his right thumb in a woolen glove had been caught in a small ring in the harness. A ditch chancing to cross the path the man dropped into it and came to a dead stop, with the result that the distal phalanx of the thumb, still clothed in the glove, cleanly severed, was torn off, carrying with it the tendon and belly of the flexor longus to a length of nine and a half inches.

News Items.

A Valuable Opportunity for Volunteer Service.—There are several vacancies for volunteer clinic physicians at the occupational clinic, of the division of industrial hygiene of the local health department, and physicians who desire to associate themselves with this work should apply in writing to the director of the Bureau of Preventable Diseases. The service requires attendance three times a week, for a period of two hours in the morning.

Summer Care of Infants.—A free bulletin on this subject is issued by the United States Public Health Service, Washington, D. C.

Typhoid Fever Death Rate in California.—Reports issued by the United States Public Health Service show that the State of California has reduced its typhoid death rate seventy per cent. in the past ten years.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Tuesday, June 14th, Philadelphia Pediatric Society; Thursday, June 15th, Northeast Branch of the Philadelphia County Medical Society.

Gift to Columbia University for Cancer Research.—The executors of the estate of Emil C. Bundy, of New York, have paid over to Columbia University the sum of 100,000, with the understanding that it is to be used for research work in cancer.

Supreme Court Interprets the Harrison Law.—The Supreme Court of the United States has interpreted the Harrison Federal Drug Act of 1914, making it unlawful for any person not registered under the law to have opium in his possession, to apply only to those who deal in the drug and not to those who use it.

Personal.—Dr. Henry W. Wandless, of New York, has been appointed clinical professor of ophthalmology at the University and Bellevue Hospital Medical College.

Dr. J. F. Williams, assistant professor of hygiene and physical education at Columbia University, has been appointed professor of hygiene and physical education at the University of Cincinnati.

Women on the Medical Staff of Columbia University.—Following close upon the announcement made a few weeks ago that the College of Physicians and Surgeons, Columbia University, would open its doors to women students, the trustees of the institution announce the appointment of two women as members of the staff. Dr. Rosalie Slaughter Morton has been appointed attending surgeon at the Vanderbilt Clinic and Dr. Vera Dantschakoff has been appointed instructor in anatomy.

Wisconsin Surgical Association.—Dr. Charles H. Lemon, of Milwaukee, was elected president of this association, at the annual meeting held in Milwaukee, May 10th and 11th, and other officers were elected as follows: Dr. G. W. Nott, of Racine, first vice-president; Dr. R. H. Jackson, of Madison, second vice-president; Dr. Karl Doege, of Marshfield, third vice-president; Dr. D. J. Hayes, of Milwaukee, fourth vice-president; Dr. Daniel Hopkinson, of Milwaukee, secretary and treasurer.

Free Beds at the Park Hospital.—The Park Hospital, at 395 Central Park West, which was formerly the New York Red Cross Hospital, announces that it has available a number of free beds for the care of acute cases of noncontagious diseases among the worthy poor. Admission will be made upon the application of the family physician, and upon presentation, at the hospital, of a letter from the physician containing his diagnosis and the assurance that the case is a proper one for free hospital treatment.

Vacation Typhoid.—The Department of Health of the City of New York calls attention to the fact that last year 372 residents of New York city contracted typhoid fever outside of the city, of whom thirty-five died. Many of these persons were on vacation. The department has issued a circular containing important information regarding the avoidance of such out of town infection, and urges all who are planning a vacation outside of the city to take proper measures for protection. These circulars may be obtained from Dr. John S. Billings, deputy commissioner of health.

Workmen's Compensation Act Amended.—Amendments to the compensation law have just gone into effect which make important additions to the various classes of workmen subject to this form of State insurance, among them being the workmen who handle furs where there is danger of contracting anthrax. All State, city, and other public employees engaged in any hazardous occupation named in the amended law are brought under its terms, and failure to provide compensation is now made a misdemeanor and subjects an employer to fine or imprisonment.

Pennsylvania Raises Standard of Teaching of Obstetrics.—At a recent meeting of the Bureau of Medical Education of Licensure of Pennsylvania, the following resolution was passed:

Resolved, that candidates for examination who graduate after January 1, 1917, must produce evidence that, prior to graduation from a medical school, they have attended personally not less than twelve cases of obstetrics.

As the intern seldom receives less than fifteen to thirty cases of obstetrics during his internship in the hospital, this practically insures each applicant for the medical examinations of Pennsylvania twenty-five or more cases of obstetrics prior to licensure.

Health Districts Established in Queens.—In order to improve the health department's service for the people of the Borough of Queens, that borough has been divided into four health districts, as follows: Astoria, Ridgewood, Flushing, and Jamaica. Each district has a health office, to which a staff of medical inspectors, nurses, and clerks is attached, and the health officers, or other representatives in charge, may be consulted there about any health department work of the district, especially that relating to medical school inspection, tuberculosis, contagious diseases, and milk station work. When the plans under consideration are completed, these offices will handle practically all health department functions.

American Laryngological, Rhinological, and Otolological Society.—At the annual meeting of this society, held in White Sulphur Springs, West Virginia, May 5th and 6th, under the presidency of Dr. S. MacCuen Smith, of Philadelphia, the following officers were elected: President, Dr. Thomas J. Harris, of New York; vice-presidents, Dr. John F. Culp, of Harrisburg, Pa., chairman of the Eastern Section, Dr. John E. Brown, of Columbus, Ohio, chairman of the Middle Section, Dr. James A. Patterson, of Colorado Springs, Colo., chairman of the Western Section, and Dr. Richmond McKinney, of Memphis, Tenn., chairman of the Southern Section; treasurer, Dr. Ewing W. Day, of Pittsburgh; secretary, Dr. William H. Haskin, of New York; librarian, Dr. H. Holbrook Curtis, of New York; chairman of the Publicity Committee, Dr. George L. Richards, of Fall River, Mass.

Auxiliary Clinics Established for the Examination of Peddlers.—The Occupational Clinic of the Division of Industrial Hygiene of the Bureau of Preventable Diseases, Department of Health of the City of New York, has recently established an auxiliary clinic at 49 Lafayette Street, Manhattan, and another at 381 Fulton Street, Brooklyn, where peddlers applying for licenses are submitted to a medical inspection similar to that which obtains at the Federal Quarantine Station. The physicians assigned to work in these new offices select those who present indications of marked malnutrition, skin eruption, or other condition which may excite suspicion as to the presence of tuberculosis, syphilis, or other infectious or venereal diseases, and refer them to the occupational clinic, where they are subjected to a thorough physical examination, and where proper laboratory tests may be made.

Illinois State Medical Society.—Dr. Elmer B. Cooley, of Danville, was elected president of this society at the sixty-sixth annual meeting, held in Champaign, May 15th, 16th, and 17th, succeeding Dr. Charles W. Lillie, of East St. Louis. Other officers were elected as follows: Dr. C. F. Newcomb, of Champaign, first vice-president; Dr. R. A. McClelland, of Yorktown, second vice-president; Dr. W. H. Gilmore, of Mount Vernon, secretary; Dr. Andrew J. Markley, of Belvidere, treasurer. Dr. Clyde D. Pence, of Chicago, editor. Next year's meeting will be held in Bloomington. An interesting feature of the proceedings was the appointment of a cancer commission, which will form the Illinois section of the American Society for the Control of Cancer, and its membership includes Dr. Charles J. Whalen, of Chicago, chairman; Dr. C. St. Clair Drake, of Springfield, secretary; Dr. Daniel N. Eisen-drath, of Chicago; Dr. John A. Robison, of Chicago, and Dr. Edward C. Franing, of Galesburg.

West Virginia State Medical Society.—The following officers were elected at the forty-ninth annual meeting of this society, held in Wheeling, May 16th, 17th, and 18th: Dr. J. E. Rader, of Huntington, president; Dr. W. S. Young, of Sistersville, first vice-president; Dr. E. H. Thompson, of Bluefield, second vice-president; Dr. Reed M. Baird, of Wheeling, third vice-president; Dr. J. Howard Anderson, of Marystown, secretary; Dr. H. G. Nicholson, of Charleston, treasurer. Next year's meeting will be held in Fairmont.

New York City's Death Rate.—According to a bulletin issued by the New York department of health, the death rate for the week ending June 3, 1916, was a trifle higher than the rate during the corresponding week of last year, the increase owing principally to an increase in the mortality of heart disease, nephritis, and cancer, although bronchitis and diarrhea also contributed to it. The mortality of practically all the other diseases was lower. The total deaths reported during the week were 1,473, compared with 1,430 reported during the corresponding week of last year, the rates being 13.75 for last week and 13.68 for the week ending June 5, 1915. The death rate for the first twenty-three weeks of 1916 is 15.13, compared with 15.34 for the corresponding period of last year.

Laxity of Physicians in Reporting Tuberculosis and Typhoid Fever.—Asserting that more than half the cases of tuberculosis and nearly three quarters of the cases of typhoid fever are not being reported, Commissioner Hermann M. Biggs, of the State Department of Health, has sent a letter to all physicians in the State, warning them that continued laxity will result in prosecution under the public health law. The warning letters have been going out to physicians for several months, but the present condition is such as to indicate stringent action to secure results upon the part of Commissioner Biggs. Commissioner Biggs urges physicians to take advantage of the adequate laboratory facilities now available for examination of specimens for diagnosis, especially of diphtheria, tuberculosis and typhoid fever.

Texas State Medical Association.—The following officers were elected at the fiftieth annual meeting of this society held in Galveston, May 9th, 10th, and 11th: Dr. E. H. Carey, of Dallas, president-elect; Dr. R. Y. Lacy, of Pittsburgh, first vice-president; Dr. Charles R. Johnson, of Gainesville, second vice-president; Dr. W. L. Brown, of El Paso, third vice-president; Dr. Holman Taylor, of Fort Worth, reelected secretary to serve third term of three years; Dr. W. L. Allison, of Fort Worth, treasurer, reelected; Dr. John T. Moore, of Houston, reelected chairman board of trustees to serve five years; Dr. W. A. King, of San Antonio, reelected member of council on medical defense; Dr. C. R. Hartsook, of Wichita Falls, reelected member of board of councillors from Third District; Dr. Charles S. Venable, of San Antonio, member board of councillors from Fifth District; Dr. W. N. Wardlaw, of Corpus Christi, reelected member board of councillors from Sixth District; Dr. A. C. Scott, of Temple, reelected member board of councillors from Twelfth District; Dr. C. E. Seale, of Daingerfield, member of board of councillors from Fifteenth District. Next year's meeting will be held in Dallas.

The Will of Dr. J. William White.—Among other public bequests in the estate of about \$1,000,000 left by the late Dr. J. W. White, of Philadelphia, is one of \$150,000 for a permanent endowment fund to found a professorship in surgical research at the University of Pennsylvania; one of \$10,000 in trust to that institution for prizes for resident physicians, for prizes for nurses and for Christmas gifts for child patients; a \$4,000 fund to the same institution, made up of personal gifts to him from patients, and all medical pictures in his office and home, as well as the death mask of Dr. D. Hayes Agnew and the cast of his hand. The medical faculty of the University of Pennsylvania is authorized to select from Doctor White's library any books desired for the library of the medical school. Direct gifts of \$10,000 each are made to Dr. William J. Mayo and Dr. Charles H. Mayo, of Rochester, Minn., \$2,000 to Dr. Alfred C. Wood, and \$1,500 to Dr. George D. Morton, both of Philadelphia.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,

Department of Biology, Olivet College.

Twenty-third Communication.

SUPRARENALINE OR EPINEPHRINE.

This substance, representing one of the newer discoveries in organotherapy, is chiefly remarkable for its definite stimulation of the nerve terminals supplying vasoconstrictor muscle fibres. This effect is produced locally when it is applied at any point on mucous membrane or subcutaneous tissue; when absorbed from subcutaneous or intramuscular injections, or from intravenous administrations, constrictor action seems to be largely confined to those areas supplied by the thoracolumbar cord. This action is prompt, especially when the solution is given intravenously, and is manifested chiefly by an extraordinary rise in blood pressure. This rise is but transient, the suprarenaline being early rendered inert by some counteracting substance either then existing in the blood or vessel walls, or quickly set free as an antibody.

Action on the heart is somewhat obscured by the normal equilibrator tendency of the heart in response to variations of blood pressure. Our present studies indicate that the heart, after the manner of other involuntary muscle, is first quickened by stimulation of the accelerator terminals. Soon the heart slows perceptibly; this slowing action is asserted to be due to centric stimulation of the vagus, although no other similar centric action is alleged; it is as reasonable to believe that increased peripheral resistance may adequately account for this diminution in heart rate. Soon there appears a second quickening, assumed by some to be due to loss of vagal control and resumption of local stimulation, an explanation still open to question.

The terminals of the splanchnic nerves appear to be included in this stimulating effect, some observers having observed marked contractions of the pyloric, ileocolic, and anal sphincters, with some inhibition of peristalsis.

Suprarenaline is satisfactorily used locally for the ischemia it produces, making it a very helpful accessory in surgery of mucous membranes, especially in operations on the eye and nose conducted under local anesthesia. Inflamed eyes are happily treated, especially from the standpoint of the patient's comfort, by instillations of fresh boric acid solutions containing small quantities of cocaine (not over 0.25 per cent.) and a few drops of suprarenaline solution. Its principal use, systemically, may be deduced from its known pharmacological action. In case of profound shock or syncope, where relaxation of the splanchnic bloodvessels is producing a relatively dangerous anemia of the brain, suprarenaline promptly relieves the anxious situation by its broad

constricting effect on the circulation, readjusting the blood stream and furnishing the brain with an adequate supply of blood. Use of suprarenaline for such conditions would be an emergency measure adopted where lowering the head of the patient had proved ineffective. It may be used intramuscularly or intravenously, as conditions and facilities indicate. When used intramuscularly, the stock one to 1000 suprarenaline solution should be diluted one half with normal salt solution; when used intravenously the stock solution should be diluted one to ten with fresh, sterile Locke's solution, and the entire procedure must be conducted with the strictest attention to the demands of surgical antiseptics.

Treatment of Apoplexy.—Faivre, in *Paris médical* for March 25, 1916, states that, for purposes of prophylaxis, individuals subject to cerebral congestion should avoid sudden changes of temperature and excesses of all kinds. Normal bowel action should be insured by dietetic regulation, and bleeding from hemorrhoids, if such exists, allowed to continue, as a rule, unchecked. Glycerin suppositories may be ordered and 0.3 gram of sodium iodide given daily. At the moment of an apoplectic attack the patient should lie with the head somewhat elevated, cold compresses or a little ice applied to the forehead and temples, and perfect ventilation and respiratory freedom secured. As soon as possible heat should be applied to the lower extremities—avoiding burns of the anesthetic areas—or local counter-irritation practised. If there is facial congestion and a tendency to excitation, application of three leeches to each mastoid process is a useful procedure. Venesection should be reserved for cases in which auscultation reveals a progressive congestion of the lung. The bowel should be opened with a purgative enema of senna leaves and sodium sulphate, urine secured for examination by catheterization, and a lumbar puncture done to ascertain if there is meningeal hemorrhage. No food should be given by mouth so long as the pharyngeal reflexes remain absent. In the post comatose period, careful liquid feeding is indicated. The mouth should be washed out with boiled water or dilute hydrogen dioxide solution. To avoid bedsores suitable hygienic measures should be applied. Patches of beginning redness should be painted with phenolated oil, and more advanced lesions, after drying, dusted with:

R Cinchona, 100 grams;
Bismuthi subgallatis, 10 grams;
Benzoini, 5 grams
Misce et fac pulverem.

After the application of this powder the sore may be covered with chamois skin, with the silky side toward the skin. If the blood pressure remains high and nervousness is marked, bromides may be administered. Where the myocardium

weakens, subcutaneous injections of caffeine should be given without hesitation. In the event of hemiplegia, motor reeducation by means of passive, then active movements—without inducing too much nervous fatigue—cannot be too highly recommended. Business cares and other preoccupations must be shunned, lest a second attack, always graver than the first, supervene. In the apoplectic attacks of tabetics and paretics, due merely to brain congestion and unattended with hemiplegia, measures similar to those indicated in apoplexy in general may be employed.

Treatment of Hyperpyrexia in Young Children.

—A. Hymanson, in the *American Journal of Obstetrics* for February, 1916, reports the case of an infant with partial atelectasis, capillary bronchitis, and at one time a temperature of 110° F., in which the efficacy of hydrotherapy in this class of patients is illustrated, the baby's life being prolonged for a time it, though death occurred several weeks later. The most satisfactory antipyretic for young children is water. In giving a cold pack, cold bath, or cold colon irrigation, in order not to frighten a timid child, it is best to begin with a temperature of 95° F., and to lower it gradually by addition of cold water or ice down to 60° or 65° . Gentle friction of the body and extremities must be carried out during the bath. At times the heart must be sustained with stimulants. After the bath the child should be well covered until cutaneous circulation is reestablished. In the author's case of hyperpyrexia, a colon irrigation, begun at 85° and cooled gradually to 65° , with rubbing of the radial arteries and head with ice, followed by a bath beginning at 85° and gradually reduced to 70° led to a slow drop in the body temperature from 110° to 96° .

Tetanus.—The treatment of tetanus is divisible into the prophylactic and the curative, the former eminently efficacious, the latter much less so. Kenneth Goadby (*Practitioner*, May, 1916) gives as three cardinal points which must be observed when there is reason to suspect that a wound has been infected with tetanus bacilli and their spores: 1. To prevent the growth of the tetanus bacillus in the wound; 2, to neutralize any poison formed by the organism before it can attack the nerve tissues; 3, to cause as little disturbance as possible to the parts infected by the tetanus organism, especially nerve trunks. To prevent local growth we must remember that free oxygen prevents the development of the tetanus bacilli, which are found in all horse dung and therefore in heavily manured land, but that they can grow in an open wound if other organisms are present which absorb the free oxygen. All contaminated wounds should be exposed freely to the air, and irrigated frequently or constantly with peroxide of hydrogen or with oxygen gas. To neutralize the poison, a prophylactic dose of antitetanus serum of 500 units should be given as soon as practicable after the injury before cleansing the wound. Should early symptoms develop, or if the wound is very extensive or foul, another dose of 500 units may be given with advantage three days after the first. After premonitory symptoms have appeared the wound

should be disturbed as little as possible, and any operation that opens up the nerve trunks is highly dangerous. The chief points in the treatment of established tetanus are: 1. To recognize prodromal symptoms early; lockjaw is nearly always late; 2, to neutralize the poison and to extract such as has become absorbed; 3, to support the strength of the patient. Chief among the early symptoms are local muscular rigidity and fibrillar twitchings, the latter sometimes noticed by the patient himself, the rigidity confined to muscle groups. Occasionally ankle clonus, or rheumatic pains, are prodromal symptoms. The best treatment is the intrathecal injection of antitetanus serum given under ether or chloroform. After fifteen or twenty c. c. of cerebrospinal fluid have been drawn off, 4,000 to 8,000 units, warmed to the body temperature, are injected. The patient must be kept in a dark room in perfect quiet; narcotics should be given freely. In bad cases general anesthesia may be of help. Sometimes maximum doses of chloroform do good. The quantity of fluid taken must be large, and rectal feeding may become necessary.

Preparation of a Nontoxic Dysentery Vaccine.—It is well known that the rabbit is highly susceptible to Shiga's dysentery bacillus and succumbs to it so readily as to make the preparation of an antiserum very difficult. Experiments carried out by H. R. Dean and R. S. Adamson (*British Med. Jour.*, April 29, 1916) led to the discovery that the toxicity of Shiga vaccines could be greatly diminished by exposure of the emulsions of these organisms to the action of dilute solutions of hypochlorous acid in the form of esulor, or to hydrogen peroxide. The injection of vaccines thus treated was followed in rabbits by the development of a satisfactory degree of immunity. Such a vaccine was also tried on man and proved to be relatively nontoxic. It produced a local reaction which was only a little more marked than that usually seen from prophylactic typhoid vaccine injections, and constitutional symptoms were wholly absent. It is suggested that the same method for the reduction of the toxicity of this vaccine may be applicable to the preparation of typhoid and other vaccines to reduce their toxicity and the reactions which they produce.

Vaccine Treatment.—The more or less unsatisfactory state of vaccine therapy at the present day is discussed by Ludvig Hektoen (*Journal A. M. A.*, May 20, 1916), who points out the highly specific nature of different strains of bacteria of the same family. Owing to this high degree of specificity, which is daily becoming more apparent, it is largely empirical and unscientific to employ commercially prepared vaccines, even if mixed and polyvalent. Rational vaccine therapy calls for the use of the particular organism, or organisms responsible for the condition under treatment. A further unscientific practice in vaccine therapy is the use of these agents in acute infections, with the exception, perhaps, of typhoid fever. In this latter condition the accumulated evidence seems to indicate that some benefit, often marked, is to be derived in a large proportion of cases from the proper intravenous administration of typhoid vaccine. It must be men-

tioned, however, in this connection that the benefit does not seem to be a specific one, for other vaccines and even albumose similarly administered have been reported to have given as good results as typhoid vaccine. The action is probably connected with the stimulation of the production of nonspecific ferments. The legitimate field for vaccine therapy seems to be restricted to subacute and chronic localized infections and to the use of autogenous vaccines. The haphazard use of commercial stock vaccines and culture filtrates not only does not contribute to the advance of our understanding of the subject of vaccine therapy, but serves to create much confusion.

The Pseudoreaction in the Schick Test.—The difficulties in the interpretation of the Schick test due to the occurrence of pseudoreactions in some cases have led Abraham Zingher (*Jour. A. M. A.*, May 20, 1916) to investigate this reaction with a view to controlling it. He finds that it is due to the protein of the diphtheria toxin and occurs only in certain cases, never in those which give typical negative or positive responses. If the toxin is heated to 75° C. for five minutes, the toxin itself is destroyed, but the soluble protein of the bacillus remains. This protein is capable of giving the typical pseudoreaction. If, therefore, a control test is made with this heated toxin equal in amount to the unheated, the presence of a pseudoreaction can be determined with ease and certainty. The two reactions should be tried simultaneously on opposite arms. The pseudoreaction begins in about six to eighteen hours, attains its maximum in twenty-four to thirty-six hours and begins to disappear in three or four days.

The Prevention of Venereal Diseases in the Army.—Otto May (*Practitioner*, May, 1916) classifies the principal means of preventing venereal diseases, as, 1, educational; 2, diminution of opportunities for exposure to infection; 3, artificial prophylaxis. Under the heading of education he deals first with instruction to the soldier, which is thus summarized: 1. Description of the two diseases, gonorrhea and syphilis, with their complications, sequelæ, and effects on the offspring; 2, insistence on the need of early and efficient treatment and the danger of concealment or the use of quack remedies; 3, prevention guaranteed only by keeping out of the way of possible infection; exposure of the fallacy that only professional prostitutes are dangerous; in many cases the "amateur" is equally or more dangerous; 4, denunciation of the idea that continence is ever harmful, and that incontinence is an essential attribute of manliness; 5, the contributory effect of alcoholic indulgence through diminishing self control; 6, the importance of each man keeping fit, from the point of view of efficiency of the army. More than 750 lectures along these lines have been given to 500,000 troops and are believed to have exerted a great influence for good. Probably their best effect is on young soldiers whose "idea of an immoral and who are quite the first step in incontinence not from an uncontrollable propensity of a bad desire, but rather from living in an atmosphere in which incontinence is the

thing." It is also suggested that education of girls and young women in these matters is an essential complement to that of the men. Very little work of this kind has been accomplished, and in most cases girls have been left to realize the existence of these diseases through bitter experience. Under diminution of liability to exposure are discussed the provision of opportunities for recreation, drink restriction, and the control of loose women. The work of various organizations has been of the greatest utility in providing men with entertainments, for the aimless promenading of darkened streets is a fertile source of danger to the soldier, and anything that gives him other means of occupying his spare time is a powerful aid. Facilities for obtaining drink, especially outside of the control of the military authorities, favor venereal infection, and restriction of these facilities, as regards early closing of the saloons and otherwise, is needed. The control of loose women presents the same problems apparently as elsewhere, and the writer thinks that the results of the few experiments which have been made in the appointment of trained women police are encouraging. As regards artificial prophylaxis, there are two extreme schools of opinion, one regarding the introduction of such measures as the complete solution of a problem in which morals find no place, the other looking with abhorrence on any proposal to diminish the dangers of illicit intercourse. The surest and most practical attitude is between these extremes. The encouragement of continence by education, temperance, and suitable recreation is of the utmost importance, but it is futile to pretend that nothing more is necessary. Some form of artificial prophylaxis is necessary if all steps are to be taken to control these diseases, while such provision alone would be lamentably deficient. A less objectionable scheme to that of supplying the prophylactic means in advance, is to have it under medical control, for the man to avail himself of as soon as possible after exposure.

Prophylactic Use of Tetanus Antitoxin.—H. E. Robertson (*American Journal of the Medical Sciences*, May) thus summarizes his conclusions: 1. The most ideal and perfect protection against tetanus is the active immunity produced before the infection has occurred, but this is not yet practical. 2. In the majority of cases the subcutaneous injection of twenty units immediately after the injury will prevent with certainty the occurrence of tetanus, but the delay of a few hours in making the injection may mean the loss of life. 3. Local applications of fluid antitoxin on the wound are efficacious, but unnecessarily wasteful and not always practical. 4. In cases where injections cannot be made readily, especially in time of war, the immediate application to the wound of dried antitoxin tampons moistened by clean fluid may be used as a temporary substitute until fluid antitoxin can be injected. 5. Powdered antitoxin on the wound is not, as a rule, trustworthy. Its one useful field perhaps is the prevention of tetanus in the form of a certain failure is to be expected in the prophylactic treatment of tetanus as it is carried out at the present time. Occasional cases of the disease will develop in spite of the most care-

ful precaution. 7. The protection afforded by antitoxin lasts from two to three weeks, hence in protracted cases a second injection should be made, or dried antitoxin tampons should be placed on the wound. 8. Urticarial eruptions, rarely anything more serious, may follow injections of antitoxin.

Treatment of Mercuric Chloride Poisoning.—J. H. Wilmus, in the *Lancet-Clinic* for May 13, 1916, reports the case of a man thirty-nine years of age who swallowed by mistake a tablet containing seven and a half grains of mercury bichloride. Next day he presented all the symptoms of bichloride poisoning. About fourteen hours after the ingestion of the poison he was given an intravenous injection of seven and a half grains of calcium sulphide in seven and a half ounces of boiled and filtered water. Within two days he was practically well except for a pyorrhoea alveolaris, which soon subsided after the taking of calcium sulphide by the mouth.

Treatment of Hypertension.—James G. Carr (*Illinois Medical Journal*, April, 1916) divides these cases into three classes. The first class are those without symptoms and the treatment is hygienic and dietetic, with rest, regulation of the bowels, avoidance of alcohol and tobacco, and limitation of proteins, salt, and foods rich in purins. The second class show symptoms such as headache, vertigo, insomnia, angina, etc., and require a stricter diet, freedom from business or household cares, with potassium iodide, five to fifteen grains three times daily, over long periods. Venesection may be employed when symptoms become aggravated. Amyl nitrite and nitroglycerin are of service in anginal crises; prolonged use of vasodilators is not only inadvisable but may be harmful. The third group comprises cases with broken compensation. Here the dietetic and hygienic treatment must be rigid with rest in bed, milk diet, and profuse catharsis. Digitalis is of great service in restoring compensation and potassium iodide may be given with it, with opiates when necessary. Fear of digitalis is groundless.

Control of Experimental Cretinism.—H. Raymond Basinger, in the *Archives of Internal Medicine* for February, 1916, reports therapeutic experiments carried out in young rabbits in which cretinism had been induced by complete thyroidectomy at the age of two to three weeks, when the animals weighed about 175 grams. About two weeks after the operation the hair always became dry, ruffled, and loose. A gradual retardation of growth was also noticed, the average weight of the cretins by the tenth week being 750 grams, against 1,400 grams in the control animals. Muscular weakness, short limbs, eczema, pot belly, and general apathy were also marked features. Transfusion of normal rabbit blood serum into the cretins was not found to exert any effect on the condition. Transfusion of blood from animals rendered "hyperthyroid" by thyroid feeding did, however, increase the growth of the cretins and control other symptoms, though the improvement was not as marked as under direct thyroid feeding. Standard U. S. P. thyroid preparations, given in carefully controlled

nontoxic doses, were found greatly to increase the growth of cretin rabbits and to prevent or counteract the other symptoms of cretinism. Rabbits in which thyroid feeding was begun as soon as symptoms of cretinism appeared reached an average weight almost equal to that of normal rabbits—2,250 against 2,475 grams; the maximum weight in the cretin was reached eight weeks later than in the normal rabbits. Good results were also obtained from feeding cretins with Koch's thyroid metaprotein preparation, but this proved more toxic than the standard thyroid preparations. Kendall's thyroid extract B had no effect on the symptoms of cretinism. Cretins were observed to be much more susceptible to the toxic action of thyroid in thyroid feeding—diarrhea, tachycardia, tremor, and nervousness—than normal animals.

Optochin in Pneumonia.—An experience of the use of this new preparation in pneumonia, extending over one year, provided Hermann Silbergleit (*Berliner klin. Wochr.*, Nov. 29, 1915) with material for the evaluation of the remedy. The comparison could be the more accurately made since he had a simultaneous series of patients whom he did not treat with optochin. Both groups were otherwise handled alike. He found that the drug did not shorten the course of the disease, did not bring the fever to normal promptly, had no influence on the mortality, and did not seem to reduce the number or severity of the complications. In two respects only did the drug have beneficial actions, namely, as a mild antipyretic, and in causing some improvement in the general wellbeing and comfort of the patients. Its use in no way avoided the need for the employment of cardiac stimulants. The beneficial actions of the drug were relatively slight compared with its possible unfavorable actions in producing disturbances of hearing and vision. But when it was used in an amount not exceeding six daily doses of 0.2 gram. each, the side reactions were seldom encountered.

Use of the Duodenal Tube for Diagnosis and Treatment.—Franklin W. White (*Boston Medical and Surgical Journal*, May 11th and 18th) speaks highly of the duodenal tube as a convenient and comfortable means of obtaining stomach contents, more trustworthy than the usual stomach tube for aspirating small amounts of clear fasting contents. A heavy Gross tube enters the duodenum more rapidly than a light Einhorn, while a small one with a heavy tip, of at least 100 grains weight, is the best of all for diagnostic work. A duodenal tube is as safe to use as an ordinary stomach tube. In treatment, or rather in the introduction of food, the tube of Einhorn is serviceable in cases of persistent vomiting of a nervous or toxic type; it should be unusually long to prevent regurgitation into the stomach. It is useful in severe cases of malnutrition with anorexia and atonic stomach, as well as in a limited group of cases of peptic ulcer which are without organic obstruction or have resisted ordinary medical treatment. It was used several times to improve the patient's condition before operation for ulcer, and twice in cancer of the esophagus. It is superior to rectal feeding, as patients usually keep

their weight, or gain and maintain their balance of nitrogen. A reservoir and the Murphy drip method is preferred to a syringe for introducing food.

Epidemic Jaundice.—Abd-el-Aziz Ismael (*Practitioner*, May) declares that the treatment of this condition must be wholly symptomatic. The bowels should be kept open by calomel, castor oil, or olive oil at night, and Carlsbad salts in the morning. Enemata also may be required. Various drugs have been tried to check the vomiting, but often without effect. Burning sensations in the epigastrium, due to reflex hyperacidity, may be relieved by olive oil when alkaline powders have failed. The stools are rarely offensive, and intestinal and biliary antiseptics can generally be dispensed with. Bromides and valerianates seem to relieve the headache and insomnia better than the coal-tar compounds. Paraldehyde, opium, chloroform, and alcohol tend to cause liver congestion and should be avoided in bad cases. Glucose solution was used with striking improvement in some cases. For the vasomotor instability calcium lactate and pituitrin were tried in ten cases with slight effect. In cardiac dilatation, secondary to fatty degeneration, strychnine had more effect than the digitalis group, which had no influence on the pulse rate and the cardiac symptoms. Arsenic and iron may be necessary during convalescence.

Methods for Testing Donors for Transfusion of Blood, and Consideration of Factors Influencing Agglutination and Hemolysis.—George R. Minot (*Boston Medical and Surgical Journal*, May 11, 1916) says that a donor for transfusion of blood should not only be healthy, but should belong to the same isoagglutination group as the recipient, in order that bad results from hemolysis or agglutination in the vessels of the latter may be avoided. The usual method is to test the patient's serum or plasma against the donor's cells, and vice versa. If no agglutination or hemolysis occurs *in vitro*, there will be none *in vivo*. A number of other tests are described by which it may be determined to which of four possible groups both the patient and the donor belong, for both should belong to the same group. Attention to this does not necessarily exclude a bad result, for other reactions of unknown nature sometimes occur after transfusion, usually in patients with high fever, sepsis, or blood disease, rather than in those with a secondary anemia.

Aneurysms of the Descending Thoracic Aorta.—Selian Neuhoef (*American Journal of the Medical Sciences*, May) urges antisiphilitic treatment, because syphilis is the fundamental disease in the majority of cases. He thinks the best routine procedure is an intravenous injection of 0.2 gram salvarsan every week until three doses have been given; then, if indicated, it may be repeated in 0.6 gram doses a month or two apart. In the interim intramuscular injections of mercury about twice a week should be given in conjunction with potassium iodide. As this treatment often is efficacious and is followed by marked improvement, the writer believes it should be carried out in all cases unless the patient is *in extremis*, whether the Wassermann is positive or not. Cardiac failure due to dilatation of the de-

scending aorta should be met by digitalis. If urgency demands it, and very little or no digitalis has been given, one c. c. of strophanthin may be slowly injected intravenously. Restoration of the aorta to its normal state is impossible, but the syphilis may be arrested and controlled, and the patient made comfortable.

Dysenteries Other Than Amebic.—George C. Low (*Practitioner*, May, 1916) divides the treatment into general and special. The patient should be placed in bed as soon as possible and kept there strictly. Cultures from the feces should be made at once. If pain and straining are excessive, hot stupes or poultices should be applied to the abdomen. The rest of the body should be kept warm with hot bottles. If the anus is irritable it should be washed with a weak antiseptic lotion after each movement. In the early stages albumin water, barley water, or rice water should be given, later boiled or peptonized milk, then soups until the patient is able to take puddings, arrowroot, etc. The return to normal diet should be made very slowly and with care, and alcohol should not be allowed during or after the illness. When dysentery serums are available they should be given early, and certainly in all severe cases. The drugs that have proved most efficacious are the ordinary salines, such as sodium or magnesium sulphate in one dram doses every two hours until the acute symptoms disappear and fecal matter reappears in the stools. The sodium salt is preferable, as it is less irritating. The salts may be given by themselves, dissolved in a quarter of a tumblerful of hot water, or combined with other drugs. Buchanan's mixture is:

R	Magnesi sulphatis,	3ij.
	Acidi sulphurici diluti,	3iiss.
	Tincturae zingiberis,	3iiss.
	Aquae, ad.....	5viij.

M. Sig.: One or two teaspoonfuls every one or two hours until gentle purgation appears. Continue less frequently for one or two days after the blood and mucus have disappeared.

Another prescription is:

R	Sodii sulphatis,	3i.
	Acidi sulphurici aromatici	℥xv.
	Aquae cinnamomi, ad.....	5℥.

M. Sig.: Half an ounce every two hours until relief is obtained.

The aromatic sulphuric acid may be omitted.

The proof that the salts are acting beneficially is furnished by the lessening of pain and tenesmus, the disappearance of blood and slime, and the appearance of copious, soft, feculent motions. If the stools become too watery the salt must be lessened in amount, or stopped if necessary. After the acute symptoms have disappeared, a further dose or two may be given for a few days, especially if there is any tendency to constipation. Calomel is not necessary. If the case becomes chronic, or diarrhea persists, rectal irrigation may be tried, with such organic silver salts as argyrol, albargin, nargol, protargol, or astringents like tannin and copper sulphate. By the mouth, bismuth, bismuth subcalvate, kerol, cyllin, acetozone, salol, and other intestinal disinfectants often are useful in checking diarrhea, or, failing these, Ko-sam, catechu, uzara, or cinna-mon might be given a trial.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT

November 8, 1915.

Functional Examination of the Heart, by Rehfisch. There is no single functional test which gives, or can give by itself in every case decisive information as to the sufficiency of the heart. Critical application of one or another method will indicate the direction in which the cause of a cardiac disturbance must be sought—whether in the state of the cardiac musculature, the vascular system, or the nervous mechanism. Consideration of the pathological physiology of the circulation indicates the tests which can be applied and their probable value. Auscultation alone will yield much valuable information. If there is an insufficiency of the power of the left ventricle through diminution of its contractility or elasticity, the aortic second sound will show a relative reduction in intensity following brief exercise owing to a smaller systolic output of blood. If under such circumstances the right ventricle remains sufficient, there will be a simultaneous marked accentuation of the second pulmonic sound. Cases which present these signs are likely to end favorably. Insufficiency of the right ventricle also is shown by a relative diminution in the intensity of the pulmonic second sound following exercise, and when this is combined with evidence of deficient power of the left ventricle the prognosis is less favorable. If the accentuation of the aortic first sound is greater than that of the second, it is an indication of a hyperexcitability of the vasomotor centre which leads to vascular dilatation during work to relieve the strain on the heart. This, however, may result in an insufficient peripheral circulation if the hyperexcitability is marked. Such a condition may also be detected or confirmed by means of plethysmographic readings taken from an arm. The plethysmograph may show a vascular constriction during exercise which, if combined with accentuation of the aortic second sound and some precordial distress, is indicative of abnormal vascular contraction involving the coronary as well as the peripheral vessels. These tests yield valuable information only in young individuals free from arteriosclerosis. There is some danger of being misled, however, even in young persons, since it has recently been shown that a rather large proportion of these are the victims of a slight early sclerosis which may be overlooked without careful examination.

BULLETIN DE L'ACADÉMIE DE MÉDECINE.

April 18, 1916.

Recent Experiences with Cerebrospinal Meningitis, by Nevèu-Lemaire.—The report is based on a series of sixty-four cases of acute meningitis treated in a military hospital at Dunkirk, France. Fifty-four cases were of meningococcic origin; two, typhoid; one each, parameningococcic, pneumococcic, and streptococcic, and five due to other organisms. All the nonmeningococcic cases, except one of the typhoid cases, ended fatally. Among the fifty-four meningococcic cases the mortality was seven, or 12.96 per cent. The series included four protracted cases. Complications were noted in

twenty per cent. of the cases, especially the protracted ones, and included localized paralyses, generally evanescent, sensory disturbances, persistent headache, mental disorder, and involvements of the joints, ears, and eyes; in one instance, a meningococcic septicemia was seen. Cases were most numerous among subjects less than twenty-five years of age and in those between the ages of thirty-six and forty; the mortality was much the greatest in the latter group. The disease was most common in the months of March, April, May, and June. The advisability of beginning spinal injections of antimeningitis serum as soon as possible, giving forty to fifty c. c. at the start and repeating the injections several times a day at first, especially in grave forms of the disease, became plainly manifest. The time for cessation of the injections is best judged by the general improvement, lowered temperature, and condition of the cerebrospinal fluid, and not by the rigidity of the neck, which may persist for some time and entail risk of serum intoxication if the injections are continued. Where relapses occurred, the author took the customary precautions against anaphylaxis when resuming serum treatment after an interruption of over a week. Hot baths at 39° or 40° C. were administered as an adjunct measure. In the last thirty-three cases the mortality from meningococcic cerebrospinal meningitis was thus reduced to one case, or 3.1 per cent.

PARIS MÉDICAL.

April 15, 1916.

Cardiac Murmurs and Military Service, by O. Josué.—Reports of soldiers with valvular lesions who had been able to withstand the fatigue of active military service have recently appeared. Stress has therefore been laid on the condition of the myocardium rather than on the condition of the valves as a criterion of individual capacity for military service. The fact remains, however, that persons with organic murmur are seldom resistant to fatigue. In general, valvular lesions prevent military service. The tendency, moreover, to consider subjects with nonorganic murmurs regularly fit for service is itself a mistaken one. Some men with clearly nonorganic murmurs show, in active service, dyspnea upon the least unusual exertion, and at times a paroxysmal dyspnea, with pallor, slight cyanosis of the lips, and on percussion a heart manifestly dilated. In such instances no immediate decision should be reached. Under complete rest and appropriate dietetic and other treatment the disturbance in some cases disappears more or less rapidly, the individual acquiring full capacity for subsequent military service. In other cases, the trouble persists in spite of treatment or disappears only to return upon further exertion; in these instances, after attentive and prolonged observation, the individual should be declared unfitted for service. In cases of anemic murmurs the capacity for military service depends upon the nature, cause, severity, and course of the anemia itself. In some cases nonorganic murmurs are due exclusively to impaired functioning of the papillary muscles and chordæ tendineæ, this resulting in faulty closure of the valves.

Acute Nephritis in Military Practice, by M. Gaud and P. Mauriac.—Among two thousand patients admitted to a military hospital, no fewer than 130 had acute nephritis. The condition, though varying in severity, showed a distinct similarity of symptoms and course in the various cases. It began with a prodromal period of three to six days, characterized by unusual fatigue, obstinate headache, lumbar pains, slight oppression and, in two cases only, anorexia and vomiting. Edema of the face and extremities then suddenly appeared, with mild fever the first few days, diminished output of a dark, muddy urine containing 0.2 to 0.5 per cent., up to one, three, and even 4.5 per cent. of albumin, a little hemoglobin, epithelial and granular casts, and a few red cells. Under rest and a milk diet the condition subsided, as a rule, in two weeks. One case was admitted while in uremic coma, but recovered rapidly after two venesections. The only fatal case in the entire series succumbed in thirty-six hours despite repeated blood lettings. Fatigue, excess of meat in the diet, and possibly exposure to cold are held to predispose to the condition, the kidney becoming a *locus minoris resistentia* and reacting sharply to any infection acquired. The organisms responsible are probably many; in the blood of two patients and in the urine of three others, out of thirteen examined, bacilli resembling the typhoid and paratyphoid organisms were found.

RIFORMA MEDICA.

May 1, 1916.

Acute Mania, by Aleardo Salerni.—Christiani in 1898 first described this condition as a generalized disease of the nervous system characterized by a process of degeneration of the cells and fibres of the nerve centres without involvement of the vessels or neuroglia. Perret, Alzheimer, Stoch, and others agree with this explanation, laying stress on the infectious or toxic origin of the disease. A microorganism resembling *Bacillus subtilis* has been isolated from the blood by Bianchi and Piccinino and named after its discoverers. Other bacteria isolated in acute mania cases are *Staphylococcus albus* and the colon bacillus.

ANNAES PAULISTAS DE MEDICINA E CIRURGIA.

January, 1916.

Visceral Transposition, by Aloysio de Castro.—about 150 cases have been reported in the literature, of which most were of cardiac transposition. Three new cases are reported by de Castro, of which the first, a man of twenty-seven years showed transposition of the heart, stomach, and large intestine; the second, a man of twenty-two, showed transposition of the heart and stomach, but not of the intestine, and the third, a boy of thirteen, showed transposition of the heart and of the stomach and large intestine. These anomalies of position were verified by radiographs and electrocardiographs, and the seeming rarity of the conditions described in the second case, namely, transposition of the heart and stomach without change in the position of the large intestine, is probably due to the fact that in most of the earlier reports no x ray examinations were made.

A Case of Blastomycosis, by J. de Aguiar Pupo.—Having previously reported two cases, Pupo describes a third in a girl of fifteen years, which was uninfluenced by neosalvarsan or by the highly recommended intravenous administration of the iodides. Likewise large doses of the iodides by mouth had no effect on the case.

GLASGOW MEDICAL JOURNAL.

January, 1916.

A Source of Error in Using Esbach's Albuminometer, by H. E. Jones.—A case is reported in which results of albumin determination in the urine with the Esbach procedure proved misleading, owing to a high degree of alkalinity of the urine tested. Although an albumin precipitate was obtained in the heat and acid tests, no precipitate was obtained in the albuminometer owing to the fact that the amount of citric acid contained in Esbach's reagent was insufficient to acidulate the urine to the extent required for precipitation of albumin by the picric acid in the reagent. In all very alkaline urine this source of possible error in the interpretation of the test should be borne in mind.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

May 2, 1916.

Painful Back, by William E. Shackleton.—A form of painful back is described, occurring in three cases, in which the condition was due to an abnormal development of the transverse process of the fifth lumbar vertebra. The enlargement of this process produced compression of the lumbar nerve, or irritation through continuous friction against the upper border of the ilium. Surgical removal of this process in two of the cases was followed by cure. The enlargement of the process seemed to be referable in large part to occupation throwing prolonged strain upon it. Diagnosis was made by x ray demonstration of the enlarged process.

Streptothrix in Bronchopneumonia of Rats, by Ruth Tunnickliff.—Observation of a large number of rats ill with bronchopneumonia revealed the presence of a streptothrix as the cause of the infection. The organism was indistinguishable from that isolated by Schottmueller from the blood of patients having rat bite fever. Since Tunnickliff found the organism present in great abundance in the tracheal mucus of the infected rats, the infectivity of the bite of such an animal seems obvious.

Bacillus epilepticus, by Charles A. L. Reed.—A short, thick, sporebearing bacillus has been isolated from the blood, the cecum, and the mesocecal or mesocolic lymph nodes in a large proportion of cases of epilepsy. It was never found in the tissues of normal or nonepileptic persons. The injection of cultures of the organism into rabbits produced symptoms closely resembling epilepsy, and the disease was discovered to be spontaneously transmissible from infected to noninfected rabbits through the medium of fecal contamination. The organism could also be recovered in pure culture from infected rabbits. In some instances in rabbits, injected intravenously with cultures of the organism, the acute infection was survived and a

condition of acquired immunity was developed. This presents a close analogy to the decline in severity of attacks and ultimate recovery observed in human subjects after removal of the cecum and intestinal antiseptics. The organism, by reason of its highly resistant spores, may live long outside of the body and, since it escapes in the feces the source of human infection is apparent. Two instances are cited in which the evidence of direct infection of normal men by epileptics, with the subsequent development of typical epilepsy, was strong.

Microscopic Examination of Finger Nail Deposits, by Albert Schneider. — A surprising amount of valuable information is to be obtained by careful microscopic examination of the scrapings from beneath the nails of the index and middle fingers. Such information may be of great medico-legal value, and an instance is cited in which it led to the discovery of a crime. The possible findings are outlined by the author and attention is directed to the need for the cultivation of this field. The wide range of substances which may be present and their individual importance demands a comprehensive experience on the part of the examiner if he is to become an expert in this line of work.

AMERICAN JOURNAL OF ORTHOPEDIC SURGERY.

May, 1916.

Loose Bodies in the Kneejoint, by Melvin S. Henderson. The writer classifies as follows: 1. Fibrinous bodies, intrinsic in origin. 2. Organized connective tissues, intrinsic in origin. 3. Foreign bodies, extrinsic in origin. Fibrinous bodies are probably due to some disease of the synovia and never cause locking or slipping. Organized connective tissue bodies cause mechanical derangements and may depend upon some disease condition as a primary cause, but the essential and secondary cause is trauma. He advises surgery, except in cases of neuropathic origin.

Results of Fractures of Os calcis, by Frederic J. Colton and Melvin S. Henderson. The authors assert that conservative treatment gives poor results and that reduction by the Colton method is an improvement in treatment. Of sixteen cases, nine were treated by reduction and six of the patients are able to work. In another series of patients (twelve) who were not treated by the reduction, but three are able to work.

JOURNAL OF EXPERIMENTAL MEDICINE.

May, 1916.

The Protection of Pathogenic Microorganisms by Living Tissue Cells.—Rous and Jones call attention to the possibility of invading bacteria being taken up by cells other than the phagocytes and in this way being protected from the normal defenses of the body. They found that even the leucocytes can protect ingested bacteria from the action of bactericidal antiserum. This protective action, particularly of the cells of the fixed tissues, may be a factor in explaining the inefficiency of therapeutic measures, as in leprosy, where the organisms are found within the cells. It may also account for the development of secondary attacks of an infective nature without there having been another infection.

As a result of injury cells may have been destroyed and the protected bacteria given an opportunity to act.

Chemical versus Serum Treatment of Epidemic Meningitis.—Flexner and Amoss report a series of experiments conducted for the purpose of determining the value of the treatment of meningitis by the injection of lysol and of protargol into the spinal canal. Recently favorable reports have been made. In order to eliminate the difference in virulence that occurs in different epidemics the authors conducted their experiments on animals. They found that their substances exert a distinct antileucocytic and antiphagocytic effect and are also strong protoplasmic poisons. Inasmuch as the recovery from meningitis is accomplished mainly by the action of the phagocytes it is evident that anything that interferes with their function should be avoided. As the antiserum increases the emigration of the leucocytes, produces phagocytosis, agglutinates the meningococci, and neutralizes the endotoxin, it should be employed in preference to substances that act harmfully.

JOURNAL OF INFECTIOUS DISEASES.

April, 1916.

An Epidemic of Appendicitis and Parotiditis probably Due to Streptococci Contained in Dairy Products.—Rosenow and Dunlap report an outbreak of eight cases of acute appendicitis developing within twelve days, and of thirty-four cases of parotiditis within three months. Bacteriological examinations were made in several instances from the appendixes and all showed streptococci, some in almost pure growth. As epidemics of septic sore throat have been traced to milk it was considered possible that the present outbreak might be due to dairy products. Streptococci were found in the milk and these when inoculated into rabbits caused appendicitis in some and parotiditis in other of the animals. It would seem quite evident that the epidemics of appendicitis and tonsillitis were due to streptococci contained in the dairy products.

May, 1916.

Epidemiology of Pellagra in Nashville, Tenn.—Jobling and Peterson give an extensive report concerning their investigation into the marked increase in the mortality and morbidity from pellagra in Nashville. They were able to find little in common in the cases, with one exception. Inasmuch as there was a greater prevalence of pellagra among those living in districts that had no sewers, it would appear that the lack of proper sewage disposal must play an important part in the development of the disease. It was also suggestive that the typhoid incidence, as a rule, conformed closely with that of pellagra. Another point of interest and possible importance is that some seventy-eight per cent. of the patients had been in intimate contact with other pellagrins before they developed the disease. Inasmuch as the water used was derived from various sources, it is not likely that it plays an important role. As far as diet is concerned it was found that the majority of the patients ingested an amount of protein considered sufficient to sustain life without the development of pellagra.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 20, 1916.

The President, Dr. WALTER B. JAMES, of New York, in the Chair.

Vitamines, a New Factor in Nutrition.—An abstract of this paper, by Dr. Casimir Funk, appears under *Dietetics and Alimentation*, page 1133.

Dr. P. A. LEVENE said that his own role in the problem of vitamins and of nutrition was that of a consumer; rather of a person receptive in instruction than of an instructor; his opinions, therefore, on the subject carried less weight and perhaps also less bias than those of the other speakers. To him the problem of nutrition appeared in two aspects: One of academic interest, and the other of practical application. One concerned the investigator, the other the physician. From the academic viewpoint the process of nutrition consisted of two phases. One was concerned with the production of energy required for the normal course of the functions of the organism; the other with growth and repair of the tissue elements. The first was a process of degradation, the second one of synthesis. There were a great many substances that could be converted into energy by an engine, yet which could not yield heat to a living organism. There were also many substances which could be converted into tissue elements by plants or bacteria, but which could not be made use of for the same end by man.

A perfect food was the one that furnished all the energy requirement with the least tax on the integrity of the tissues, and which at the same time contained in ready form all the elements required by the organism for the normal repair of its tissue elements. In the light of these requirements a diet composed of homologous tissue approached nearest the ideal. On the other hand, a diet composed of an unusually large quantity of a single food stuff was most taxing to the activities of the tissues. It not only lacked some of the elements necessary for tissue repair, but also lowered the efficiency of the supply of these substances deposited in the tissues.

Such was the case in experimental polyneuritis. Fasting was much less harmful than a diet consisting alone of polished rice. A large intake of rice was more effective than a small intake in producing beriberi. Beriberi once produced could be permanently cured by a well balanced diet; it could also be temporarily or partially cured by minute quantities of certain tissue extracts. It was one of the merits of Doctor Funk to have introduced the name "vitamine" for the substances possessing curative and prophylactic properties in beriberi.

Hence it seemed that the organism was endowed with a given supply of vitamins which sufficed to guard against beriberi in a fast, but not on a diet rich in polished rice. The speaker wondered what were these substances? How did they function? To what extent had the practice of the clinician been guided by them? The conservative mind would have to admit that they knew little or nothing about the chemical nature of the hypothetic substance. The future might disclose that the so called vitamins were very simple components of the tissues. They might be of importance only for the reason

that the organism did not possess the power to synthesize them, or possessed the power only in a limited degree.

Just because the knowledge of the vitamins was so limited, the study of them carried great fascination to the theoretical worker. The clinician for the present had to deal cautiously with the problem of vitamins. Wherever possible, he should avoid one sided, monotonous diet. His knowledge for a time would remain empirical. The greater the number of workers in the field of vitamins and of nutrition, the sooner empiricism would be replaced by exact knowledge.

Dr. JOHN R. MURLIN had had very little experience with vitamins, but he had had some opportunity to observe pellagra in the U. S. Hospital for the Study of Pellagra, at Spartanburg, S. C., where he was employed for three months as biochemist. When an abundance of animal proteins was supplied in the diet, the disease was conquered to a large extent. So far, however, it had not been proved that pellagra was the result of vitamin deficiency. It had not been proved either that vitamins were essential to life, except under the conditions which produced polyneuritis in fowls. Doctor Funk was the first to show the specific effect which could be obtained from extract of yeast, and that added to the diet of polished rice it would cure polyneuritis in fowls. In small quantities, the purified substance was just as efficacious as a large quantity of the rice polishings. Doctor Funk had shown that this material could be obtained in a crystalline form.

But it was a far cry from polyneuritis in fowls to pellagra. In pellagra, there was a symmetrical distribution of the lesions on the skin, which must be attributed to effects on the central nervous system; and there was peripheral neuritis, but the gastrointestinal symptoms were equally prominent. So far, they could not say that the symptoms of pellagra were due to the absence of vitamins from the diet. Goldberger and his coworkers had shown that when normal people were placed on a restricted diet made up of materials habitually eaten by the poor people of the South, they developed some symptoms of pellagra, and when an abundance of animal proteins was added to the diet of the inmates of several institutions in the South where pellagra regularly appeared, the pellagra was prevented, and cured. To prove that the absence of vitamins produced the disease, it would have to be shown that the food habitually eaten lacked vitamins in a specific sense; and that the proteins which prevented the disease contained these vitamins.

The name vitamin was assumed to mean too much. Mendel and Osborne have shown that lysin—a constituent of many but not of all proteins, was essential to growth; lysin in that sense might be spoken of as a vitamin; and unless it was present in the diet there was a form of deficiency.

In pellagra the diet and climate conduced to a peculiar gastrointestinal condition. The flora of the intestines was peculiar and gave rise to the formation of acid bodies which might be toxic. The flora was changed and the acid formation prevented by an abundance of animal protein in the food. Lorenz recently demonstrated in a study of the mental manifestations of pellagra that there were

many things in common between the effects of this disease and those of chronic alcoholism. The production in the intestine from excessive carbohydrate of a toxin with marked deleterious effects similar to those of alcohol might be responsible for the symptoms. At all events, there was as yet no justification in accepting Doctor Funk's hypothesis that pellagra was due solely to lack of vitamins.

Dr. MORRIS STARK said that, in the course of the evening's discussion in referring to the so called deficiency diseases, not much stress had been laid upon the possibility of rhachitis being considered a deficiency disease, as suggested by Doctor Funk and others, some time ago. There was enough evidence in the literature of rhachitis, to say nothing of much as yet unpublished work now going on, to tempt them to assume that rhachitis was a metabolic deficiency, at least until it could be either proved or disproved as such by further work along the lines of metabolism experiments upon the human infant. If such experiments definitely showed a change in the mineral metabolism as a result of the administration of substances designated by Doctor Funk as vitamins, substances in themselves free from these salts in appreciable amounts, in addition to the diet which produced the deficiency disease, a diet in itself not lacking these salts in necessary amount for the needs of the body, but lacking in vitamins, then the point was proved and the mystery surrounding rickets was solved. The literature already published by Doctor Funk showed ample evidence in justification of the term, vitamin, being applied to these substances. That this group of substances was just as necessary for life as those aminoacids which had proved themselves also necessary to the normal existence of the organism, would readily demonstrate itself to any one making as careful chemical and physiological tests as Doctor Funk and his collaborators had made, tests which, though questioned, had never been disproved by any one.

As to whether the boiling of milk diminished its nutritive value, it seemed, as the experiments so far had shown, that boiling of casein did not destroy its food value, as supposed by McCollum, but it undoubtedly did destroy the vitamins, as was proved by the cessation of growth of rats fed upon it and their return to normal growth when a vitamin-containing substance, such as yeast, was added to the food. McCollum's findings as to the necessity of butter for growth, experiments referred to by Doctor Funk in his paper, seemed to controvert this. From many authoritative sources they were led to believe that yeast contained a large proportion of vitamin, and accordingly observations upon the effect of the administration of autolyzed yeast to rhachitic children were now being conducted by the speaker at one of the out patient departments with the finding that a distinct increase of appetite was the result. Rhachitis in breast fed babies and also its occurrence very early in other infants artificially fed, was being further investigated by a careful study of the diet of the mothers during pregnancy and lactation. (See editorial articles, Vitamin Therapeutics, etc., JOURNAL for March 18, page 559, and Isolating the Vitamins, JOURNAL for April 15, 1916, page 749.)

WESTERN SURGICAL ASSOCIATION.

Twenty-fifth Annual Meeting, Held at Des Moines, Iowa, December 17 and 18, 1915.

The President, Dr. JOSEPH RILUS EASTMAN, of Indianapolis, in the Chair.

(Continued from page 1102.)

First Aid.—Dr. JOSEPH C. BLOODGOOD, of Baltimore, asked what was first aid? The military surgeon of today said that first aid was what a surgeon would do if he chanced to be present at the moment of injury; but in the great majority of cases the surgeon could not be there. First aid was what a surgeon was willing to have some one else do with the things that it was possible to provide and to have there at the time of the accident until the patient could be carried to a surgeon. At the front there was the soldier with his first aid package, and the medical profession of the army told the soldier what he could do for his comrade if he was shot. Near the firing line was the hospital corps with a few surgeons, and the medical profession of the army told what the hospital corps man could do; but he could do very little more than the comrade of the soldier; he carried a few more things with him than the soldier carried. There was a difference of opinion whether the hospital corps man should carry morphine, so that the wounded soldier could get the drug if he needed it. It was also felt that the hospital corps should carry iodine, but the soldiers should not be given iodine. Then there was the surgeon on the firing line. He should be restricted in what he should do with what he had there just as much as the comrade and the hospital corps man. The soldier on the firing line and the hospital corps man could not do as much as the surgeon at the base hospital. He was given things to do that were possible to every surgeon with a moderate amount of training in a position behind the firing line, with the materials that were possible to put there.

First aid measures consisted of how they should cover a wound, how to put an injured arm or leg at rest, and the problem of transportation. Wounded soldiers should be transported to some place where they could have the services of the most experienced surgeon with the environment of a modern hospital, so that everything necessary could be done, and the consensus was to move the base hospital as near the firing line as the modern gun would permit. The only thing that put the base hospital back was artillery.

Why did they need a board of standardization? There was no consensus among those who were teaching first aid as to what should be taught. This must be standardized. The danger had been that they taught too much. They could not standardize first aid unless surgeons were willing to think about this and give their opinion as to what they thought ordinary persons should be allowed to do.

Repair of Small Vesicovaginal Fistulae.—Dr. CHARLES H. MAYO, of Rochester, Minnesota, described his operation. An incision was made through the vaginal mucosa, extending completely around the fistulous opening for about a quarter of an inch, or less, from its margins. The vaginal mucosa was dissected toward the opening, care be-

ing taken not to break through at the margin. This made a little cup or funnel shaped opening projecting into the vagina. The circular dissection was carried deeper around the fistula, not approaching nearer than one eighth of an inch to the margin, its depth penetrating to the mucosa of the bladder, but not through it. This left a little bell or funnel shaped opening of mucous membrane, which was connected with the mucosa of the bladder and projected into the vagina. A ligature carrier was passed through the urethra into the bladder and through the fistula into the vagina. A suture was passed through both walls of the funneled mucosa on each side of the ligature carrier. The ends of the silk suture were threaded into the ligature carrier, which was withdrawn from the bladder and urethra. The ends of the suture projecting from the urethra were drawn upon, and with a little aid the fistulous tract started to invert. As soon as the mucosa disappeared a circular suture of fine chromic catgut was applied, a little more traction was made on the ends of the long suture, and a second purse string suture of catgut was applied. The vaginal side was then closed, either by a circular suture of chromic catgut or by interrupted sutures, as seemed best. This inversion turned the mucous surface into the bladder and left a healing surface within the tube. One of the long ends of the suture projecting from the urethra was rethreaded and by a needle was sutured to the skin of the labia. The ends were then tied at this point, making slight traction. A self retaining catheter of the Pezzar type was inserted into the bladder, and the patient was instructed to rest on her side or even on her face. This kept the fistulous area free from urinary pressure. After four days, it was necessary carefully to watch the catheter to see that sediment or vaginal deposit did not obstruct this lumen. In some cases irrigation was necessary. However, the long suture attached to the inner side of the surface of the fistula and passing through the urethra acted as a safety valve of leakage should the catheter become temporarily plugged. After a week the repair was usually solid, but it was better to keep the patient on her side or face for a few days longer so that no undue strain might be placed on the fistulous area, and during this time it was best to keep a catheter in, or if it was removed, to have regular periods for passing it. The suture from within the bladder either cut itself out with the slight traction before it was time to remove the catheter, or it might be drawn out without difficulty by cutting one side where it was attached to the skin.

Intestinal Stasis.—Dr. B. B. DAVIS, of Omaha, stated that in his conception of intestinal stasis the condition fell naturally into three classes: 1. Cases due solely to mechanical causes. 2. Cases due entirely to weakened and dilated intestines without mechanical obstruction. 3. Cases primarily of the second class, but with adhesions resulting from subinfections. Regarding the first class, there was little to say. If inflammatory adhesions, persisting bands, membranes, or kinks produced enough mechanical interference with the progress of the intestinal current to result finally in a weakening of the intestinal walls and a gradual lessening of peristaltic efficiency, the result would be intestinal stasis with all the

varied train of symptoms that he had learned to expect. In such cases the etiology was plain, and the treatment was not a subject for discussion. The mechanical cause of the stasis must be removed surgically, and if this was done effectively and reasonably early, the results were restoration to perfect health and normal function.

The second class was the one toward which he wished to direct attention. Normally the food was taken into the stomach with appetite, the saliva and gastric juice were secreted in sufficient abundance, peristalsis was started, the bile and pancreatic juice appeared at the correct stage of the procedure, the intestinal juices bore their share, and sufficient gas was formed to aid materially in giving safe passage of the food along its way. Even the normal tonicity of the abdominal muscles was an important factor in helping the intestinal contents along the journey to the large bowel. When the colon was reached, the food was ready for absorption. Finally the residue was deposited in the descending colon, which was to be considered a mere reservoir. Defecation was the final act, which left the colon ready to receive the next installment. As long as all the functions were perfect, the process of digestion, absorption, and discharge of the waste material went on in a natural way, none of the organs concerned in the process were being overworked, weakened, or exhausted. A perfectly sane and well ordered life and dietary ought to go on for a lifetime without a hitch.

That shortcircuiting or colectomy had a large place in the treatment of such cases, he was not prepared to believe. It was not a procedure that appealed to reason. The condition was entirely one of perverted function brought about by a long series of abuses. The condition in the severer cases affected the whole alimentary canal from stomach to anus. In order to restore in part the weakened intestinal walls, increased nutrition was sorely needed. The proposal to excise that portion of the colon which had especially to do with absorption of nutrients, seemed theoretically to be about the worst thing that could be suggested. It was his opinion that soon surgeons who had permitted themselves to be stampeded into shortcircuiting operations and colectomies for intestinal stasis, would be wondering why they could ever have expected benefit to arise from such an illogical procedure.

The real ray of light came from prophylaxis and from the recognition of the early stages of stasis before irremediable changes had occurred. In any of these stages the patients taken early and treated carefully and rationally, might be restored to normal again. A weakened intestinal musculature could be made a normally strong intestinal musculature. A dilated and elongated intestinal canal might be restored to its original lumen and length. A stagnant bowel teeming with toxic material might be made to empty normally.

The third class of cases of intestinal stasis, those where after long existence of the stasis there occurred a migration through the intestinal walls giving rise to a subinfection and the production of adhesions which caused obstructive symptoms, naturally required surgical procedures. Such procedures should be limited to simple relief of the obstruction.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

A Manual of Practical Nursing. Prepared for the Washington University Training School for Nurses in the Barnes and St. Louis Children's Hospitals. Edited by HELEN LILLIAN BRIDGE, B. S., R. N., Assistant Superintendent and Instructor of Nurses, Washington University Training School for Nurses, St. Louis. St. Louis: C. V. Mosby Company, 1916. Pp. 84. (Price, \$1.00.)

This handbook was prepared as a supplement to the textbooks used by the pupils of the Washington University Training School for Nurses to facilitate and render more accurate the work of student nurses. The routine described is that used by the various services of the Barnes and St. Louis Children's Hospitals. The book, interleaved for nurses' notations, marks an advance in training school teaching that has been long in arriving. Too frequently have pupil nurses been required to follow methods "patched up" from hastily written notebooks, haphazard bedside instruction by floor nurses, and desultory instruction from doctors. In presenting her book the author forestalls mistakes and places hospital technic on a teachable basis. The requirements of every hospital procedure are put in tabular form for quick reference. Minute directions are given for the personal care of patients, care and disinfection of wards and equipment, dishes, supplies, rubber goods, and instruments. Contents of various trays are listed, also the necessary articles for various baths and packs, and the requirements for catheterism and examinations. The work also includes directions for diet, test meals, lavage, irrigations, blood cultures, lumbar puncture, venesection, and obstetric, surgical, and gynecological routine. Having in mind a book with a definite purpose, Miss Bridge has admirably accomplished her object and pointed the way to better training school methods.

Précis de Médecine Opératoire. Par A. BROCA, Professeur d'Opérations et d'Appareils à la Faculté de Médecine de Paris. Avec 510 Figures dans le texte. Paris: Masson et Cie, 1916. Pp. ii-296.

Broca, the distinguished operative surgeon of the Faculté de médecine de Paris, has found time in the midst of war's alarms, to produce an admirable little manual of surgery. In less than 300 pages the entire field of operative surgery is covered and the instruction includes 510 illustrations, all free hand drawings, which when done by a competent artist, as in this case, tell so much more than the best photograph. Some of these cuts are borrowed from Farabeuf, and others are from stereoscopic photographs belonging to the author. In each case but one method of procedure is given, that which the author uses, an excellent rule in a work intended for students who are taking the lancet in hand for the first time. For those who read French we recommend this book highly. The author offers an ingenious explanation of the extensive use of small type; he says that he is sure that the young students for whom the work was prepared, will be able with their presumable emmetropia to read type that gave no trouble to his own unspectacled eyes.

Interclinical Notes.

In the *Outlook* for May 31st there is an excellent article on Detroit, the city where the next meeting of the A. M. A. takes place. Detroit is in some respects unique. As the writer, Frederick M. Davenport, remarks, "the enormous growth and centralization there of the automobile industry of the country is creating and distributing wealth with almost unparalleled rapidity throughout a feverishly increasing population of now three quarters of a million."

On page 681 of *Leslie's* for June 1st is a picture of the Fighting Fifth after the battle of St. Eloi. They have just lost a heavy percentage of their men in taking a German trench, but every face is wreathed in smiles and most of them are either singing or cheering. How are these boys going to face life after the war is over? Now they are

free from all the responsibilities of peace and civilization, their food is provided, they have clothing and all other necessities, pocket money, etc. Evidently the heavy mortality has little effect upon them. Are they not perfectly content to go on fighting indefinitely? For the unwounded, an immense percentage, war is the greatest of larks! There will be grumbling when the survivors have to face the problems of peace, to act on their own initiative, to have nothing "found."

* * *

The most delightful word we have come across during the past month—we regret deeply having lost the reference—is *viguen*, obviously intended as a feminine singular of vikings. Perhaps the city editor could prevent such atrocities from making a laughing stock of his newspaper; or is it possible that there is nobody to laugh?

* * *

"Silas" communicated to the Conning Tower of the *New York Tribune* for June 1st, the following verses expressing resignation to sickness:

ON BEING ILL.

What a blessed thing to stay
Under covers all the day,
Spending half the time in eating;
And the other half in greeting
Healthy bucks and lovely llamas,
Come to see me in pajamas.
Then this patient squirms and fidgets
'Till some damsel holds his digits.
Whee! I care not one iota
Where the doctor says I'll gotta—
Illness isn't such a curse
With the ladies playing nurse.
So I guess I'll stay here 'till I
Dispossess all my bacilli.

Meetings of Local Medical Societies.

MONDAY, June 12th.—Society of Medical Jurisprudence. New York; Roswell Park Medical Club, Buffalo; Williamsburg Medical Society, Brooklyn; New Rochelle, N. Y., Medical Society.

TUESDAY, June 13th.—Federation of Medical Economic Leagues of New York; Medical Society of the County of Schenectady.

WEDNESDAY, June 14th.—Medical Society of the Borough of the Bronx; Richmond County, N. Y., Medical Society; Dunkirk and Fredonia Medical Society (semi-annual); Rochester Academy of Medicine; Medical Society of the County of Montgomery.

THURSDAY, June 15th.—Auburn City Medical Society (annual); New York Celtic Medical Society.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending May 31, 1916:

Anderson, T. B. H., Assistant Surgeon. Directed to proceed to Greenville, S. C., for duty in studies in rural Sanitation. Brooks, S. D., Senior Surgeon. Granted one month's leave of absence, from June 2, 1916. Carmella, F. A., Assistant Surgeon. Directed to report to Surgeon H. S. Cumming at New Haven, Conn., for duty in connection with studies of coastal waters. Clark, Taliaferro, Surgeon. Directed to proceed to Boston and other places in Massachusetts and the New England States, to make studies of methods used for the prevention and cure of insanity and mental defects. Cumming, H. S., Surgeon. Detailed to attend the meeting of the American Medical Association at Detroit, Michigan, June 12 to 16, 1916. Ebert, H. G., Surgeon. Reassigned to duty in charge of the quarantine station at Astoria, Oregon, effective May 14, 1916. Faget, F. M., Assistant Surgeon. Relieved at New Orleans, La., and Greenville, S. C., and directed to proceed to State Maritime Quarantine Station, Rosebank,

N. Y., for special temporary duty. **Irwin**, Fairfax, Senior Surgeon. Directed to visit the life saving stations on the coasts of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and Long Island, N. Y., to arrange for the medical treatment of officers and enlisted men. **Kerr**, J. W., Assistant Surgeon General. Granted twenty days' leave of absence, while en route carrying out Bureau orders of May 16, 1916. **Safford**, M. V., Assistant Surgeon. Directed to proceed to Providence, R. I., for conference in order to co-ordinate and make uniform the medical examination of arriving immigrants at Providence and Boston. **Schereschewsky**, J. W., Surgeon. Directed to proceed to Milwaukee and other places in Wisconsin, to supervise the studies of industrial hygiene now being carried on. **Stiles**, C. W., Professor. Detailed to deliver an address on Public Health at the meeting of the Social Service League, Montgomery County, at Takoma Park, Md., June 9, 1916. **Stimson**, A. M., Surgeon. Relieved as member of the board convened May 31, 1916, for the examination of applicants for appointment as assistant surgeon. **Sweet**, E. A., Passed Assistant Surgeon. Detailed as a member of the board to convene at the Bureau, May 31, 1916, for the examination of applicants for appointment as assistant surgeon.

Casualty.

Surgeon William Page McIntosh was born in Georgia, June 14, 1855, and died at Longwood, Howard County, Md., May 27, 1916. He was appointed an assistant surgeon November 14, 1885, promoted to be a passed assistant surgeon November 21, 1888, and to be a surgeon May 20, 1899. His first station was at New Orleans, La., and at various times he was in charge at Memphis, Tenn.; Mobile, Ala.; Portland, Maine; Baltimore, Md.; and Louisville, Ky. He was placed on waiting orders on account of sickness April 15, 1915.

Board Convened.

Surgeon A. D. Foster and Passed Assistant Surgeon Lawrence Kolb detailed as members of Coast Guard Retiring Board, at Stapleton, N. Y., June 5, 1916.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending June 3, 1916:

Ballowe, Hewitt L., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort St. Philip, Louisiana, and will proceed to his home, and upon arrival there will report by telegraph to the Adjutant General of the Army; granted leave of absence for two months and twenty-five days, effective upon arrival home; relieved from active duty in the Medical Reserve Corps upon expiration of leave. **Brooke**, Roger, Major, Medical Corps. Granted fifteen days' leave of absence, to take effect on or about June 1, 1916; order amended so as to direct him to report to the Surgeon General of the Army for assignment to duty as assistant to the attending surgeon in Washington, D. C., instead of as attending surgeon. **Christie**, Arthur C., Captain, Medical Corps. Granted four months' leave of absence, effective on or about June 1, 1916. **Fletcher**, Harry Q., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Oglethorpe, Georgia, and will proceed to his home, and upon arrival there will report by telegraph to the Adjutant General of the Army; granted ten days' leave of absence, effective upon his arrival home; relieved from active duty in the Medical Reserve Corps upon expiration of leave. **Gaul**, John S., First Lieutenant, Medical Reserve Corps. Relieved from duty at the Army Medical School, and will proceed to the Walter Reed General Hospital, and report in person to the commanding officer of that hospital for duty. **Lowe**, Thomas S., First Lieutenant, Medical Reserve Corps. Granted one month's leave of absence on surgeon's certificate of disability. **Meraux**, Louis A., First Lieutenant, Medical Reserve Corps. Granted nine days' leave of absence, effective upon his arrival at his home. **Robertson**, James A., First Lieutenant, Medical Reserve Corps. Relieved from duty at Fort Thomas, Kentucky, and will proceed to his home and upon arrival there will report by telegraph to the Adjutant

General of the Army; granted ten days' leave of absence, effective upon his arrival at his home; relieved from active duty in the Medical Reserve Corps, effective on the expiration of leave.

The following named officers will proceed to Fort Sam Houston, Texas, and report in person to the commanding general, Southern Department, for assignment to temporary station and duty in that department: Captain Robert H. Pierson, Medical Corps; Captain Howard H. Bailly, Medical Corps; First Lieutenant Arden Freer, Medical Reserve Corps; First Lieutenant Edwin B. Maynard, Medical Reserve Corps; First Lieutenant Paul A. Schule, Medical Reserve Corps; First Lieutenant Frank W. Wilson, Medical Reserve Corps; and First Lieutenant John W. Turner, Medical Reserve Corps.

Each of the following named medical officers will report at once by telegraph to the commanding general, Southern Department, for assignment to temporary station and duty in that department and will proceed to join the station to which he may be assigned: Captain Frederick W. Palmer, Medical Corps; Captain Alexander T. Cooper, Medical Corps; Captain Ernest G. Bingham, Medical Corps; Captain Orville G. Brown, Medical Corps; Captain James L. Robinson, Medical Corps; Captain Eugene G. Northington, Medical Corps; First Lieutenant Albert H. Eber, Medical Reserve Corps; and First Lieutenant Edward Bailey, Medical Reserve Corps.

Births, Marriages, and Deaths.

Born.

Kaplan.—In New York, on Thursday, June 1st, to Dr. and Mrs. Ira I. Kaplan, a daughter.

Married.

Armstrong—Schulting.—In Passaic, N. J., on Monday, May 22d, Dr. Robert A. Armstrong and Miss Edna Schulting. **Eggleston—Parker**.—In New York, on Saturday, June 3d, Dr. Cary Eggleston and Miss May Appleton Parker.

Died.

Anderson.—In Chepota, Kansas, on Thursday, May 25th, Dr. John Anderson, aged sixty-two years. **Carpenter**.—In Cumberland, Md., on Wednesday, May 24th, Dr. George Henry Carpenter, aged seventy-three years. **Costello**.—In Wollaston, Mass., on Wednesday, May 24th, Dr. James F. Costello, aged twenty-six years. **Dodds**.—In Indianapolis, Ind., on Monday, May 22d, Dr. William T. S. Dodds, aged forty-two years. **Duryee**.—In Orange, N. J., on Thursday, June 1st, Dr. John L. Duryee, aged sixty-nine years. **Edwards**.—In Newark, N. J., on Saturday, May 20th, Dr. Philip H. Edwards, aged forty-three years. **Garside**.—In New York, on Thursday, June 1st, Dr. Charles Zeh Garside, aged thirty-eight years. **Hain**.—In Shillington, Pa., on Tuesday, May 23d, Dr. Leonard C. Hain, aged forty-three years. **Hardenburgh**.—In Port Jervis, N. Y., on Monday, May 29th, Dr. Henry Hardenburgh, aged eighty-one years. **Hine**.—In Chicago, Ill., on Tuesday, May 16th, Dr. C. W. Hine, of Red Oak, Iowa, aged seventy-two years. **Hoel**.—In Fort Collins, Colorado, on Monday, May 22d, Dr. George L. Hoel, aged fifty-four years. **Jenks**.—In Detroit, Mich., on Tuesday, May 30th, Dr. Nathan Jenks, aged forty-four years. **Kennedy**.—In Union, S. C., on Sunday, May 21st, Dr. Thomas Perrin Kennedy, aged thirty years. **LeCrone**.—In Tacoma, Wash., on Wednesday, May 17th, Dr. S. M. LeCrone, aged sixty-nine years. **Logan**.—In Gloucester, Mass., on Saturday, May 27th, Dr. Frank P. Logan, aged fifty years. **Peables**.—In Auburn, Me., on Wednesday, May 24th, Dr. Andrew M. Peables, aged seventy-nine years. **Perveil**.—In Brooklyn, N. Y., on Tuesday, May 30th, Dr. Albert Curtis Perveil, aged forty-two years. **Prickett**.—In Parkersburg, W. Va., on Friday, May 10th, Dr. Isaac T. Prickett, aged seventy years. **Ritchie**.—In Pittsburgh, Pa., on Wednesday, May 24th, Dr. M. Delmar Ritchie, aged forty-one years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 25.

NEW YORK, SATURDAY, JUNE 17, 1916.

WHOLE No. 1959.

Lectures and Addresses.

SOME OF THE LARGER PROBLEMS OF THE MEDICAL PROFESSION.*

BY RUPERT BLUE, M. D.,
Washington, D. C.,

Surgeon General, U. S. Public Health Service; President, American Medical Association.

The profession of medicine enters into and touches every human activity from the first kindling of the vital flame until life's candle flickers out. The joys of being and the sorrows of life, the travail of labor and the relaxations of idleness, the opulence of riches and the meagreness of poverty have running through their web and woof the fine blue thread of the calling which has as its ideal the physical salvation of mankind. Throughout the nearly seventy years of its existence the American Medical Association has clung with unfaltering fidelity to the doctrine of the prolongation of human life and the relief of the miseries of man. In peace and in war, in prosperity and in public calamity, in crowded city and on isolated frontier, despite all opposition, it has moved steadily forward toward the goal of health, recognizing neither creed nor sect, neither school nor system, but solely the sacredness of its objects. The catholicity of its principles, the high altruism of its ideals, and the broad basis of its humanity have preserved it inviolate against the attacks of those who would revert to primeval incantations, ignorance, and chicanery in the prevention and remediation of disease. The passage of the years is marked by a trail of discarded superstitions on the one hand and by the monuments of scientific progress on the other, and the very obstacles which have been thrown into the path which we have trod have proved stepping stones to higher ground.

Today, as we look back over the achievements of this association, we receive inspiration from the work of those who have gone before us. The researches of our medical forebears are a priceless heritage, entailed for all future generations. But as we review the triumphs of the past and plan fresh victories for the future, our happiness in the joy of this pleasant reunion in the bonds of scientific fellowship is not without its note of sadness.

Since our last annual meeting death has called from our midst a number of the strong men of the profession of medicine. In the loss of that lovable and kindly gentleman, Dr. Edward L. Trudeau, the

world has been deprived of a great leader in the antituberculosis movement. In the death of Surgeon General George M. Sternberg our profession and the nation have lost an officer eminent in science and a pioneer in the field of military hygiene. In the passing away of Dr. Henry B. Favill the country has been robbed of a powerful intellect which was being more and more devoted to the cause of good government, clean politics, municipal improvement, and sanitary progress. In the untimely death of Dr. William L. Rodman the association has been bereaved of its president, and America has lost a distinguished surgeon and a public spirited citizen. We would also remember at this time the members of our profession and association who, through love of their fellow men, volunteered to serve mankind in those countries unhappily divided by war and stricken by pestilence, and who by so doing sacrificed their lives to the ideals of our profession.

By reason of their relation to the association, we glory especially in the accomplishments of Rodman and Favill, and extend our condolences to their sorrowing relatives and friends with whom we mourn. In the solemnity of this moment let us take inspiration from their lives, that their ideals may pass on to us, and that we may more faithfully discharge our duties to mankind.

The limitation of time does not permit the recitation of the scientific accomplishments since our last meeting, neither does it suffice to enumerate the fields of activity which lie fertile before us. The movement for race betterment, the increase of child hygiene, and the restriction of child labor deserve and receive the approval and assistance of this body. The necessity for the advancement of the campaign for mental hygiene, the cure and prevention of tuberculosis and cancer, and the improvement in the collection of vital statistics, particularly morbidity statistics, is so great as to require no argument.

MEDICAL AND SANITARY EDUCATION.

Since its inception the American Medical Association has endeavored in every way to raise the standard of medical education, and as the result of its labors there has been constant improvement, particularly in recent years. Not only are the graduates of today better qualified in the science of medicine than those of ten years ago, but they have a broader grounding in the general sciences as well. These are decided improvements, but should not satisfy us. As an association, we should continue to urge and adopt every means which will better qualify medical men for their calling. Improved labora-

*President's address before the American Medical Association, at the Sixty-Seventh Annual Session, Detroit, June, 1916.

tory and hospital facilities are now being made available to medical students in greater degree, and the standard of medical practice is accordingly raised. Not enough attention is being paid, however, to the subject of hygiene, in either undergraduate or postgraduate courses. Thus far the members of the medical profession have been looked to as the natural conservators of individual and community health. With the increasing interest in this subject, however, and the facilities for giving instruction in public health work being established in institutions other than medical schools, there is likelihood that in the future medical graduates will have sharp competition in a field which they should naturally occupy. The time is at hand when localities and States will demand the services of full time health officers, and the medical profession should look forward to meeting this requirement. It is suggested, therefore, that the Council on Medical Education and the profession generally give greater attention to this growing need.

MEDICAL AND SANITARY PREPAREDNESS.

The American Medical Association, as a national body, has come to bear an important relation to everything medical which affects the nation as a whole. It has, therefore, interested itself in the improvement of the medical departments of the Army and the Navy and the Public Health Service.

The Medical Department of the Army is charged with the duty of preserving the sanitary condition of the army and with certain important functions of administration and organization. In its relation to the people of this country by far its most important activity is along educational lines. Some thirty to fifty thousand young men join the army each year, and a similar number annually pass back to civil life. During the period these men remain in the army they come into direct contact with the medical department. Their ideas and standards as to housing, food, clothing, ventilation, and lighting are all materially influenced by their sojourn in the army, and even more definite impressions are acquired from the medical department with reference to such matters as disease and its treatment, preventive medicine, temperance, and recreations. At almost every point in his new environment the recruit comes into contact with the ideas and teachings of the army medical department, and he returns to civil life with a much broader and more enlightened view of hygienic principles.

The great lesson of the European war which we as medical men should take to heart is the importance of thoroughly preparing the medical and sanitary forces in time of peace, so that they may be ready to take their proper place and efficiently to relieve the sick and wounded and prevent disease in time of actual conflict. Not only must the land forces be put on the footing of highest efficiency, but it is perhaps even more important that the Medical Department of the Navy receive the active support of the entire citizenship. The multifarious character of the duties of the medical corps of the navy requires officers of broad training. This association should continue in the future as in the past to afford to the medical departments of the army and navy every assistance in its power.

The problems which confront the Public Health Service are of a different character from those of the strictly military arms of the government. This organization is rapidly expanding to meet its duties in the protection of the health of the civilian population of the United States. The crying need of the Public Health Service at the present time is men and money. Congress has never been slow in imposing functions on the Public Health Service, but it has been extremely conservative in the matter of appropriations and increased personnel to discharge the added duties. As yet, Congress has not seen fit to establish a national department of health, and pending the creation of that much needed department, the Public Health Service must perform the public health duties of the nation. It is incumbent on every citizen of this country who is interested in the conservation of human life to assist and co-operate with the Public Health Service.

ENLARGEMENT OF USEFULNESS OF HOSPITALS.

One of the extremely important matters in which this association should take an active interest is the utilization of hospitals in order that they shall not only have greater application in the relief of illness, but be of greater utility in times of national stress.

In many general hospitals there is opportunity to increase efficiency through organization. It is probable, for instance, that the most accurate knowledge of the distribution of certain preventable diseases could be obtained by regular reports from hospitals and dispensaries if these were comparable. Moreover, it should become possible in greater degree to admit many cases of illness, such as tuberculosis and venereal infections, now excluded, but which profoundly menace the public health. Hospitals are public servants and as such should be utilized to the fullest extent, not only in the relief of illness, but also for educational and public health purposes.

IMPROVEMENT AND STANDARDIZATION OF REMEDIAL PREPARATIONS.

Further effort should be made to determine the availability and use of remedial preparations. The remarkably valuable work of the Council on Pharmacy and Chemistry is well known to you. As a result of its untiring efforts for more than a decade, our knowledge of useful remedies has been increased, the Pharmacopœia improved, and the physicians' armamentarium made more serviceable. Much, however, remains to be done. The determination, for instance, of the value of biological products used in the prevention and treatment of the diseases of man and the elimination of those which are without worth is a matter of urgent need, meriting the earnest consideration of this association. While it is the province of the Federal Government to promulgate standards for these preparations, the determination of their therapeutic value is a function of the medical profession.

In the enforcement of the law regulating the propagation and sale of viruses, serums and toxins, it is possible for the Public Health Service to guard against the sale of contaminated preparations. It insures to physicians the full strength of those preparations for which standards have been devised, but it cannot guarantee the potency of preparations for

which standards have not been fixed, and which practitioners generally are being urged to use in greater degree. In order to determine this potency, the medical profession has a duty to perform.

By encouraging therapeutic research along broad lines through hospitals and clinical laboratories, the Council on Pharmacy and Chemistry would facilitate the standardization of useful biological preparations and restrict the exploitation of doubtful ones, thereby saving millions of dollars annually to the country. I would accordingly suggest that this be made the subject of intensive study, thus supplementing the researches already under way in respect to other preparations.

Through its helpful attitude, the medical profession has contributed to the enforcement of the antinarcotic law. As a result, a multitude of data are being recorded to show not only the public health importance of the control of habit-forming drugs, but the additional measures that are necessary to this end. I doubt if any of us here present comprehend fully the social and sanitary significance of this vast problem and the relation of individual practitioners thereto. It should be our earnest effort to aid in restricting the use of narcotics for other than medicinal purposes, and thus aid in overcoming an evil of the gravest menace. While as an organization we may not influence specific legislation, it is entirely within our province to strive to mould public opinion, which will beget wise laws and proper provisions for their enforcement.

HEALTH INSURANCE.

As a result of recent workmen's compensation laws and the increasing interest in the health of wage earners, the subject of health insurance is rapidly coming to the front. This is a question which we as a profession will be called on to face in the not very distant future.

Studies of the economic and sanitary conditions affecting the health of the industrial population have shown the urgent need for more effective methods for the relief and prevention of disease among the 30,000,000 of persons who comprise this group. The unskilled, low paid workers in every community have an excessive morbidity and mortality rate, which is largely accounted for by their economic status and living environment. A large proportion of this class have incomes insufficient to maintain healthful standards of living, much less to provide adequate medical and surgical care. This places a serious handicap on the medical profession, as well as a financial burden on the poorly paid wage earner, which neither should be wholly required to bear. The public, industry, and the workers themselves are at least partially responsible for the faulty conditions, and in consequence should share in the remedial measures.

To meet the situation, there are unmistakable signs that health insurance will constitute the next great step in social legislation. Experience has shown that an adequate health insurance system should distribute the cost of sickness among those responsible for conditions causing it and thereby lighten the burden on the individual. Financial incentive may thus be given for the inauguration of comprehensive measures for the prevention of dis-

ease. I would accordingly suggest that the American Medical Association continue the studies, which have been so splendidly begun, of the results of health insurance in all its aspects in this and in foreign countries, so as to decide on a program which would properly coordinate any proposed health insurance system with existing agencies for the cure and prevention of disease.

INDUSTRIAL HYGIENE.

Closely allied to this is the study of industrial hygiene, a subject which will receive careful consideration in the Section in Preventive Medicine and Public Health at this session. Too many safeguards cannot be thrown about the health of operatives in industry, but we should consider the problem as it relates, not only to the workshop and factory, but to home conditions as well. Factory sanitation will fail of the highest accomplishment unless the workman is educated in the hygiene of his body and the sanitation of his home. The relation of the wage to disease, the housing problem, and the health training of operatives are therefore matters which I would commend to the attention of the Council on Health and Public Instruction.

RURAL SANITATION.

Rural sanitation is a matter of even greater importance. Over fifty-three per cent. of the population of the United States dwells in communities of less than 2,500 inhabitants, in many cases under most insanitary conditions. This is a menace not only to the health of the rural dweller, but also to that of the urban resident. The next great point of attack against infectious diseases is the small town and village. The work which the Public Health Service has been carrying on in cooperation with State and local health authorities in rural counties shows not only the necessity for increased and more widespread activity in this direction, but also that great good may thus be accomplished at relatively little cost. It is incumbent on this association, possessed as it is of the machinery for popularizing health movements, to undertake a definite campaign for bringing health education to our rural population. If this is well done there will be a direct result in the reduction of typhoid fever, malaria, and hookworm disease in the country and an increased safety in the food supplies of cities. I cannot too strongly urge on this body the necessity for intensive efforts toward the improvement of rural sanitation.

PUBLIC HEALTH ORGANIZATION.

In the accomplishment of this purpose, however, we cannot stop with the sanitary enlightenment of the country inhabitant. Much he can and must do for himself, but lasting good cannot be accomplished in the absence of adequate State and local health organizations. An examination of existing laws and regulations shows that some of the States have an abundance of public health legislation. In fact, in many instances the powers and duties of the sanitary authorities far exceed the appropriations for their execution. Still others have defective laws and low appropriations, while some have little law and almost no appropriations.

In many instances considerable improvement in

organization will be necessary before health authorities can function properly. These defects are being remedied, and many States are rapidly approaching a high degree of efficiency in their public health administration. In the counties and small municipalities, however, the greatest need for reform exists, and this association should cooperate to the fullest extent in creating a public sentiment for thoroughly prepared, adequately salaried, full time health officers. Indeed, it should not only create such sentiment, but, as previously stated, it should take active steps to provide without delay a large share of these public servants. The production of well qualified men for such positions is not keeping pace with the demand. Sanitation is as much a specialty as is surgery, and simply because a physician is a successful practitioner is no guarantee that he will make a qualified health officer.

Through improved medical education and the cooperation of health departments with universities, properly qualified physicians should become available to meet this growing need. It is important also that States and localities should be able to secure the services of sanitarians without reference to legal residence. It is equally important that medical hygienists, as well as physicians generally, should be able to practise their profession anywhere within the confines of our country without undue restriction as to academic examinations. It is not at all improbable that this thought imbued our late president in founding the National Board of Medical Examiners. This body, which promises so much benefit both to the medical profession and to the American public, stands as a monument to the industry and clarity of vision of our lamented colleague, Dr. William L. Rodman. I would commend to the Council on Medical Education the study of the problem of devising some uniform means of certifying and training prospective health officers.

The great effort of the future must be in the direction of the improvement of the internal health of the nation. We are possessed of an adequate coast defense against disease from abroad, and what we must now do is to control those diseases which are already with us. In this we require the qualified health officer and the educated public. A part of this education may be secured by the printed and the spoken word, but the great agent in public education is demonstration. This association is in a position, touching as it does every stratum of society in this broad land of ours, to carry this work forward to ultimate fruition. This is an obligation on our profession, a sacred duty laid on the followers of the healing art. Though we minister to the sick and bind up the wounded, though we bring sight to those who see not and alleviate the suffering on the bed of pain, yet our duty is not done until we have put forth our best endeavor to the end that sickness and pain and blindness be not. Poverty and ignorance, squalor and intemperance, cruelty and greed, these are the enemies which we as individuals and as a profession must combat. As citizens who would maintain our nation in a condition of preparedness against its greatest enemy, disease, it is our duty to perform not only our legal obligations as physicians, but to bend our every energy to the prevention of disease. No selfish or half hearted

service will suffice. Nothing short of whole souled devotion to this duty will satisfy the ideals which have been passed down to us by generations of self sacrificing, public spirited physicians who love their fellow men. The American Medical Association represents the crystallization of these ideals. If it permits no self seeking interest to dominate its actions, if it maintains its plane of high altruism, if it devotes itself with strength of purpose to the betterment of the public weal, it will prosper in the future as in the past, serene and sure in the satisfaction of work well done. Let our deliberations be so imbued with that broad spirit of charity and brotherhood that the name of the physician shall be revered.

Original Communications.

FAILURES IN DIAGNOSIS.

A Comparison of Physical and Laboratory Methods.

BY WILLIAM S. GORDON, M. D.,
Richmond.

Emeritus Professor of Medicine, Medical College of Virginia.

That the treatment of disease depends upon correct diagnosis is a truism; and that diagnosis brings into play the highest faculties of the mind is a self evident fact. The powers of memory, observation, perception, imagination, reason, judgment, analysis, and synthesis, supplemented by the liberal use of common sense, must all be invoked by the painstaking physician to solve his problems. The achievements of medical science are in a measure known to the laity, who are educated in various ways, and who demand accuracy upon the part of the doctor; while the sharp witted lawyer examining the medical expert will make his unprepared victim tremble in the witness box.

It may not be irrelevant to state in the beginning that definite scientific information cannot be obtained when the necessary data upon which conclusions are based are wanting. A patient with fever went on one occasion to a well known hospital in a medical centre of this country, and secured the services of a distinguished diagnostician. All the means of diagnosis were exhausted; and the physician frankly remarked to the patient that, since the cause of the peculiar temperature curve could not be ascertained, there was probably not much the matter, and that the patient would do well to consider himself cured. This statement was followed by a subsidence of the fever. The story comes to me from a reliable source. It is known also that the ablest physicians may differ as to diagnosis in a given case because the examinations are made at different times and under changing conditions. Errors are not infrequently the result of intentional or unintentional misstatements of the patient. For these and other reasons it is not always fair to the medical man to charge him with incompetence because he is unable to express a positive opinion. In such instances an honest confession of failure is a sign of ability.

On the other hand, the physician who is too busy to employ all the modern methods of diagnosis

would do himself and his patients justice by eliminating a portion of his work and bending all of his energies toward the remainder. The country doctor is often necessarily handicapped in his efforts, but the city practitioner is less excusable. The safe rule is to be systematic and thorough in the diagnosis and treatment of each patient. This procedure saves time, the doctor's reputation, and his patient. The loss of ordinary fees—to look at the pecuniary side of the question—will sooner or later be replaced by the rewards of consultations. The difficulties in diagnosis are much reduced when both the patient and doctor are conscientious in their mutual relations.

Laboratory methods in diagnosis have their advocates and detractors. On the one hand, there are physicians who, making extravagant assertions concerning what is new, pin their faith to the test tube and microscope and belittle or neglect physical methods; on the other hand, there are physicians who are skeptical with regard to laboratory findings, and attach the greatest importance to physical methods. How can these conflicting attitudes of mind be explained? The main cause for these opposite opinions is the failure to recognize the limitations of all diagnostic methods, or properly to correlate them. Casts and a trace of albumin are found, for instance, in the urine of a given patient, and the diagnosis of nephritis is made when the real seat of the trouble is a leaking heart valve resulting in passive hyperemia of the kidney. The habit of careful routine examinations would have prevented such an error. Again, a specimen of urine is examined and reported normal, when repeated examinations of the same patient's urine would reveal chronic interstitial nephritis. An analysis of the gastric contents may show an excess of hydrochloric acid, and the patient is treated for hyperchlorhydria. Twenty-four hours later, the same stomach may have a deficiency of acid. We have recently had under observation two cases in one of which sugar was present in the night urine and absent in the morning urine. In the other case sugar was detected once in marked amount during a period of several days. The lessons to be learned from experiences of this kind are obvious; and, unless these lessons are heeded, the most serious errors in diagnosis and treatment may result.

It is apparent, therefore, that laboratory methods should not be discredited because they are sometimes improperly employed. We must estimate them at their true value. One observation, or one examination, does not always clinch the truth, any more than one swallow makes the summer; yet in many instances the whole truth comes out after one laboratory examination. The presence of the malarial organisms in the blood, of sugar in the urine, of parasitic ova in the stools, of tubercle bacilli in the sputum—all point to definite conclusions and should be accepted at their face value.

At the same time laboratory methods may fail, even when repeatedly made, to disclose the cause of disease. It is well known that the Widal reaction may be absent in typhoid fever; that the plasmodium may not be found in malaria; and that blood cultures do not tell us in certain cases the nature of the offending organisms. In malignant

endocarditis, for instance, accompanied with the symptoms of a severe septicemia, we may search the blood in vain for the responsible microbe, while the differential and complete white cell count cannot always be relied upon to furnish the desired information.

The x ray, incalculable as its usefulness has been, is far from infallible. There are certain things which it cannot do even in the hands of the most careful experts, simply because this department of science, like many others, has not reached perfection. It is telling us more and more as time passes, yet medical science is blamed in some quarters because the x ray does not tell us everything.

So much, in short, for laboratory methods. What is the present value of physical methods? Greater, it can be affirmed, than they have ever been, for they have been greatly improved and added to with the progress of human knowledge; but in order that they may not disappoint us, it is necessary to use them with the same care, and skill and patience which apply to laboratory methods. Yet physical diagnosis, also, has its limitations. The diagnostician cannot be expected to express a positive opinion at his first visit in a case of pneumonia, when the disease is central and confined to a small area, the healthy sounds of the lungs masking the morbid ones. Valvular disease of the heart may produce morbid sounds at one time, whereas, at other examinations, no abnormal sound can be detected. The writer can recall the case of a young lady who consulted him because she believed that her heart was not normal on account of symptoms pointing to cardiac trouble. Repeated examinations in the upright posture revealed no abnormality in sound or rhythm. On one occasion, however, when the patient assumed the recumbent posture, a decided mitral systolic murmur was elicited. A diagnosis of tuberculosis at the apex of the lung might be made when only a normal atelectasis is present. We have recently known a young man who for several years had quit work, lived in the open, and lost a valuable portion of his life activity, believing that he could not use his eyes. Everybody pitied him until one of his friends advised him to consult a competent oculist, who told him that he was laboring under a delusion, and advised him to get down to work. The young man is now trying to make up for lost time.

It should not be forgotten that failures in diagnosis are frequently due to the ignorance, impatience, and credulity of patients. They credit the doctor with the power of seeing everything at one glance or at one examination. They are buffeted about from doctor to doctor by well meaning, but deluded wisecracks. The physician, with his education, catches them one morning, while the next day they have fallen under the witchery of the charlatan with his enticing newspaper invitations. For these and other reasons they do not report for repeated examinations. Sooner or later many of them resemble the ocean derelicts, while the doctor is accused of being a derelict of another brand.

From the foregoing comments it may not be difficult to understand why so many failures in diagnosis have to be recorded, and why even a capable and conscientious physician may be unjustly criti-

cised for not being able to tell the whole truth at any given time, be it at the bedside, in the lecture room, on the witness stand, or in the medical journal. We know of a medical teacher whose classes found fault with his clinics because a positive and final diagnosis was not made in the cases at every clinic. His shortcomings were compared with the acquisitions of another clinician in the same department of the college, who was said always to make a positive diagnosis on the spot. The accused teacher spent a good portion of his next clinic hour in telling his students that, no matter how learned they were or how long they lived they would all experience the unpleasant sensation of looking back upon many a case that could not be diagnosed offhand, and upon others that ended in recovery or death minus a diagnosis of the malady.

Now, as to the comparative value of laboratory and physical methods, something may be said. In many cases the practitioner must depend upon the reports of the pathologist and bacteriologist for exact knowledge, but may there not be a tendency to shift too much responsibility upon the shoulders of the expert? Are we exploiting the new methods to the neglect of the old? How far are we disregarding Pope's rule about laying aside the old and trying the new? Here lies the temptation of the busy doctor, and it behooves us to be on our guard lest we find ourselves slipping away from the fundamental principles of diagnosis. Physical methods came first. Year by year, they are being supplemented and improved, and the power of close observation should keep pace with them. The large majority of patients—especially in the small towns and in the rural districts—must have their ailments diagnosed by physical methods. The physician who settles in the country ought to be, and often is well trained in the laboratory. Modern medical education, indeed, demands such training; but the time and facilities for the use of laboratory knowledge are wanting to the country doctor, who must see through his own eyes and think with his own wits. All of his senses must be kept tuned up to concert pitch, for his test tubes, microscope, and chemicals will frequently be found unused upon the shelves. In the course of time, increase of population, good roads, automobiles, telephones and other contributions of human progress will enable the doctor to wipe off his idle apparatus and put it into commission, for many a patient suffers from the absence of laboratory diagnosis; but the young doctor who has thoroughly studied physical diagnosis and constantly builds upon his knowledge will find that his organs of special sense and his brain, when properly exercised, will largely atone for the lack of other facilities in the detection of disease.

It is needless to reassert that diagnosis depends upon a correlation of all known methods. The average practitioner might be incompetent to work in the laboratory for want of practice, but he should know how to interpret the reports sent to him by the experts. Even an autopsy may fail to disclose the cause of death; but the persistent and intelligent employment of all known diagnostic measures, when practicable, will, in the vast majority of cases, enable us to point to the exact nature of the patient's disorder. It is bad enough for errors to be

made in private; but when the deficient medical man has to expose his ignorance before judges, attorneys and juries, the loss to the doctor and to his profession is deplorable.

Medical experts are not infrequently severely criticised by the public for their failures or disagreements in medicolegal testimony involving the mental responsibility of the accused. If the witness is ignorant, or allows himself to be deflected from the truth by pecuniary considerations, he degrades himself and brings his profession into unmerited disrepute. It is perhaps unfortunate that all the black sheep are not in one flock or breed. In no class of patients, however, are diversities of opinion more excusable than in cases of suspected insanity. The border line between mental health and disease is ill defined; and, when it comes to a decision as to the sanity or insanity of a prisoner, even the expert may find it easier to decide where the fresh water of a river ends, and where the salt water begins. Differences of views among physicians in such instances do not justify sinister reflections upon their capacity or character. Science has never given a satisfactory definition of insanity, and probably never will. It is difficult for an expert to convince a jury that a person who looks normal, talks intelligently, and behaves properly, can be insane. Officers of the law are loath to believe that a person who knows the difference between right and wrong can commit a crime because his will power is uncontrollable; or that stealing, incendiarism, or some other offense against the law can be an evidence of irresponsibility when purely intellectual aberrations are not evident. On dangerous ground this statement may be, but science, prompt as it should be at all times to acknowledge its limitations, must speak the truth when it is known. Let the uninformed hesitate before they shoot, lest the darts cause an innocent victim to fall.

Summing up, we may state that the chief causes of errors or failures in diagnosis are:

Ignorance or neglect on the part of the physician.

The partial or incomplete employment of the aids afforded by science.

The failure to make routine examinations.

The failure to correlate laboratory and physical findings.

Exceptions to the laws governing diagnosis and pathology.

The limitations of scientific knowledge.

The impracticability at times of using all of the diagnostic methods.

The failure of the patient to submit to the requirements of the physician.

The direct or indirect influence upon patient and physicians of the erroneous expressions of the laity.

As members of a profession imposing great responsibilities, we should be willing to confess, and endeavor to correct our own faults; but we should not be held accountable for the faults of others or for the imperfections of the science whose progress it is our aim and duty to promote. That science is rapidly advancing in all of its branches. Diagnosis is becoming more and more accurate, while the doctor is becoming more highly educated. When the public awakes to a realization of the many difficulties which beset the pathway of the medical

man, and when it ceases to place him on a level with the charlatan, it will be surprised at the comparatively few mistakes which the physician makes and at the large number of successes which can be placed to his credit. *Sic itur ad astra* could apply to medical science, but the journey will be easier and more rapid when the obstacles of ignorance, superstition, and prejudice are removed.

5 EAST FRANKLIN STREET.

FOCAL SEPSIS.*

A Cause of Constitutional Diseases from the View-point of the Internist,

By JUDSON DALAND, M. D.,
Philadelphia,

Professor of Clinical Medicine, Medico-Chirurgical College; Physician, Medico-Chirurgical Hospital.

Although the masterly work of Dr. W. D. Miller (1) in 1889 clearly demonstrated that mouth infections caused constitutional diseases, the profession remained indifferent until recent years, because of the belief that it was of rare occurrence; and, moreover, septic foci in the mouth, tonsils, sinuses, or prostate were usually overlooked, while secondary infections were considered primary diseases. Increasing knowledge and improved methods of diagnosis have proved the frequency of small chronic septic foci in the mouth and tonsils. The newness of the subject resides in the fact that small chronic local septic foci are a common cause of more or less serious, acute, chronic, or recurring systemic diseases.

The brilliant and original work of Dr. Edward C. Rosenow (2) has added much to our knowledge of the way in which focal sepsis causes constitutional diseases. He has demonstrated that ordinarily streptococci, in the presence of oxygen, possess low virulence; when poorly supplied with oxygen, virulence increases, and when deprived of oxygen they become most virulent. He has also demonstrated that under varying cultural conditions one strain of streptococci may be converted into another of higher or lower virulence, and when passed through a susceptible animal virulence increases. Under certain conditions a streptococcus may be transmuted into a typical encapsulated pneumococcus.

He has also proved that certain strains of streptococci possess an affinity for certain tissues, for example, *Streptococcus viridans* for joints, tendons, aponeuroses, muscles, and the endocardium, pericardium, or myocardium. When the virulence of the streptococcus is raised, this strain may produce cholecystitis, pancreatitis, gastric or duodenal ulcer, appendicitis, thyroiditis, neuritis, oophoritis, or severe anemia. By inoculating an animal directly with organisms obtained from an infected gallbladder removed by operation, he has reproduced the disease; and with surprising frequency has obtained similar results in cases of arthritis, endocarditis, gastric and duodenal ulcer, appendicitis, and meningitis; and has therefore conclusively proved that certain strains of streptococci possess selectivity for

certain tissues or organs of the body. When these original observations are associated with modern concepts of immunity and toxemia, we are able to comprehend some of the relationships of focal sepsis to constitutional infections.

The experimental clinical work on focal sepsis by Dr. Frank Billings (3) and his associates is a most valuable contribution and well illustrates the value of team work in investigative medicine.

One of the commonest constitutional diseases secondary to focal infection is rheumatic fever, or polyarticular rheumatism, better named septic polyarthritis, and this focus is most frequently situated in the mouth or tonsils. When pus is seen draining freely from pyorrheal pockets or alveolar sinuses, such foci are less liable to cause systemic infection, as the microorganism in discharging pus usually possesses low virulence; whereas confined pus has high virulence, because of low oxygen tension. Absorption is more apt to occur when pus is confined. The virulence of the microorganism, rather than the size of the lesion, is important.

That an abscess around an ingrowing toenail may produce endocarditis; or that an abscess situated anywhere may cause paroxysm of chills, fever, and sweat; or that a gonorrheal prostatitis may cause arthritis, has long been recognized; but that a small abscess around the root of a tooth, or in and around a tonsil, can cause acute, recurring, or chronic disease of the joints, bones, periarticular structures, muscles, heart, vessels, kidneys, ulcer of the stomach or duodenum, gallbladder, appendix, thyroid, pancreas, ovary, or meninges, is a new concept.

It is therefore obvious that the prompt diagnosis and removal of a septic focus, wherever situated, is of the greatest importance.

Oral sepsis may occur at any age; it is very frequent after middle life. The commonest site is the mouth, usually a periapical abscess or pyorrhea, and may be easily overlooked and remain for weeks or months. Every loose, dead, or capped tooth, abutment of a bridge, artificial denture, or crown containing a large filling may be a septic focus, even though the tooth gives no sign of disease by the usual tests, such as heat, cold, electricity, absence of pain, etc. In every case a roentgenograph is a necessary aid to diagnosis.

When an apical abscess is diagnosed, the organism, usually *Streptococcus hemolyticus*, should be identified, and, if necessary, a vaccine prepared. The diagnosis of pyorrhea is usually easy, although occasionally a small concealed pocket may be overlooked. The assistance of a skilled dentist, trained to this special work, is absolutely necessary in diagnosing oral sepsis.

The tonsils are the second most frequent seat of focal sepsis, and the diagnosis is sometimes easy, more particularly when the gland is enlarged, the crypts dilated and filled with septic or decomposing material, or occluded, retaining these secretions. A case of mild or severe septic polyarthritis may give no history or symptoms of tonsillitis, and yet one or both tonsils, when removed, reveal an abscess which could not otherwise be diagnosed. The removal of this septic focus may be followed by the permanent disappearance of the so called articular rheumatism.

A septic tonsil may be normal in size, buried or

*Read, by invitation, as part of a symposium, before the Philadelphia County Medical Society, April 12, 1916.

atrophied, and in serious cases it may be necessary to remove a tonsil for diagnostic purposes.

The tonsils may be secondarily infected from a septic mouth, sinus, or nasopharynx. Lymphatic glands may become infected secondarily from any primary septic focus. If the primary focus is removed and the secondary focus persists, systemic infection will continue.

In children or adolescents the tonsils more frequently cause constitutional disease than does mouth sepsis. Suppurative disease of the antrum, ethmoid, sphenoid, frontal, mastoid, or middle ear, may cause systemic disease.

The majority of the obscure septic foci causing constitutional diseases are situated in the head; and when in the mouth are often multiple, or may exist simultaneously in the mouth and tonsils or sinuses. The next most commonly overlooked septic focus is prostatic abscess or vesiculitis seminalis. Septic foci in other parts of the body are usually acute, and more or less easily diagnosed, but occasionally are chronic and latent, the more common of which are suppurative appendicitis and cholecystitis. The less common are suppurative meningitis, pyelitis, nephritis, salpingitis, and simple or circumscribed empyema and bronchiectasis.

CONCLUSIONS.

1. Chronic focal sepsis is known to be one of the causes of acute and chronic arthritis, peri-arthritis, arthritis deformans, osteitis, endocarditis, pericarditis or myocarditis, endarteritis, acute and chronic parenchymatous nephritis, cholecystitis, cholelithiasis, gastric and duodenal ulcer, appendicitis, meningitis, thyroiditis, neuritis, ophoritis, ocular diseases, furunculosis, and is the recognized cause of other diseases.

2. The results of chronic focal sepsis are due to the varying virulence of the microorganism, the duration of the focus, the quantity of microorganisms and toxins entering the circulation, the rapidity of absorption, the integrity of the tissues, and the susceptibility or immunity of the patient. The role of toxemia is not fully understood.

3. The usual location of chronic focal sepsis in the order of frequency is the mouth, the tonsils, and the sinuses.

4. The diagnosis of chronic septic focus is sometimes easy, but more often difficult. A common error is to recognize only one focus when more than one exists, and this is especially true of the teeth.

Loose, dead, capped teeth and those containing large fillings, or those connected with bridges or artificial dentures, are frequently septic and should be explored. The mouth should be carefully examined for pyorrhea or pyorrheal pockets. The diagnosis of mouth sepsis should be made by a dentist especially trained for this work, and a roentgenograph is always necessary. A tonsil may appear normal and yet contain an abscess or be infected. A partial removal of a tonsil may cause a septic focus by sealing crypts and follicles. The adenoid structure in the supratonsillar fossa may be infected. A sinus may appear normal and a second examination show supuration. This is especially true of the ethmoid and sphenoid. The virulence of the microorganism, rather than the size of the focus, is important.

5. Success in treatment of constitutional diseases

secondary to focal sepsis depends upon the diagnosis and removal of the focus or foci of infection. Temporary improvement with relapses may be expected when the septic focus is only partially removed.

After removal of the focal sepsis recovery may be hastened by personal and general hygiene. It is believed by those having experience that an autogenous vaccine hastens recovery. I have seen a number of patients make satisfactory recoveries without vaccines.

The recognition of the principle of secondary systemic infection is one of the most important advances in medicine in recent years.

REFERENCES.

1. MILLER: *Die Mikroorganismen der Mundhöhle. Die Ortlichen und allgemeinen Erkrankungen, welche durch dieselben hervorgerufen werden*, Leipzig, 1889.
2. ROSENOW: Phagocytic Immunity and the Therapeutic Injection of Dead Bacteria in Endocarditis—A Preliminary Report, *Journal A. M. A.*, li, 19, Nov. 7, 1908, p. 1571.
- IDEM: The Production of Ulcer of the Stomach by Injection of Streptococci, *ibidem*, lxi, 22, Nov. 29, 1913, p. 1947.
- IDEM: Elective Localization of Streptococci, *ibidem*, lxxi, 1915, p. 1687.
- IDEM: Pathogenesis of Spontaneous and Experimental Appendicitis, Ulcer of the Stomach and Cholecystitis, *Journal Indiana State Med. Assoc.*, October, 1915.
- ROSENOW and DAVIS: The Bacteriology and Experimental Production of Ovaritis, *ibidem*, lxxi, 16, April 15, 1916, p. 1175.
3. BILLINGS: Focal Infection, *Journal A. M. A.*, lxxiii, 11, Sept. 12, 1914, p. 899.

317 SOUTH EIGHTEENTH STREET.

X RAY DIAGNOSIS OF SURGICAL COMPLICATIONS WITHIN THE CHEST.*

BY GEORGE E. PFAHLER, M. D.,
Philadelphia.

The x rays have been especially useful in the diagnosis of all conditions within the chest. The chest adapts itself especially to investigation by the Röntgen rays, because of the transparency of the lung tissue, and since nearly all diseases involving the chest interfere in some way with this transparency, and since the slightest change in the transparency can be recognized, this becomes especially a fertile field for investigation.

Under the title of this communication we may group diseases which become complications to surgical treatment elsewhere in the body, or complications within the chest which demand surgical interference. A hasty review of these conditions will be of value to both the surgeon and the general practitioner, because, in some instances, an x ray examination will save life, or prolong life by avoiding surgical treatment in other parts of the body when we know there is complication within the chest; and in other cases, the exact diagnosis of the conditions within the chest will lead the attending physician or surgeon to apply accurately the surgical means necessary, without delay. To deal with each one of these complications thoroughly would require a paper on each particular subject, but since the object of this paper is to state briefly the exact value of the Röntgen rays in making diagnosis, and to review rapidly the various complications which may arise within the chest (of a surgical nature or complicating some other surgical condition), it will be utterly impossible to discuss each phase thoroughly.

For convenience of description, I will discuss first

*Read, by invitation, before the Philadelphia Clinical Association, March 20, 1916.

complications which arise within the mediastinum; then the lungs, and finally the complications in the pleural cavity.

The mediastinum. First comes aneurysm. Not infrequently aneurysm of the aorta is present within the mediastinum, in connection with some acute or chronic condition elsewhere in the body, which, if not recognized, may lead to serious complications during or after an operation. This can usually be recognized by a fluoroscopic study, when a tumor mass is found in the course of the aorta, which presents expansile pulsation. Occasionally an aneurysm may be present which does not present expansile pulsation, but I believe that in such cases the condition need not interfere with an operation. The presence of an aneurysm does not necessarily contraindicate an operation, but it may lead to more caution during the administration of the anesthetic, or it may influence the choice of anesthetic. Also, the knowledge of the condition may influence surgeons in the type of operation.

Secondly, there may be atheroma of the aorta—so commonly associated with angina pectoris, and with the conditions which cause sudden death, that it surely becomes a complication in connection with any surgical procedure of any magnitude. Atheroma of the aorta is recognized, first, by the evidence of tortuosity which was described by Doctor Sailer and myself in 1903 (*Am. Jour. Med. Sciences*, October, 1903), and consists especially of a sharp projection to the left at the beginning of the descending portion of the arch. Other and more valuable evidence of atheroma is obtained by examining the patient in the oblique position, when we can detect the calcareous plates and the thickening of the walls of the aorta by fluoroscopic examination, and more in detail upon a photographic plate in this position.

Thirdly comes tumor of the mediastinum. Tumors of the mediastinum are important as a surgical complication, because it is often necessary for the surgeon to decide whether the tumor which he is about to remove from some external organ, such as the breast, the thyroid in connection with goitre, sarcoma of the cervical glands, etc., may also have invaded the mediastinum. In some instances, even a primary tumor of the mediastinum may be taken into consideration for surgical removal. Therefore, it is important to determine the exact nature and extent of any tumor that involves the mediastinum in order that the surgical procedure may be better planned for the life of the patient. The tumors in the mediastinum are:

1. Sarcoma. This is generally primary, usually involves the upper portion of the mediastinum, and extends outward most commonly in the direction of the section between the upper and inner lobe of the right lung. It is generally irregular in outline, there is no expansile pulsation, and the characteristic extension would serve to make an exact diagnosis.

2. Lipoma. This may develop to the size of the patient's head, as I have seen in one case, and in which it was almost perfectly symmetrical, and showed no involvement or line of extension to other organs. It lacked the involvement of the septum of the lung, as is commonly true in sarcoma.

3. Carcinoma. This is nearly always secondary, and most commonly a complication of carcinoma of

the breast, resulting from a direct extension through the lymphatic system. These tumors are usually small, and commonly produce no direct pressure symptoms, though in one case, in a woman whom I am now treating with success, the tumor was found to be the size of the end of the thumb, and so situated that it pressed upon the recurrent laryngeal nerve, causing aphonia. Occasionally the whole upper mediastinal space becomes filled with malignant tissue.

4. Hodgkin's disease. The importance of recognizing the glandular involvement in the mediastinum in connection with Hodgkin's disease is that of making a differential diagnosis, and this will assist the surgeon in deciding not to remove Hodgkin tumors from the cervical glands, when he can know there is involvement of the mediastinum. This involvement of the mediastinal glands, in connection with lymphadenoma in the neck, will generally serve to differentiate between tuberculous glands and Hodgkin's disease, for involvement of the upper mediastinum by Hodgkin's disease is very much more common than similar involvement by tuberculosis. When there is tuberculous extension into the chest of glandular tuberculosis, it more commonly involves the peribronchial glands, the glands about the roots of the lungs, rather than the upper mediastinum, and since it is well known that Hodgkin's disease, which is not completely removed, is made worse by operation, recognition of this complication will aid the surgeon in preserving the energies of the patient. A marked involvement of these glands by tumors of variable size is, in itself, rather characteristic of Hodgkin's disease.

5. Thymic enlargement. The enlargement of the thymus gland as a surgical complication is of special importance in connection with operations upon the thyroid for goitre, for it is well known that when there is such enlargement the operation is apt to be more serious, and may sometimes necessitate the removal of the thymus preceding the operation upon the goitre, or by recognizing this condition, it may sometimes be advisable to treat this thymus gland by means of the Röntgen rays until it has been reduced, or until the symptoms produced by the thymus have disappeared, when an operation upon the thyroid can be undertaken with very much more safety, as has been observed in several cases under my care. This thymic enlargement is recognized by an extension of an abnormal shadow outward, especially to the right, but it may also extend to the left, of the manubrium, sometimes one half inch, sometimes an inch or more, so as to make a distinct tumor mass. Generally, however, this thymic enlargement is recognized by only a faint but definitely formed shadow extending from one half to three quarters of an inch to the right of the manubrium.

6. Thoracic goitre. Sometimes a large goitre may extend so far into the chest as to modify the nature of the operation by the surgeon, provided that he knows in advance the degree of this extension, and it is considered by Crotti, of Columbus, desirable that every case of goitre should be examined by the Röntgen rays before operation.

Surgical complications involving the lungs. 1. Abscess. Abscess of the lungs may develop as a complication of one of the acute infections, but

especially as a complication of pneumonia, or may be the result of inhaling a foreign body. In any event, it usually demands surgical interference in order to get the patient well. While it may be suspected by physical signs and from the general symptoms, it is important for surgical purposes that it be definitely diagnosed and definitely localized. This can be done by means of the Röntgen examination. An abscess is recognized primarily by the evidence of a cavity which has been formed. This cavity is usually surrounded by an area of dense tissue, resulting from the associated inflammatory process, and at times we may recognize the level of fluid which has collected in this abscess. For this purpose the patient should be examined in the erect posture. Evidence can be obtained both fluoroscopically and by means of plates. Both methods should be used in each instance. The abscess should be definitely localized with regard to ribs and inter-spaces, and also depth, so that the surgeon may determine the best procedure for its evacuation.

2. Gangrene. Gangrene may become a surgical complication of pneumonia, especially a septic pneumonia. It may be suspected from physical signs, symptoms, and particularly the characteristic gangrenous odor. Its exact site and point of greatest destruction can best be recognized and accurately determined by means of the Röntgen rays. In gangrene of the lung I believe we generally find a less definite cavity formation, and more extensive consolidation. In both gangrene and abscess of the lung it is necessary to examine the chest from every possible angle in order to determine the site of the abscess and the best point of surgical attack.

3. Tumors of the lung. Tumors involving the lung tissue are of surgical importance because, if of a benign character, it may seem advisable to remove them. Generally tumors of the lung are secondary, and their surgical importance consists in their recognition for the purpose of avoiding extensive operation elsewhere in the body when this complication exists. I have repeatedly, of my own accord, examined the chests of patients having tumors elsewhere in the body, and have found metastatic involvement of the lungs when there were no symptoms, and no reason to suspect such involvement. Such evidence of visceral involvement, of course, leads to the avoidance of a surgical procedure that could only hasten the death of the patient. This is particularly true in sarcoma, and sarcomas of the lung give a very characteristic appearance, in that they consist, for the most part, in round or spherical tumors which may be single or multiple, but are generally scattered through the lung tissue. I believe that it is always important to examine the chest for metastatic involvement of the lungs before operating upon hypernephromata. Only within the past year I have had the opportunity of examining a patient who had metastatic involvement of the lung tissue within two weeks of the removal of a tumor of the right kidney, which was found to be a hypernephroma. The patient had been sent to me for postoperative treatment over the operative field, and it was of my own accord that the examination of the chest was made. The patient died within two months of this examination from the metastatic disease. This evidence of involvement of the lung by

metastasis from tumors anywhere in the body usually consists in localized consolidation in the lungs, and these consolidations do not occupy by preference the usual sites of tuberculous disease, though in other respects carcinoma sometimes gives an appearance almost identical with that found in tuberculosis.

5. Bronchiectasis. This disease is now being attacked surgically, and before the surgeon can operate intelligently, the exact situation and extent of the disease must be determined. Bronchiectasis varies in its appearance. It may consist of a simple, isolated, large cavity, or of myriads of small cavities connected with the bronchial tree. It involves the trachea, the lower portion of the lungs, and particularly the inner part of the lower bronchial tree. The cavities are distributed in line with the bronchi, and for this examination, as well as for most of the others, stereoscopic examination is found especially valuable.

Pleural complications. Up to the present time, the complications involving the pleura are more frequently attacked surgically than any other affection in the chest. These consist of:

1. Pleural effusion. Pleural effusion can be recognized definitely by the Röntgen rays, especially if the patient is examined in the upright posture. The upper level of the fluid and its site and distribution can be determined.

2. Empyema of the chest. Empyema of the pleural cavities may give the same appearance as an ordinary serous effusion, though generally I believe it is more dense in its shadow. When the entire cavity is involved it can be recognized very commonly by the ordinary physical signs, and when this empyema is encysted, or definitely localized, or interlobular in character, its location by means of the Röntgen rays is of the greatest importance, and very difficult to determine exactly by any other means. The localized empyema gives a dense shadow, often surrounded by healthy lung tissue or at least surrounded on one or two sides, and produces a more or less characteristic appearance. Its definite location and diagnosis will permit the surgeon to treat it in the most effective manner.

3. Tumors of the pleural cavity. These may be primary or secondary, but are generally secondary to carcinoma of the breast. This cancerous involvement is usually associated with fluid, and is often difficult to differentiate from fluid due to other causes.

Complications of the larynx, the trachea, and the bronchi. 1. Foreign bodies. These are probably of the greatest importance surgically so far as the bronchi are affected. Most foreign bodies can be recognized and definitely localized within the bronchial tree by means of the Röntgen rays. All the metals and opaque bodies can be seen. We must bear in mind, however, that foreign bodies consisting of wood, fibre, and cartilage, and all organic materials cannot be demonstrated by means of the Röntgen rays, excepting as they produce secondary changes in the lung tissue. Occasionally we may determine the location of such a transparent foreign body by localizing the disease that is secondarily involving the bronchial tree which has been blocked by the foreign body. The other foreign bodies can

be definitely localized by the Röntgen rays, and by means of the fluoroscope, the bronchoscope can be guided to the foreign body. Only recently the rays were demonstrated to be of great value in the localization of a pin which had caught directly under the epiglottis, and in such a manner that in the passage of the bronchoscope it would not have been identified, according to the statement of Doctor Skillern, until after its recognition by the Röntgen rays, when it was easily removed by means of the bronchoscope. Then, too, a cent which had been swallowed by a child, and which was supposed to have lodged in the esophagus, and remained there for a year, was definitely localized in the right bronchial tree, and was removed by means of the bronchoscope.

2. Tumors. Tumors involving the bronchial tree are very rare, but do occur, and can be recognized, as has been proved in one of the cases which I had the privilege of examining.

This hasty review of the subject is intended only to make the attending surgeon or physician think of the assistance which is at his command in these difficult cases, and the early use of the Röntgen rays in making these diagnoses or in obtaining additional information will at times make the difference between life and death.

1321 SPRUCE STREET.

THE CORROBORATIVE DIAGNOSIS OF MASTOIDITIS BY MEANS OF THE X RAY.*

BY HAROLD HAYS, M. D., F. A. C. S.,
New York,

Adjunct Professor of Laryngology, Polyclinic Hospital and Medical School; Assistant Surgeon in Otolaryngology, Eye and Ear Infirmary.

The diagnosis of mastoiditis as a rule can readily be made from both the subjective symptoms and objective findings. Such further data as those obtained by the x ray are not necessary. Yet we are inclined to make use of every aid to confirm our diagnosis, particularly in those doubtful cases in which the question arises as to the advisability of operation. The x ray picture is not necessary in the majority of fracture cases; yet we should hardly be satisfied to treat a fracture today, without using the x ray as an adjuvant. The same holds true in the use of the x ray in examination of the chest and abdomen.

We cannot gainsay the value of our clinical findings, and even to this day the majority of cases of mastoiditis are operated in without the corroborative evidence of the x ray picture. Yet we all come across indefinite cases—cases, for example, which present very few symptoms and yet which do not respond to treatment in the way that they should. I have no doubt that such cases frequently go on to the stage where the setting up of such complications as sinus thrombosis and epidural abscess makes immediate operation imperative. In these instances the x ray findings will frequently determine the condition of the underlying bone before extensive destruction has taken place.

I have frequently heard it said that the usual

x ray pictures that are taken to determine the condition in the mastoid are of little value. If we take a lateral picture of the head according to the ordinary methods, the superimposed masses of bone do not allow of the proper judgment of the condition of the mastoid cells. It is necessary in taking such a picture that clear outlines of the mastoid show, and that two pictures be taken—one of each mastoid, so that they can be compared.

In February, 1913, Dr. George Sloane Dixon, radiographer at the New York Eye and Ear Infirmary, presented a report of certain x ray work before the Medical Association of Greater New York. He said in this paper:

If any advantage is to be derived from mastoid radiography, we must, of course, have some knowledge of the variations in the normal mastoid process. We all know that the mastoid process may contain pneumatic cells of the medium, small, or large type: that the small cells are in the upper, and the large cells in the lower mastoid, as a rule; that we may find coarse or fine diploetic bone, or solid bone throughout, only the aditus and antrum being present to be regarded as pneumatic spaces, and sometimes they are exceedingly small. Finally, the cortex may be very thick or very thin, and combinations of any two or all of the varieties may occur on one or both sides, except that the cortex is more likely to be the same on both sides. The size and shape of the mastoid are likely to be symmetrical.

Certain definite anatomical facts must be kept in mind; for example, the right lateral sinus is usually larger and further forward than the left and it is further forward in diploetic than in cellular bones. In Mr. Cheate's specimens shown before the Ninth International Otolaryngological Congress (1912), it was demonstrated that 16.6 per cent. of these bones were of the diploetic infantile type on one side only. Speaking broadly, the processes were symmetrical in sixty-eight per cent. of the specimens shown. Dixon further states:

X ray examination will show in a vast majority of cases the location of the lateral sinus, judged by the shadow of the anterior margin of the groove in its relation to the meatus and its angle to Reid's base line, which is most important. If this shadow of the anterior margin of the groove is found to be at right angles to Reid's base line, the sinus has cut the petrous pyramid and must necessarily be very close to or immediately under the posterior canal wall, and as this angle decreases backward the sinus is further and further from the canal. If it cuts Reid's base line at about 50° to 55° it may be regarded as about in its normal position.

I have so frequently heard it stated that the majority of radiographers are unable to take good pictures of the mastoid that I thought it might be of value to give a simple description of the position in which Doctor Dixon takes his pictures.

The head is laid on an incline of 166° to the table, with the pinna folded forward. The plate, either 4 by 8 or 5 by 7, is placed underneath the head. The chin is tilted slightly downward. The x ray tube is centred as near as possible so that the external and internal auditory canals are superimposed, and it is focused at a distance of about thirty-eight to thirty-nine cm. from the plate. The patient, of course, is lying on his chest with the one side of the head flat against the plate and after the first picture is taken the head is turned to the opposite side on the second plate without disturbing the rest of the body. The length of the exposure varies with the thickness of the head and the density

*Read before the Kings County Medical Society, Section in Laryngology and Otolaryngology, March 21, 1916.

of the tube. After the plates are dried a comparison is made of the two plates, the demarcation of the various interstices of the mastoid cells being noted. The amount of cloudiness of one plate with the other will denote whether any pathological condition is present. We can generally make out the location of the sinus and also the size and location of the emissary—both of which points are exceedingly valuable if an operation is performed later. We can also readily make out the size of the mastoid, how far posteriorly it extends, the size and shape of the tip cells, and the extent of zygomatic involvement.

I have not felt it necessary to have an x ray picture taken in order to make a diagnosis of mastoiditis, but it is exceedingly satisfactory if we have made a diagnosis and insist upon an operation to have our opinion corroborated by the x ray and at the same time learn details of the mastoid cavity which will help us in the operation. I have frequently told patients who have insisted upon consultation with other otologists, that although I was perfectly willing to have such a consultation, I should feel that a second opinion was unnecessary if the x ray picture bore out my assertions. In other words, the x ray picture is the best consultant the otologist can have. In many cases, the pictures that Doctor Dixon has taken for me have made the diagnosis so self evident that I have not hesitated to let the relatives of the patient see them and determine the condition for themselves.

Although the chief value of the x ray is in cases of latent mastoiditis, of which more will be said later, it frequently is of a great deal of value in the very acute cases in which we are undetermined as to the wisdom of awaiting further developments. The x ray picture may state definitely whether immediate operation is necessary or not. This is well illustrated in the following case:

CASE I. L. R. manifested an acute otitis media in the right ear early in January, 1916. After paracentesis, the ear drained for two days and then dried up. On the third day, there was again bulging of the drum, with severe pain and a temperature of 102° F. The following morning, he was taken to the New York Eye and Ear Infirmary, where the drum was again opened. A profuse discharge took place and tenderness began to develop over the entire mastoid cortex. The organism causing the discharge was *Staphylococcus aureus*. The temperature continued high and the symptoms increased in severity. Two days later, an x ray picture of the mastoid was taken. I had no doubt as to the diagnosis, but I was in considerable doubt as to the advisability of operating in a case where the discharge from the ear had continued for only three days. The x ray picture showed cloudiness of the entire mastoid, and that same afternoon a simple mastoidectomy was performed. No dura or sinus was exposed, and the patient made an uninterrupted recovery.¹

The chief advantage of the x ray in this case was in determining for us the necessity for an early operation. I have no doubt that with an infection caused by the staphylococcus, I should have been inclined to delay operation with the result that possibly the destruction of bone might have gone on to the extent where both dura and sinus would have been exposed. In order to show the contrary state of affairs, I desire to cite the following case:

CASE II. E. C. acquired an abscess in his right ear, which was incised, and, two days later, was taken to the hospital for observation. The infection was a chain streptococcus. He had all the clinical signs of mastoiditis and begged to be operated upon. I hardly felt inclined to operate in a case of only three or four days' duration, and determined that I should be guided by the x ray picture. The x ray of the right ear, although a little more hazy than the left, did not show sufficient evidence of trouble to warrant operation and, two days later, the temperature dropped to normal, the patient leaving the hospital in good condition, and the discharge ceased at the end of a week.

Of course it is usually in the atypical cases that we need to get ourselves out of a dilemma. Most of these cases are of the latent type—that is, cases in which there is no pain, in which there is little or no tenderness over the mastoid, in which there is no rise of temperature. These patients continue with a moderately profuse discharge from the ears for weeks and show some sagging of the drum which is notably thickened. Deafness is evident. Such a case frequently goes on without active symptoms for weeks and months until the patient acquires a perisinus abscess or some more serious complication, such as brain abscess or meningitis. For example:

CASE III. L. B. K. came to my office, two and one half years ago, stating that he had had a discharge from his right ear for five weeks. He complained of few other symptoms. There was no tenderness, no rise in temperature, he slept well at night, his general physical condition was good. I observed him for ten days and then advised him that it was impossible for him to get well without an operation. I insisted upon an x ray picture, which showed total destruction of a very large mastoid. The patient made an uneventful recovery.

This same state of affairs is evidenced by the three following cases.

CASE IV. M. L. was a young man who had had a profuse discharge from the right ear for a number of weeks. The left ear had run almost the same length of time. He had no pain over either mastoid, but there was some sagging of the posterosuperior wall on the right side. An x ray picture showed definite cloudiness of the entire right mastoid. The patient was observed in the hospital for a few days after the picture was taken, and even with the corroborative evidence of the x ray his general condition was so good that I hesitated to operate. On the third day after the picture was taken, his temperature rose to 101° F., and that same afternoon I did a simple mastoidectomy. The patient made an uninterrupted recovery, leaving the hospital on the sixth day, the wound completely healing in the course of two weeks.

CASE V. Mrs. McC. In this case the patient had no discharge from the ear, but had a thickened bulging right ear drum and was totally deaf. There was slight tenderness over the tip of the mastoid. There was no fever, and the patient could not understand why, if she felt so well, she had to go to the hospital to be operated upon. I insisted upon an x ray picture, which showed involvement of the right mastoid. This was operated on on the following day, after which the patient made an uninterrupted recovery.

CASE VI. Miss P. When I saw this patient for the first time she gave a history of a discharge from the ear lasting over six weeks. She had no pain in the ear and only general superficial tenderness over the mastoid. There was a profuse discharge and some slight sagging of the posterosuperior wall. X ray examination evidenced a total destruction of the entire mastoid bone. On operation, I found the cavity filled with thick pus, which bathed the exposed sinus from the knee to the tip. The patient recovered rapidly after the operation. I have no doubt that if this patient had come to me three or four weeks earlier, and if the diagnosis of mastoiditis had been confirmed by the x ray picture, we might have saved her from the perisinus abscess and possible general blood infection.

¹ The postoperative histological examination of the x ray plates are of little use. Plates of these cases were shown at the meeting.

In order to illustrate the rapidity with which infection takes place and the value of the x ray findings in an atypical case, let me cite the following:

CASE VII. A. S., man, aged twenty years, suffered from an acute otitis media in the right ear, due to pneumococcus. This subsided very nicely under local treatment after four days, but at the end of that time a re-infection took place, the responsible organism being *Streptococcus mucosus*. There was considerable pain radiating from the mastoid up over the parietal bone. There was a slight amount of discharge from the ear, with moderate sagging of the posterosuperior wall. Numerous incisions had been made with no definite effect. An x ray picture was taken on the second day after this latter infection. This showed the mastoid to be distinctly cloudy on the right side. Two days later, a mastoidectomy was done. It was necessary to operate for a sinus infection. The patient subsequently recovered.

The x ray in this case showed very definitely that there was considerable involvement of the mastoid cells, although the trabeculae between the cells had not broken down. Comparison of two photographs shows very distinctly that there is cloudiness on the right side. The outline of the sinus is very clear. The x ray picture in this case not only definitely decided the diagnosis, but was of great help in showing the size of the mastoid and the location of the sinus.

There is another class of cases in which the x ray is of a decided value. I refer to the milder grades of infection in children in which a continuous discharge from the ear is attributed to the presence of tonsils and adenoids, in which assurance is given that after the tonsils and adenoids are removed the discharge will cease. In many of these cases the children have no fever, they seem perfectly well and happy, although at certain times in the day they appear languid and are not in their usual high spirits. The character of the infection is frequently the staphylococcus or an attenuated streptococcus. Pressure over the mastoid does not elicit definite tenderness, and even examination of the drums is not particularly painful. On careful examination we see a small perforation which constantly pulsates but does not disturb the child. Hearing is usually very much diminished. The discharge in most cases is not purulent, but is mucoid and stringy in character and gives the impression that it is drawn up from the nasopharynx. I have operated in three such cases within the past two years, in every one of which the discharge had continued for at least two months. In none should I have been willing to operate unless I had the positive assurance that was given me by the x ray. I shall cite these cases briefly.

CASE VIII. R. W., six years of age, had intermittent discharge from both ears for two months. As he had no fever, I decided to remove his tonsils and adenoids, hoping to clear up the condition in this way. The day after the operation his temperature rose to 104° F. and gradually, during the next three days, returned to normal, but he was languid and apathetic and refused nourishment. His ears still continued to discharge, and as there was some slight sagging of the posterosuperior wall on the left side I decided to have an x ray picture taken, which showed cloudiness of both mastoids, but more cloudiness of the left. Operation the same day disclosed the left mastoid completely filled with sticky tenacious mucus, extending well back behind the sinus and forward into the zygomatic region. On opening up the right mastoid, I found almost a similar condition. I closed the wounds by primary suture,

as described by me some years ago. The child left the hospital completely cured on the seventh day.

CASE IX. Baby S. In this case, a child two years old, an almost similar condition prevailed. When I sent the child to the hospital I was undetermined whether I should remove the tonsils and adenoids or operate upon the mastoids. I had him prepared for operation and made up my mind to reserve decision until I had seen the x ray pictures. These pictures showed cloudiness of both mastoids with more destruction of the right. On opening the mastoid cavities, both were found to be filled with mucus. In this instance the wounds were closed by primary suture, and the child left the hospital at the end of a week completely cured. The tonsils and adenoids were not removed.

CASE X. W. S. In this third case, a child five years of age, two paracenteses were performed at intervals of a few weeks, during which time there was a profuse discharge of mucus. The child complained of no pain, but there was some slight tenderness over the antrum. At the end of four weeks, an eminent otologist was called in consultation. He advised against operation until further symptoms presented themselves. I was perfectly willing to abide by his decision, but asked if in the event of the x ray proving positive, he would not operate immediately. Of course, he agreed with me that the x ray picture would clear up the situation. On the following day a picture of the left mastoid was taken, which showed distinct cloudiness of the entire mastoid, and that same evening a mastoidectomy was performed. The child made an excellent recovery.

To my mind the chief desideratum in children is the preservation of hearing, and it seems to me that when the hearing is decidedly impaired, we are wiser to operate upon the mastoid cells than to allow the condition to continue until hearing is permanently destroyed. We have no excuse for allowing such conditions to continue in children where it is possible to get an x ray picture, which in the majority of cases will very definitely tell us whether the mastoid is involved. If the mastoid is involved, the sooner the child is operated upon, the better. In these three cases the hearing has returned to normal as far as we can determine. I feel that in the last two cases it will be necessary to remove the tonsils and adenoids, but I am sure that we adopted the safest procedure by operating upon the mastoids first.

It is unwise to base a diagnosis on one sign or symptom, so it is unwise to let the x ray picture itself determine the advisability of operating without some clinical evidence. The x ray picture may mislead us, particularly in cases where the bone for some reason or other is sclerotic. This is shown in the following case:

CASE XI. Miss S. M., a young woman, came under my care, about two months ago, with an acute otitis media (left ear). She was sent to the hospital, where the drum was incised. There was a slight amount of discharge from the ear, with considerable superficial tenderness over the entire mastoid. Her temperature was never over 101° F. I was undecided whether the tenderness was due to the hypersensitiveness of the patient or not, and made up my mind to be guided by the x ray findings. The pictures showed an atypical mastoid with cloudiness on the diseased (left) side. Operation was performed the following day. The bone was hard and sclerotic, and there was absolutely no evidence of pus. The patient's antrum was opened and cleaned. The wound was closed, except at the lowest part. To make matters worse, the patient showed an erysipelas two days after the operation. In this case there was no doubt that the cloudiness of the mastoid was due to the hard sclerotic bone.

In closing, I wish to state again that proper x ray pictures of the mastoid are of decided value in determining the necessity for immediate operation.

We all desire to be as conservative as possible and I am sure that we all feel that it is more than worth while to have our opinions corroborated. The x ray pictures presented with these cases leave no doubt in the mind of the observer that there is a decided difference between the diseased side and the normal side. Doctor Dixon has developed his technic in this work to such an extent it is seldom that a mistake is made. Doctor Dixon is not inclined to assert definitely that a case is an operative one from the x ray findings, but when he has made such an assertion, it has been proved correct on the operating table.

11 WEST EIGHTY-FIRST STREET.

MENINGITIS.

A Report of Seven Cases,

By RANDLE C. ROSENBERGER, M. D.,
Philadelphia,

Professor of Hygiene and Bacteriology, Jefferson Medical College;

AND DAVID J. BENTLEY, JR., M. D.,
Philadelphia,

Resident Pathologist, Philadelphia General Hospital.

(From the Clinical Laboratory of the Philadelphia General Hospital.)

The following cases of meningitis are reported at this time because they all occurred within a period of six weeks. Five of the cases were of the epidemic variety, one of pneumococcal and one of tuberculous origin. All occurred in children, with the exception of the pneumococcal case, which was in an adult. The cases which were due to the meningococcus, occurred in widely separated districts of the city. In one instance, however, two sisters were afflicted, one entering the hospital about one week later than the other.

The spinal fluid in all these cases was cloudy and usually deposited an abundant sediment by the time it arrived at the laboratory for examination. Cellular content was almost entirely of the polynuclear variety. The meningococcus was found in all five cases; in some only a very few organisms were present and found only after a most painstaking search. In three of the cases the cocci were found in great numbers both intracellular and extracellular and always Gram negative. Cultures were obtained upon blood serum in all five cases, and three of the five gave positive agglutination tests with antimeningococcus serum; one fatal case and two which ended in recovery.

The fifth case was one which was originally diagnosed as internal hydrocephalus, and only when puncture was made by the surgeon of the ventricles through the anterior fontanelle and cloudy fluid withdrawn, was there a suspicion of an infective process. Examination of the fluid showed an enormous number of Gram negative intracellular and extracellular diplococci. Subsequent study of the fluid in this case was made by repeated punctures through the anterior fontanelle, as spinal puncture was productive of only a few drops of fluid.

All cases in this group (meningococcus) presented the typical symptoms of the disease: Rigidity and retraction of the neck; exaggerated reflexes;

Kernig's sign; strabismus and nystagmoid movements of the eyes; Babinski's sign and hyperesthesia. The temperature ranged from 102° to 104° F. All five cases were treated with antimeningococcus serum intraspinally, with the exception of one in which the serum was introduced through the anterior fontanelle. This case ended fatally. The serum was given to all in amounts of twenty c. c., repeated every twelve hours, daily or every other day; recovery occurred in three cases and death ensued in the other two.

As the cases were progressing toward recovery, the fluid became clearer, the polynuclears fewer in number, and the number of organisms steadily decreased, and finally only an occasional cell was found and no organisms. In one of the fatal cases in which pneumonia developed two days before death, the spinal fluid contained, beside the meningococcus, a great number of streptococci. In one or two a nasal discharge was observed and cultures made from these showed, beside the usual bacterial flora, a Gram negative diplococcus which could not be differentiated from the meningococcus.

A partial autopsy was held upon the child showing the internal hydrocephalus, but apart from a marked dilatation of the lateral ventricles there was nothing of pathological interest. No sequelæ followed in any of the three cases which terminated favorably. In the case of tuberculous meningitis, the spinal fluid was uniformly clear, without cellular elements and without the characteristic cobweb coagulum, until two days before the child died, when a well defined coagulum formed and tubercle bacilli were demonstrable.

The patient with pneumococcal meningitis was admitted to the hospital in a stuporous condition with a diagnosis of pneumonia and delirium tremens, and died within twenty-four hours of admission. The spinal fluid, when first received, was cloudy with abundant sediment, and numerous polynuclears and pneumococci were found. A second specimen of fluid received was greenish in color, contained abundant sediment, gave a positive test for bile, and also showed a large number of pneumococci. At autopsy, a left sided bronchopneumonia was found and a fibrinopurulent meningitis, a massive thrombus in the right auricle, and a large vegetation on the tricuspid valve. Sections of the cord and vegetation stained for bacteria by Gram Weigert technic, showed enormous numbers of pneumococci in almost pure culture.

Vesical Drainage.—For this purpose many mechanical methods have been devised, but none has given perfectly satisfactory results. A new, simple, cheap and very ingenious method is described by Edwin G. Davis in the *Journal A. M. A.*, for May 27, 1916. It depends upon the maintenance of a constant, very slight suction which is automatically regulated and which needs almost no attention. The efficiency of the apparatus has been demonstrated by the fact that in the cases in which it has been used the wound has been kept permanently and absolutely dry and has healed rapidly without complication.

FLECK TYPHUS.*

The Scourge of the Eastern War Theatre,

By E. KILBOURNE TULLIDGE, M.D.,

Philadelphia.

Formerly Captain Surgeon, Austrian Army; Military Surgeon, French Red Cross; Physician, Connecticut State Hospital for the Insane, Middletown.

War and Pestilence, twin sons of Barbarism, go hand in hand.

Cases of cholera have been comparatively common throughout the eastern theatre of the war, appearing in many camps, barracks, and concentration centres, playing havoc among the Russian prisoners in Austria and Germany especially; together with smallpox, typhoid, diphtheria, dysentery, and an exanthematous disease, accompanied by rhinitis, bronchitis, tonsillitis, mental stupor, high fever, and rapid sudden exitus, known as fleck typhus. This disease has probably caused as much distress and loss of life as that recorded upon the battlefield. Of all diseases it is the most contagious and deadly.

A symptomatic characteristic of fleck typhus is its resemblance to typhoid, particularly when combined with a profuse eruption of many rounded or oval, colored spots, at first of pinhead size, but later enlarging to that of a twenty-five cent piece. They appear early, as an ill defined subcuticular mottling of a dusky red color, seemingly deeply imbedded in the skin. The spots, when they develop, disappear at times on pressure during the first few days; later they become more generalized, merging together, giving a copious appearance upon all parts of the body, face, neck, soles of the feet, and palms of the hands, and persisting after death. They resemble ripe red currants in color, developing often a black-berry or mulberry duskiness. The prostration is extreme, coming on early in the infection. The patient lies usually upon his back with a drawn face, flushed cheeks, contracted pupils, injected conjunctivæ and scleræ that soon lose their lustre. The tongue is dry, yellowish, coated sometimes, cracked, and fissured, hanging from the mouth. Sordes of the gums and lips are frequent. Coma may set in early and is usually profound and accompanied by muttering or low delirium. The temperature is characteristic, rising early in the first two or three days to 104° or 106° F. (as high as 108° in six cases), and remaining at that level with slight, varied remissions until it falls by crisis or lysis, usually at the end of two weeks or twenty days.

After the disease reaches its climax, if death does not ensue, a long and tedious convalescence is experienced. There are often, during this period, many mental and nervous disturbances, together with gangrene of the extremities and extreme emaciation, meningitis, hypostatic congestion of the lungs, bronchopneumonia, myocardial degeneration, enlargement of the liver and spleen, particularly the latter, and a marked disturbance of the kidneys accompanied in twenty-six of seventy-two cases by hematuria and albuminuria, all resulting from the direct influence of the specific causative organism lodging in these respective organs.

The epidemic spread of a virulent type of typhus

fever, now that lice, preeminently body lice, have definitely been demonstrated to be the chief agents of disseminating this deadly disease—the plague against which medical art is still hopeless and helpless—has been most active throughout Hungary and the Slavic districts of Europe, not only in the present war, but in campaigns of the past, most notably the first and second Balkan wars. It is *par excellence* a disease of armies in the field and was formerly known as hospital fever, war plague, ship fever, jail fever, spotted fever, and camp fever, and was looked upon as the result of overcrowding and poverty, lack of cleanliness, and intemperance.

The list of deadly epidemics of typhus that have raged among the armies in the field is a long one. During our past wars it has been the scourge of the American nation, killing more men in practically every conflict than shot and shell. In the war with Mexico¹ 16,054 troops lost their lives from disease, compared to 1,777 killed in action, and 954 that died later of wounds. In the Civil War² the statistics were almost as appalling, 259,017 dying on both sides from the ravages of disease, while 184,594 soldiers lost their lives on the battlefield. This does not include the deaths in prisons, which we all know ran into the thousands.

Still later, in the Spanish War³, when we had presumably learned and thoroughly digested our previous lesson, I am ashamed to state that 2,565 strong, stalwart, able bodied men succumbed to disease, while only 243 died upon the battlefield. With these disgraceful figures before us we can await with interest the outcome or results of our next campaign. Not only in the American army did this disease play havoc, but in one of the greatest campaigns of past history, the Crimean war (1855-1856), typhus made great ravages throughout the French and British armies.

Today we know the direct cause of the disease, the specific transmitter to be the louse or pediculus, and why the nurses, and doctors in attendance upon the sick from this infection are so invariably attacked, and why there is no other disease that can claim so many victims among the medical profession.

In the Balkan wars the Bulgarians suffered intensely from its ravages. A Bulgarian staff officer told me that during these two wars they lost more soldiers in a shorter period of time from fleck typhus than from all other diseases combined. In those wars, as in the present one, the soldiers, for protection against cold and projectiles, dig themselves covered pits or trenches; where contagious diseases spread with great rapidity and facility. The disease is essentially one of the cold weather, and no sanitary measures at present known are better or more efficacious than the sunshine and warm, balmy breezes of spring and summer, when open air life becomes a habit, bathing is more frequent, clothing is washed and changed, and the lice are forced to leave, as they cannot endure warmth. Overcrowding of soldiers and prisoners, especially of the latter, presents ideal conditions for the spread and propagation of the disease. Prison camps are unavoidably so situated, overcrowded, supervised, and

*This is the third of a series of three communications based on personal study of the European war. See this JOURNAL for May 1916, page 983, and May 27th, page 1092.

¹Heitman's Historical Register.

²Cox.

³Recent campaigns of Sanjago de Cuba.

cared for that the horrors of confinement and treatment will be carried far into the future as unrelatable, unbelievable remembrances by those unfortunates condemned to such a fate. One Russian officer who, feeble, crippled and broken down at the age of forty years, just released from a concentration centre to return to his home, told me that rather than return to a life such as he had lived during his past six months' confinement, he would desire to die on the battlefield or be torn limb from limb by the



FIG. 1. Isolated fleck typhus ward and volunteer nurses established in a farmhouse in the Carpathian Mountains.

wolves in the frozen north. In one case he knew what his end would be, and that it would come shortly; but in the other, as time dragged on, no one knew what day would dawn to find him raving, delirious from disease in the squalid box stall allotted to three of them for a room; where facilities for bodily cleanliness and personal hygiene were denied; where the filth and squalor were added to by each incoming consignment of men. Those of you at a distance have no conception of the realities of such centres, for even those near them do not and cannot know of the conditions.

Although continued efforts are made to free the men from vermin, and to prevent the spread of epidemics by flies and other insects, little progress is made along these lines, because of the overcrowding and handicap caused by the weather. However, disinfection stations have been built at intervals along the borders of Poland, in which 500 men can be washed, cleansed, and refreshed at one time, usually from eight to ten hours. There are two distinct divisions in each of these institutions, an unclean and a clean one. The men enter the first department, strip, place their clothes in one net, and money, belts, furs, and other odds and ends in a second. The first is sterilized by dry heat, and the second remains outside until after the bath has been taken. The soldiers then pass into the unclean shower bath No. 1, where they are allowed to remain for ten minutes; from there they go to shower No. 2. Here they may first be shaved and their hair is cut, etc., after which the bath is taken with soap and warm water for ten minutes. No. 3 shower is the clean bath, first of warm, later of cool water. After this last washing they receive food, clean fresh underclothing, and their sterilized uniforms. Discarded articles of clothing are destroyed by fire. The drainage of these sanitary bath houses is treated with chloride of lime contained in a large galvanized tank,

through which all refuse must pass, remaining in the tank for a period of twenty minutes. The structures in which these sanitary measures are carried on are crude wooden ones with concrete or stone floors, fairly well ventilated and situated. Near them were usually found hospitals for the care and treatment of infectious or contagious diseases discovered as a result of this process. Hospitals were crowded to their full capacity, several men being at times forced to occupy the same bed, and all the available floor space was utilized by those who had no beds. Lice ran rampant and the epidemic of typhus was growing every day and was still uncheckable as long as the cold weather lasted. The adult body louse, *Pediculus vestimenti*, which conveys the pathological germ, transmits it to the succeeding members of its brood, which, in turn, are capable of infecting human beings. In order to propagate, the female must ordinarily suck itself full with human blood twice in twenty-four hours, the rapidity of digestion being determined by the environmental temperature. There is a strong possibility that superinfection may take place, inasmuch as observation seems to indicate that the course of the disease is relatively more severe in patients who are being constantly inoculated anew, compared with those who are immediately cleansed and nursed in a louse-free environment. The female louse must keep in a warm atmosphere, not too warm, however, and have food at least once or twice a day. Lice perish at a temperature over 30° C. sustained for any length of time. The reason why body lice show a predilection for the regions of the neck, back, and waist is because the close fitting garments at these points provide more uniform warmth. They also like to hide in between coarse weaves where the threads cross. Here the female deposits seventy to eighty eggs, which are hatched in three or four days, according to the temperature. They become sexually mature in from



FIG. 2. Field filter barracks, built near a railroad station as a post-hoc measure against infectious diseases.

fifteen to eighteen days, as does also the head louse, or *Pediculus capitis*.

Milman discovered in the blood of soldiers sick with typhus fever a diplobacillus, which was non-motile, Gram positive and did not coagulate milk, form indol or ferment grape sugar, and did not split up milk sugar. The inoculation of rabbits gave in all cases positive results, and the same diplobacillus was found in their blood and tissues after death. A twenty-four hour bouillon culture was injected hy-

podernically into a guineapig and a rabbit respectively. The former remained alive, but an abscess developed at the spot of inoculation in which the diplobacillus was found in pure cultures. Cadavers also showed its presence. The agglutination test, he stated, was hard to carry out in many cases, but it proved positive when results were obtained. Milman calls his organism or microbe *Streptococcus exanthematicus*, because it resembles to a great degree the ordinary streptococcus, having, however, the added faculty of producing typhus pyemia.

Little has heretofore been known regarding lice, and a thorough search through the past and present literature has failed to reveal trustworthy information. Dr. Bert W. Coldwell, Dr. Harry Plotz, and Dr. Nathan E. Brill, all of the American Red Cross Sanitary Commission to Serbia and Germany, know probably more about this organism than do any others, having been constantly associated with it in combating the severe epidemics of typhus that enveloped Serbia.

Continued effort is being made at the present time on the eastern front to free the soldiers from these and other vermin, noticeably *Acarus scabiei*, which is as much, and in some localities more of a curse to the men than the louse. In Miskolcz I found it necessary to enforce the following rules on all patients entering the reserve hospital of which I had charge, thus guarding against the possibility of an epidemic. Filter barracks were built near the railroad station to accommodate the new arrivals. Here they were detained for a period of six days, until assurance was given that they would not contaminate or infect others, when they were transferred to the reserve hospital. On entrance to this barrack a crudely constructed wooden building, or number of buildings each able to accommodate from thirty to two hundred wounded soldiers, every man was stripped and his clothes were marked and placed in a canvas bag for sterilization. Boots, leggings and accoutrements were put aside to be sterilized by dry heat. Tobacco, trinkets, suspenders, worn socks, etc., were destroyed. The men were then washed with soap and warm water, being well scrubbed by an orderly from head to foot. After this first bath they were shaved, not one hair being allowed to remain on the body. Following this they received another bath in an adjoining room, where they were sponged over completely with gasoline. A third bath at the end of ten minutes completed the requirements, after which they were led away to receive clean linen and be placed in the proper wards that their injuries demanded. This practice was carried out regardless of station or rank, character of the wound, or the condition of the arrival, with, I might say, fairly good results when we compared them with the reports and investigations of other hospitals. However, using every precaution possible, lice still persisted in infecting the hospital and finding their way to the clothes of the doctors and nurses when making their rounds of inspections and in close contact with the beds of the patients. Because of this I found it necessary to provide myself and assistants with suitable suits to be worn when visiting the wards, after which they were thoroughly sprayed with gasoline before removing, and later sterilized. These suits were prepared from a rubberoid mate-

rial, in two pieces that overlapped both up and down, forming four thicknesses at the waist and fitting snugly over the shoes and head. An open space for the eyes was allowed in the head covering and the lashes were covered with petrolatum before we entered the wards. These suits helped to a great degree in keeping off the lice and were later adapted for use in the filter barrack. The immediate isolation and careful disinfection of the patient and all his excreta is not all that is necessary to prevent the spread and contagion of this disease. Complete extermination of the lice first is an important consideration. In carrying out this end of the treatment the eggs must not be forgotten. They adhere closely to the fabric of the cloth and are enclosed in an envelope that is resistant to antiseptics. After the clothes were sterilized by dry heat or steam, they were sent to the tailor shop, where a hot iron was passed carefully over the seams so as to penetrate into the folds. The seams of the sleeves, belt, collar, and flap of the trousers were specially ironed with the point of the iron. This process can be so rapidly performed, with results so efficacious that in cases where equipment or time would not permit sterilization, this method was practised by men who were formerly tailors, while the soldiers were passing through their douche or bath, and the clothes were ready for immediate use if necessary.

The treatment of typhus fever is very unsatisfactory, being purely of a supportive and symptomatic character. I believe the most important factor, however, to be a clean, clear intestinal canal. Slight but nourishing diet should be allowed, but not confined wholly to milk because of the large, hard, curdy stools that follow its ingestion. Other light beverages just as sustaining and of as high caloric value can be found. The nervous symptoms above mentioned should be watched carefully even during convalescence. Spirit of nitrous ether to relieve congestion and reduce the extremely high fever was without an equal, and when combined with an ice cap or snow bag, rarely failed to produce the desired effects. Other remedies that proved of great value in sustaining the heart action and general condition were strychnine, sparteine, strophanthin, and thyroid extract. The last remedy, I believe, should be used with more confidence and as a routine in the treatment of typhus fever. It will prove of immense value, I am sure, to those who are fortunate enough to possess any quantity of it when treating this disease, and should form a principal item for those who are yet to return to diseased and war stricken Europe to help combat the ravages of fleck typhus.

843 NORTH SIXTY-THIRD STREET.

Treatment of Trachoma.—Rebeck (*Penna. Med. Journal*, May, 1916) advises as the best method of treatment thorough scarification under ether and the complete expression with the roller forceps followed by a scrubbing with one to 1000 bichloride solution. Ice compresses should be applied for two days following the operation and the sulphate of copper stick should be applied daily for six to eight days, or longer, if necessary.

CAMP SANITATION.

By P. W. HUNTINGTON, M. D.,

New York,

Captain, Medical Corps, United States Army.

In order that transmissible diseases may, so far as is possible, be prevented among armies in war time, it is necessary that the rules of general sanitation be applied to the camps and to the troops in them.

In applying these rules we must, among many other things, take measures for, 1, the disposal of human excreta; 2, the disposal of other organic matter, solid and liquid wastes and rubbish; 3, the furnishing of a safe water supply; 4, the furnishing of an uncontaminated food supply; 5, the proper drainage of the camp site. Of these the first is easily the most important and often the most vexatious.

1. There have been many methods proposed for the disposal of human excreta in the field, such as the various forms of incinerator, the milk of lime trough, and the falsely so called "odorless excavator," and others, all of which have for one reason or another proved to be wholly unsatisfactory in the field, under such conditions as would usually prevail in war time.

It would appear that, except in the few instances where a city water carriage sewer system was available, we should practically always be forced to the use of one of the two systems of pit disposal, depending upon the special circumstances; that is, for camps of not over four days' duration, the "straddle trench" latrine, and for camps of any duration greater than that, the deep pit latrine with fly proof box cover.

The straddle trench is a pit not over eighteen inches wide, two to four feet deep, depending on the soil and the length of the camp, and about ten feet long, for a company. The men stand with one

The deep pit may be of any size, depending on circumstances, but the box seat must be of such size as completely to cover the pit and render it perfectly fly proof. The seats must be made with covers, self closing, either by their own weight or otherwise, and a piece of tin should be fastened at the front of the box on the inner side to prevent foul-



FIG. 2.—Cross section of circular pit crematory at A-A; B and C, earth from excavation.

ing by urine. The box should be removed daily, and the pit burned out with straw and oil or sprayed with a mixture of lampblack and oil, when it is obtainable. The latter procedure is easier and quicker than burning and at least equally efficacious.

Toilet paper should be provided in rolls, as when it is in separate sheets it is much more likely to be blown about.

A trough, thoroughly limed and leading into the pit, should be provided for the disposal of urine. Basins, soap, and water should be provided, and it should be insisted on that all men wash their hands after voiding excreta, always remembering that contact is the most important means in the transference of typhoid fever and other intestinal diseases. An enlisted man should be constantly on duty at the latrine to see that orders are obeyed and to report offenders, who should be severely dealt with.

At night, there must be placed in each company street a large can, marked with a lantern, for the reception of urine, for experience has shown that soldiers will not walk to the latrine at night to urinate. Each man appears to think that fouling of the ground by urine is not important, or that he is the only offender in that respect.

The latrines should be, of course, on the opposite side of the camp from the kitchens. They should be carefully protected, by ditching or otherwise, from being flooded by storm or other water.

2. The disposal of other wastes can be accomplished by various means. The kitchen garbage may and should, as far as possible, be burned in the kitchen fire. To this end it is necessary to separate it from all liquid, and to burn it carefully and in small portions. Other wastes can be disposed of in the circular pit crematory. This, when properly built and carefully tended, will consume large amounts of organic waste with a relatively small expenditure of fuel. The writer once assisted in constructing one in which was cremated completely and without odor the bodies of thirty-seven horses. Its construction is, in ground plan and cross section, as shown in Figs. 1 and 2.

The stones should be about six to twelve inches in diameter and the spaces between them should be left open to provide for liquids. The four quadrants of the circle may be used on succeeding days to allow for cleaning. It is essential that the fire should have been very hot and the rocks thoroughly

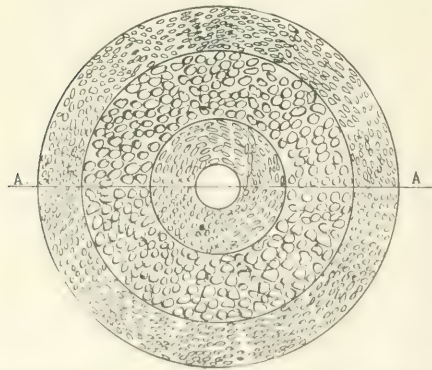


FIG. 1.—Circular pit crematory, general plan. A-A', stones and bottom of pit; B-B', four quadrants of the circular stone.

foot on each side of the trench or straddle, and thus should avoid soiling the sides of the trench. Each man should cover his excreta with a light layer of the earth that was thrown up when the trench was dug, and, when the trench is full to within a foot of the surface, it should be filled up and marked.

heated before any organic matter is placed in it. Liquid waste should be poured over the edge and allowed to seep down between the rocks.

The disposal of manure from camps of mounted commands is difficult. Some textbooks on hygiene advise that it be burned, but experience has shown that this is difficult if not practically impossible. The picket line should be swept and carefully policed each day, and the ground occasionally oiled to prevent the breeding of flies. The manure should be hauled away and either buried or spread out in a thin layer so that it will dry quickly, as the flies will not breed in it when it is dry.

3. The water supply of a camp should, whenever possible, be arranged for in advance by putting down driven wells and piping the water to necessary points, restricting the number of faucets as much as possible to prevent waste. If these measures for any reason are not practicable, the nearest water supply must be used, remembering that surface water must always be looked upon as suspicious and be treated by heat, the Darnall filter, the Lyster hypochlorite bag, or other efficient agency.

When troops are moving daily, the cooks should boil a sufficient supply of water at night so that there may be cold sterile water for filling the men's canteens before breaking camp in the morning.

On moving on to a new camp site a guard should be placed at once over any stream or pond from which water is to be used, in order to prevent fouling, and to see that water for drinking, cooking, watering animals, washing, and bathing is taken, in the order named, from upstream down. Men should be taught to drink fully before leaving camp in the morning, and on the march but sparingly. They should not be allowed to leave ranks to fill canteens at wayside wells and streams.

4. The food supply is nearly always sufficient as issued, but especially in newly raised volunteer organizations, there will always be much waste and improper management of the ration.

Cook tents and mess tents should be screened, in standing camps, and wire gauze covers provided to protect food from flies. The personal hygiene of cooks and their kitchens should be carefully supervised.

Very often soldiers, especially young and inexperienced men, will in permanent camps suffer from the effects of rash overeating.

Civilians should not be allowed to set up stands within or near camps for the sale of food or drink, as their wares are usually of the poorest quality and their methods of the dirtiest. In addition, they usually sell liquor secretly to the men and in other ways impair the discipline and hygiene of the command. It was suspected that an epidemic of typhoid originated from one of these stands at a large camp near Tacoma, in 1906.

5. The drainage of a camp should be adequate to care for storm and other waters and will depend on the locality, season, soil, etc. The system should include a ditch surrounding each tent, latrine, or building, to catch the rain water falling on it, and empty into a larger ditch running down the company street to a main ditch, and so out of camp.

An experienced soldier will always impress upon a recruit that a tent is never properly pitched until

after it has been ditched. An experience of being flooded out of an unditched tent in the middle of the night will firmly fix this fact in the memory.

To care for the waste water from faucets and bath houses there should be deep ditches running in appropriate direction and filled with gravel or broken rock.

The foregoing scant sketch of some of the salient points in camp sanitation may be of value in indicating the scope and importance of the subject; but the knowledge of these, and of other facts, will be of no value to our troops in the future unless there are efficient medical officers in sufficient numbers to see that they are properly put into effect. The efficient medical officer in the field will be instructed in the details of sanitation, will be a hard worker, willing to give his personal attention to seemingly trivial and often unpleasant details; and also a man who can, by the force of his education and personality, secure the cooperation of his seniors, his brother officers of the line, and his subordinates, without which he can accomplish little.

39 WHITEHALL STREET.

RADIUM IN GASTRIC CARCINOMA,*

By C. EVERETT FIELD, M. D.,
New York.

An ever present optimism that is common with the writer, allows him to approach this theme with a degree of hopefulness, that he trusts will not be considered unduly enthusiastic. Possibly there is no subject in medicine or surgery today that is receiving more attention at the hands of the scientific world than radium. In common with the discovery and early use of all new elements, radium's supposed power of cure has probably been sadly overdrawn. To the credit of this element, radium, we must acknowledge that a large percentage of the early disappointments, so frequently met, were due to the fact that insufficient doses and lack of purity of the element were common. Unfortunately, even today, there are surgeons using radium purchased years ago, that have not had it properly measured and standardized; therefore, their reports are not worthy of credence. A more scientific application of adequate quantities of radium, properly screened and estimated for dose, has given us in our present knowledge certain tangible results that are making for radium a place in surgery. Radium is acknowledged best, in the words of Dr. Joseph B. Bissell, of New York, who in an editorial comment on the surgical status of radium, urges its use "in incurable cancer to relieve various symptoms, such as odor, discharge, pain, and, last but not least, to sustain the patient and improve the general health, in connection with other palliative measures, thus taking away from the sufferer the certainty of death and reviving confidence and hope."

The influence of radium and radium solutions in the treatment of diseases of faulty elimination and deranged metabolism is easily conceded, when we review the remarkable achievements at the clinics of Germany, Austria, France, and England during the

*Issued by invitation, before the Albany County Medical Society at Albany, N. Y., January 11, 1915.

past ten years. The physiochemical manifestations of radium emanation clearly activate most of the body ferments, and clinical results follow in close accord. Regarding the local application of radium for the treatment of malignant growths, our knowledge as to its biological action is not so definite. Just whether the selective influence that is evidenced, directs the rays towards the cancer by a caustic action which brings about its destruction, or whether its power is exerted on the intercellular substances, we are not as yet sure. It is certain, however, that some biochemical action of the rays does cause rapid degeneration of the malignant structure, without bringing harm to the normal tissues that are adjacent.

Radium does kill the cancer cell, this we know, and exerts its power in direct accord with the accessibility of the mass. Superficial cancer is controlled and cured in fast increasing percentages. Radiation undoubtedly works, first, through its influence on the bloodvessels, bringing destruction to the protoplasm and cell nuclei. Any means that will facilitate our giving proper doses in deep seated masses will bring us a long way nearer encouragement in treating cancer of the stomach.

How little we formerly understood of the proper doses of radium is evidenced by the fact, that radium, with all its powers of penetration, cannot exert a killing force deeper than an inch and an eighth to an inch and a quarter, yet no doubt we have all heard of the agent being used in some immense, inoperable mass with expressions akin to hope.

In the light of our present knowledge we place the rays as merely an adjunct to the knife. All malignant masses that can be excised should be accorded such treatment, except such growths as superficially affects parts like the face, where undue disfigurement would result. In other parts, such as the tongue or tonsil, where frequently extreme active growth follows even the removal of a specimen for analysis, radium alone should be used. The London Radium Institute, one of the most noted radium clinics of the world, in its report for 1913, says that "tabulated data on a total of 181 cases of cancer of the face, neck, and breast, show a total of 154 cases healed; seven not healed; three under treatment; and seventeen discontinued. Of the 154 listed as healed on January 1, 1911, at present 135 are still healed."

I feel that we all acknowledge to a large degree, the successful manifestations with radium in purely superficial growths, therefore, we hasten without further comment to the use of the element in malignant disease affecting the stomach. For special reasons I am going to speak also of the urinary bladder.

The increasing frequency of gastric carcinoma and its tremendous mortality make it a subject of great importance. Surgical treatment, following early diagnosis, presents most encouraging results, but early cases are few and far between. In advanced cases, surgical interference is not evolving treatments which promise radical advantage, and we must search for relief along other channels. I am frank in saying that we are not able to present satisfactory results in gastric carcinoma from the use of radium, although many have attempted to give treatment in various ways. Special applica-

tors of silver and rubber with handles suitable for introduction have been used, but the inability definitely to locate the mass and give proper application, is sufficient reason for the fact that there is but little literature.

When we review the subject and note the surprising lack of evidence, we are constrained to ask, Has radium any place in the treatment of gastric carcinoma other than purely experimental? Judging, first, by the results that are evidenced from application of radium in the urinary bladder; secondly, by the opportunity for application in cases where exploratory incision for diagnosis is to be made; and, thirdly, in using it for the relief of pain in inoperable cases, I should not only say that radium has reason for active consideration, but I feel confident that it will not be long before encouraging findings follow an improved technic.

Undoubtedly, the fear of producing radium burns and the consequent danger of perforation have deterred many from attempting treatment. Furthermore, the lack of suitable means of introducing under the field of vision an applicator containing radium of sufficient potency and maintaining it in proper position for an hour or more, have been deterrent features. The gastroscope may come into play, but even in the hands of so talented an operator as Chevalier Jackson, it has been hardly possible to secure application by such means. Many esophageal cases are treated with success, but not so growths at various portions of the gastric wall.

In the urinary bladder, Dr. Winfield Ayres, of New York, has been giving treatments with radium that are promising. By means of a gold screen applicator attached to a flexible silver wire, constructed in such a manner as to permit it to gain access through the cystoscope, he is able to make application directly to a cancer mass which is in direct vision, and give a dose of 200 milligram hours at a time. Careful regulation of the dose, combined with experienced technic, gives assurance of no bad effects and much to be expected. Dr. Hugh Young, of Baltimore, has devised many new types of radium applicators for bladder work and commonly uses very high doses.

With the stomach, we hope that some device will be presented in the immediate future to give us the same possibility of application that is afforded in the bladder. Einhorn, of New York, some time ago, employed a radium gastric applicator, called the radiodiaphane, which was simply a radium tipped applicator, which carried a rubber tube and permitted gastric distention by means of a hand bulb. This instrument was used in numerous instances, but for the most part was reported as unsuccessful.

Dr. Robert Coleman Kemp, of Fordham University, has given us a new instrument known as an inflating gastroscope, which will have advantages where operation for diagnosis or treatment is decided upon. It certainly would serve as a most practical means of making a direct initial application of radium. In some cases it might be advisable to create an abdominal fistula for continuing treatments. In such an instance it is possible to use a smaller calibre instrument. The Kemp apparatus is certainly a step in the right direction, although I am of the opinion that its author had little thought

of advancing it as a means of administering radium therapy.

That the world is not standing still as far as effort is concerned, is shown by the fact that von Czerny, of Heidelberg, has reported observations in several thousand gastric carcinoma cases. His experiences detail the direct application of radium, the use externally of radium compresses for relief of pain, and the injection of the soluble salts of radium. With the latter treatment, he avers that he has checked, for a time, active congestion, relieved pain, and reduced stenosis to the point of allowing the passage of food.

Bissell, of New York, has reported palliative results from the intravenous injection of solutions of the soluble radium salts containing 100 micrograms of the element. Such means of treatment are plausible for the purpose attempted, and are rich in possibilities. Paul Ehrlich stated that the application of antitoxins and serums had reached its zenith, and the next great step in therapy will be the employment of radium solutions combined with other curative agents (possibly colloids) yet to be announced. There are several research workers doing most interesting work along this line. Possibly, the complete destruction of cancer will not come until we can present treatment that can be administered directly through the body fluids.

I regret exceedingly that it has been impossible for me to present more encouraging data, but in the light that is now mine I feel that progress is being made and that not many years are to elapse before our hopes will in liberal measure be realized.

50 EAST FORTY-FIRST STREET.

THE LEUCOCYTE COUNT OF APPENDICITIS.

Its Value in the Diagnosis, Based on the Blood Counts and Pathological Findings in Four Hundred Operative Cases.

By J. E. ROBINSON, M. D.,
Temple, Texas,

Pathologist, King's Daughters' Hospital.

In this paper we deal first with the two hundred appendixes removed at operation at the King's Daughters' Hospital in the last two years, in which sections were made of the appendixes and records made of the blood counts; only blood counts made before the operation will be considered. At some future date we wish to speak of the blood counts made both before and after operation, when we deal with the leucocyte count as a means of prognosis and an indication for further interference.

In the second part of this paper, we speak of the blood counts in two hundred cases in which records were kept of the blood counts, but no sections made of the appendix; here the surgeons' report will be used entirely as to the condition of the appendix. Many of these were abscesses in which the appendixes were not available, or if obtained, very little could be learned from the section.

The appendixes were fixed in two per cent. formalin, sectioned by the freezing method, from three to ten microns thick, mounted on the slides with cel-

loidin, and stained with eosin and hematoxylin; cross sections were made from the appendix at two or three places. An effort was made to secure a section from a pathological area, if one existed, and also through a point as nearly normal as possible. We were unable to say from these examinations that one point was more vulnerable than another. Reports were made by describing the condition of each coat from without in and conclusions drawn accordingly. The age of the subject was known, but no reference was made to the blood counts or the surgeon's report in making the pathological diagnosis.

Fifty-two cases or twenty-one per cent. were diagnosed as active inflammatory by both the surgeon and the pathologist, the average leucocyte count being 18,000, and the polymorphonuclears 82.8 per cent.

Sixty-five cases or 32.5 per cent. were diagnosed as chronic by both the surgeon and the pathologist, the average leucocyte count being 10,161, and the polymorphonuclears seventy-six per cent.

In forty cases or twenty per cent. the appendixes were removed while operating in the abdomen in noninflammatory conditions, in which both the surgeon and the pathologist reported normal, the average leucocyte count was 8,400 and polymorphonuclears 67.5 per cent.

It will be seen that the surgeon's report made with the history and appendix before him corresponded with the laboratory report 157 times or in 78.5 per cent. of the cases.

Fourteen cases were diagnosed as active appendicitis by the surgeon and as normal by the pathologist, and in these cases the average leucocyte count was 11,900, and polymorphonuclears 72.1 per cent.

Here it would seem that the surgeon had a shade the best of the pathologist, for the blood count would indicate some infection of a very mild type, while the appendix appeared normal. Either the patients were suffering from some other infection not recognized at the operation, or the infection in the appendix was of such a nature that it did not cause a hyperemia or infiltration of any of the coats of the appendix. This last condition we are inclined to doubt.

Twenty-four cases diagnosed as chronic appendicitis by the surgeon and as normal by the pathologist, gave an average leucocyte count of 8,000 and a polymorphonuclear of 65.8 per cent. Here we are inclined to think that the surgeon's report was based on the history of recurrent pain in the region of the appendix or upon the presence of adhesions rather than the gross appearance of the appendix, for if previous inflammatory conditions had existed, they had left no inflammatory change.

In five cases reported as active appendicitis by the surgeon and as chronic by the pathologist, the average leucocyte count was 7,450 and the polymorphonuclears 62.5 per cent. Here the blood count would tend to bear out the pathologist rather than the surgeon.

A point that was noted in this series of examinations that we think worthy of mention: 78.5 per cent. of the seventy cases reported as chronic appendicitis, showed an excess of lymphoid tissue. We are inclined to think that this excessive amount of

lymphoid tissue weakens the wall of the appendix to the extent that fecal matter lodging in the appendix is not expelled in normal time and gives rise to appendicular colic of a noninflammatory type, or to a catarrhal condition not sufficient to produce a leucocytosis or marked pathological change, but sufficient to cause some intestinal or systematic disturbance. Still, the presence of an excessive amount of lymphoid tissue in about fifteen per cent. of normal appendixes would lead us to think that its presence is not of itself a pathological entity.

Presuming that we were correct in our findings and that we were following the work of surgeons of average ability, we find that the surgeon is incorrect in his conception of the pathology of the appendix in 21.5 per cent. of the cases. Twelve per cent. of normal appendixes were diagnosed as chronically inflamed. Seven per cent. of chronic cases were diagnosed as active and 2.5 per cent. normal appendixes were diagnosed as acutely inflamed. There is one redeeming feature of the surgeon's report; in no instance was an inflamed appendix diagnosed as normal, and his efficiency along this line is easily 100 per cent.

Assuming that the leucocyte count of the normal individual is 7,000, and the polymorphonuclears sixty-five per cent., and that an increase of 2,000 or 3,000 in the count and of five to eight in the differential is of no diagnostic importance, we see that little can be learned in the cases of chronic appendicitis from the blood count; sixty-five cases here showing a leucocyte count of 10,161 and a polymorphonuclear of 76.1 per cent. Excluding other inflammatory causes, this could be taken as a reliable indicator, provided that the patient was observed and more than one blood count was made, but not as absolute; it would be of material service, however, in excluding an active appendicitis, for, as shown above, fifty-two cases of active appendicitis showed an average leucocyte count of 18,000 and polymorphonuclears of 82.8 per cent. Here we consider a leucocyte count with the differential of the utmost value, which gives a correct diagnosis in from ninety-five to 100 per cent. of the cases, provided that care has been taken to eliminate other factors by proper examinations.

In the second series of 200 cases, in which sections were not made, ninety-three were diagnosed as actively inflamed and fifty-five showed pus either in or around the appendix; these gave an average leucocyte count of 29,000 and a polymorphonuclear of 84.6 per cent. The highest leucocyte count was 98,000, with eighty-three per cent. polymorphonuclears. The lowest count was 10,000 leucocyte, with eighty-six per cent. polymorphonuclears.

Thirty-eight cases diagnosed as active appendicitis showing no pus, gave an average leucocyte count of 18,000, polymorphonuclears 83.2 per cent.

Six cases in this series gave a leucocyte count as low as 12,000, with an average of eighty-three per cent. polymorphonuclears; 107 cases diagnosed as chronic appendicitis gave an average leucocyte count of 10,000, polymorphonuclears 70.2 per cent.

It will be noticed here that the cases showing pus gave a leucocyte count of 11,000 and a polymorphonuclear count of 1.8 per cent. higher than the series

which were sectioned and pronounced to be actively inflamed, while the cases showing no pus gave practically the same count as the series sectioned, namely 18,000 in the sectioned series and 18,500 in the series not sectioned, with a difference of only 0.4 per cent. in the polymorphonuclears.

The cases of chronic appendicitis gave a somewhat lower count than in the series sectioned, which is no doubt due to many normal appendixes being included in this series by the operator.

We wish to acknowledge here the valuable services of Dr. I. D. Jackson and Dr. M. O. Rea in sectioning and preparing specimens for examination and also for most of the blood work.

CARDIAC DILATATION.

As a Complication of Apical Pulmonary Tuberculosis,

By MAX GROSSMAN, M. D.,
New York.

(From the Medical Clinic of the New York Post-Graduate Medical School and Hospital.)

The fact that in many cases of acute infectious disease dilatation of the heart is a complication, had long been noticed and commented upon by different observers; but that in apical pulmonary tuberculosis cardiac dilatation is often a factor, and an important one at that, was shown and emphasized by the present writer in an article published, April 15, 1916, in the *Medical Record* (1). It would seem that up to the writer's article on the subject, no special mention was made of the existence or importance of this complication of pulmonary tuberculosis. In the present article, the writer will show the value of its recognition in the different phases, and in the treatment.

From the standpoint of diagnosis, it is well to remember that often, as shown by a previous article of the writer (2), a soft systolic functional murmur is one of the first signs observed in incipient apical pulmonary tuberculosis. The murmur may be heard at times loudest at the mitral valve. It is due, in the writer's opinion, to early cardiac dilatation. Its importance lies in the fact that if the murmur is organic, the chances are that the congestion is not tuberculous; for it is a well known fact that cardiac trouble, caused by valvular disease, and pulmonary tuberculosis seldom occur together.

In incipient cases of apical pulmonary tuberculosis, we find often that the gastric symptoms predominate. The writer believes it is due in many cases to early cardiac dilatation, resulting in poor blood supply to the stomach, and thus in derangement of gastric secretion and motor disturbances.

The dyspnea so troublesome in some cases of pulmonary tuberculosis, it would seem, is partly caused or at least much influenced by cardiac dilatation. On giving appropriate cardiac tonics, it is much improved and the patient is much relieved.

As to the value of the recognition of cardiac dilatation as an aid in the treatment of pulmonary tuberculosis, the writer would say that it is essential. Cardiac dilatation is a good guide, taken, of course, in connection with the individual points of the case, as to the amount of physical activity, for example,

to be allowed to a patient. A tuberculous patient with marked cardiac dilatation and fever is better off in bed. But such a patient with no marked cardiac dilatation, though having fever, may be allowed to be up and about, of course under proper restriction.

As to the treatment of cardiac dilatation in pulmonary tuberculosis, first, prophylactic, the patient should avoid too much physical strain. We should remember that the presence of fever, septic in origin and constantly recurring, is one of the causes of a weakened cardiac muscle, and we must try by general hygienic measures to help control it. Good, suitable, fresh air is certainly essential, and at all times desirable. Sparteine sulphate is a good heart tonic, and in doses of one quarter grain every four hours will help to overcome the depressing effects of the toxins of tuberculosis on the cardiac muscle. A tonic tablet, popularized by Dr. Robert Abrahams, and used with good effect at the medical clinic of the New York Post-Graduate Medical School and Hospital, consists of guaiacol carbonate, arsenic, strychnine nitrate, and sparteine sulphate.

While the writer does not believe that cardiac dilatation is present at all times and in all cases of apical pulmonary tuberculosis, it certainly is present when the tuberculous process is virulent and shows active manifestations. Its presence certainly suggests a multitude of possibilities as to the better understanding of phenomena hitherto obscure in diagnosis and treatment. In this connection the writer wishes to thank Adjunct Professor R. Abrahams for aid extended during the observations mentioned in this communication.

REFERENCES.

1. MAX GROSSMAN: Cardiac Dilatation as a Sign of Early Apical Pulmonary Tuberculosis, *Medical Record*, April 15, 1916.
2. IDEM: An Interesting Observation in the Diagnosis of Incipient Apical Pulmonary Tuberculosis, *American Medicine*, April, 1916.

124 LEE AVENUE, BROOKLYN.

Contemporary Notes.

The Ductless Glands.—Though the profound influence exerted by the removal of the sexual organs of the young was thoroughly recognized by both physician and laity since the very earliest days, and must have been the foundation of much speculation, it was not until 1855 that Addison in a description of the destruction of the suprarenal glands in the disease which bears his name first directed the attention of the profession to the relationship between the diseased gland and the disease. The clinical findings, remarks the *Maryland Medical Journal* for June, 1916, were definitely proved to depend on a definite pathological lesion. Little by little, our knowledge concerning the important role played in the human economy by these, for the most part, small organs has been increased by the investigations of a host of observers. Gull, Ord, and Charcot first described myxedema clinically, and Theodore Kocher and Reverdin demonstrated that this picture is due to the absence of thyroid secretion. Next Moebius expressed the opinion that exophthalmic goitre depends upon an abnormally increased activity of a ductless gland. These observations were the forerunners of the now naturally accepted view that a lack of abnormal activity of

the ductless glands exerts a powerful influence on the wellbeing of the body. It is pretty generally accepted by the profession that the absence of the thyroid secretion is the element underlying the disease called cretinism and an excess of the secretion causes exophthalmic goitre. Likewise the presence or absence of the internal secretion of the pituitary gland produces a definite clinical picture, and so with the removal of the sexual organs, the pancreas, the adrenals, the parathyroids, the thymus, etc. Acromegaly is now known to be due to an increased activity of the function of the hypophysis and infantilism to a decrease in the functional activity of that gland. Though these secretions have not been isolated in pure form, still by disease and by pathological experiment it has been proved beyond a peradventure that they exert a powerful influence in regulating the complex processes which sustain life. Bidcl expresses this view very happily, viz., formerly every correlation of organs was regarded as nervous; today, however, even nervous actions are regarded as brought about chemically. In other words, the correlation of the bodily processes is a chemical not a nervous phenomenon. It is needless to speak of the influence of the ductless glands on growth—all are fully aware of the overdevelopment of the castrated cat, the slender lines of the eunuch, etc., but, perhaps, all are not so well acquainted with the influence the ductless glands exert in regulating metabolism. Carbohydrate metabolism is regulated by the pancreatic insular apparatus, by the destruction of which the carbohydrate equilibrium of the body is markedly disturbed.

The Prevention of Mental Deficiency Due to Alcohol and Syphilis.—Dr. B. Sachs presented a paper covering this subject to the New York City Charities and Correction Conference, held on May 25th last. He deprecated the tendency to blame parental alcoholism and syphilis for the greatest portion of mental defectives, although he expressed firm belief that such factors were operative in at least a third of the cases. This portion represented that percentage of the total which sanitary measures could be best calculated to reach. He considered that the recent instruction of the world in the evils of even moderate indulgence in alcohol was to make rapid progress in the near future. In regard to syphilis, he voiced the appeal, which cannot be too frequently repeated, that hospital and other institutional authorities should provide the special accommodation and treatment so badly needed by sufferers from this disease, since such inadequate provision for their proper treatment exists at present.

A Glass Hospital Room.—The newly completed hospital of the Hebrew infant asylum in New York contains one room built entirely of glass. It is divided into twelve compartments, each having glass sides through which the nurse can see the baby at all times without coming in. Each compartment is ventilated separately, states the *Southern Hospital Record* for May, 1916. A child having a communicable disease can be cared for in one of these little compartments without any possibility of infecting the baby in the next one, although he may be only three feet away and the children can smile at each other through the glass.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and The Medical News.*A Weekly Review of Medicine.*

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.,

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transporta-
tion through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 17, 1916.

THE SIXTY-SEVENTH ANNUAL MEETING
OF THE AMERICAN MEDICAL
ASSOCIATION.

For the second time within a few years, a city remote from the coasts has been chosen for the deliberations of the American Medical Association assembled in its annual meeting. As the majority of the physicians must necessarily come from fresh water districts, we are inclined to think, perhaps without a sound logical basis, that salt air has for them a strongly tempting quality as an agreeable change, and that if the coast meetings are not more numerously attended, yet there is a more lively and enthusiastic atmosphere about them. Still, Detroit must have felt the increase of membership, over 2,300 during the past year, and as one of the loveliest as well as liveliest of our cities, paraded her charms probably before a thoroughly delighted convention. The features of the meeting, both scientific and social, were quite up to the usual standards. The membership of the association is apparently imposing in its dimensions, yet thoughtful investigation is demanded to learn why fully one half of the regularly licensed physicians of the United States remain outside the breastworks. The ideals of all are alike and the association is supposed to reflect them accurately; why is there an extraordinary discrepancy between the actual and the potential membership of the association?

EPILEPTIC LOSS OF INTEREST.

Withdrawal of interest from the outer world is becoming more and more recognized as a manifest factor in that condition which, all too frequently, is loosely designated as dementia. The interest of many so called demented patients is really occupied in an imaginary world filled with fantastic creations. This is a world of vivid coloring, of strong affective states, negativistic though they may be. This is the type seen in dementia præcox (schizophrenia). Epileptic dementia so called has certain analogies, but it has also certain marked differences.

Dr. John T. MacCurdy (A Clinical Study of Epileptic Deterioration, *Psychiatric Bulletin*, April, 1916) has presented a most comprehensive review of the field of observation which this disease picture opens to the physician, with an able discussion of the interpretations which so far seem to offer some adequate explanation of the clinical data. In view of the lack of knowledge of a specific pathology or of any precise formulation in literature of epileptic deterioration, MacCurdy devotes his attention particularly to a consideration of the functional clinical manifestations.

In this he takes up the elaboration of the special nature of the epileptic loss of interest. Its diffuseness separates it from the varied and special forms of withdrawal of other dementias. A fundamental characteristic of the genuine epileptic make-up is responsible for this at the outset. The genuine or classical epileptic, who must be distinguished from the epileptic of gross brain disease, has no common herd instinct, i. e., the social instinct which in the course of normal development counterbalances and regulates the egoistic instinct. So great is this lack in the epileptic, that it prevents the objectivation of his egoistic desires. His emotional attitude is that of the child who has not yet reached the stage of object love. Hence he is extremely egocentric, a feature which comes into prominence in the special manifestations of the progressive stages of the dementia.

Starting life with such a constitutional attitude, he is ready when some disappointment or difficulty arises, to react by loss of interest; he experiences immediate relaxation of that "mental tension" which is necessary to sustain and direct attention upon the outer world. An interplay of adverse forces is thus established. The patient is thrown back upon his infantile attitude, from which he can be roused with greater difficulty at each fresh disappointment or annoyance.

The functional nature of the disturbance, however, seems to be proved by the fact that he can be roused and stimulated by a new interest. This

must be the basis of all therapeutics. It makes a more than ordinary human demand upon the person in charge, for this constitutional apathy and inelasticity on the part of the patient forbid the personal response which should come forward to meet the efforts of the physician or attendant. The "laziness, apathy, and ingratitude," however, "are symptoms in these patients, a reason for their treatment and not for their neglect."

MacCurdy emphasizes at this point the necessity for progressive treatment, just because interest is so quickly and easily lost. This means that not only must we see that new interests are provided as needed, but that they must be suited to the patient's ability. For a sufficient number of cases make such progress toward a normal and useful life that their efficiency is increased under this sort of treatment, and just here care must be taken that the treatment keeps pace with this increased efficiency, or deterioration will again set in. The ineffaceable epileptic constitutional background must not be forgotten. Of course, the ideal is that highest therapeutic goal, reeducation of the patient to the point of self sustained interest, a goal which experience proves may be attained with epileptics as with others.

The darker side of the picture is very instructive for the understanding of this epileptic loss of interest. The gradual deterioration, given fresh impetus at every new disappointment, discouragement, or annoyance, progresses rapidly to its final stage. Even the convulsions, in that peculiarly vicious circle in which the epileptic is enclosed, contribute to the discouragement, and by their temporary interference with various pursuits play a serious part in the loss of interest. In the end picture the prominent egotism has reached the most infantile stage possible. The individual is scarcely more than a biological ego. It is another peculiarity of the dementia of classical epilepsy that it affects not only the psychical, but the vegetative levels of the nervous system. Thus the complete epileptic dement needs the same bodily care as an infant in the earliest months of life, and his behavior and reactions are the same as at that period. Mentally he has regressed beyond the goal of the dementia præcox patient, who remains in an infantile or archaic world of fantasy. The epileptic loses all consciousness of his environment. The psychanalytic principles of regression, as well as such clinical knowledge as is possible of the grand mal seizure, force the conclusion that the unconsciousness of the attack is also a temporary return to the same profound stage, even possibly to an intrauterine state of consciousness.

The functional understanding of the gravity

of this end picture, as of other successive stages and clinical manifestations, provides what way of escape there may be for the epileptic through the utilization of the principle of interest. The full valuation of this principle directs a therapeutics which has been able to prove its efficacy.

MUNICIPAL PLAYGROUNDS.

The street children of our large cities, what a sad tribe they are! How troublesome! How unfortunate! How much and how constantly in the way of death dealing chauffeurs and reckless drivers! Their shrill cries, their boisterous play, and their dangerous and inconvenient pastimes are the nightmares of traffic policemen and hurrying crowds, and more than justify their exclusion from the busy thoroughfares; so they are driven back to the alleys and cellars from which they emerged. It is impossible to listen unmoved to the pleas which the various playground societies put forth in their behalf. In every American city of today there should be a playground society. The municipality which cannot boast a playground society acknowledges its backwardness in dealing with that great problem, "the citizen of tomorrow." From birth the children of the poor have been written in misfortune's book. Born and nurtured in damp cellars, in pestilential rooms, and dark alleys, from the day that they first behold the light of heaven, the ensign of disease is livid on their cheeks, and the pale flag of want blanches their young skin. The restless activity of childhood we know to be a predestined agency in the development and growth of the body; and active play in open, light, and healthy playgrounds is absolutely essential for children. American cities, which overflow with superfluities and extravagances of myriad variety, are almost destitute of playgrounds. It is a natural consequence of the high value of land in congested industrial districts. In most cities it is very difficult to find vacant spaces in central and thickly populated districts. Modern municipalities provide fire, police, and health protection; but this is not enough, and the future citizen, the growing child, must be helped.

THE GERMAN ARMY AND QUACKERY.

Whatever may be our secret leanings in the great struggle now in progress, certainly we can find ourselves in entire sympathy with the vigorous measures instituted by the German army against quackery. Having once been informed that medical charlatanism was in existence in military districts with its inevitably detrimental effects, the next step was to stamp it out with the iron heel of

Prussian militarism. We cannot help envying in such cases as this the arbitrary power of the military surgeon. The surgeon forbids a thing and that is enough; there is no discussion before bodies of laymen, influenced possibly by the very interests under discussion.

The rigid regulations adopted by the military authorities in districts where the troops are quartered, forbid unlicensed practitioners from publishing commendatory advertisements of their treatment. They cannot advertise to treat venereal disease, nor can they pose as specialists in abdominal and skin diseases, which was their former method of angling for genitourinary cases. The advertising of remedies for the prevention and arrest of pregnancy has also been interdicted. A further step has been taken, one which would appeal to many Americans as a devoutly wished for consummation, and that is a ban upon the activities of the antivaccinationists. Vaccination for both smallpox and typhoid is now compulsory in the German army, and the publication of literature which might tend to influence the soldier's mind against these measures is also *verboten*.

THE ABSENCE OF NEUROSES IN WAR.

It might have been imagined that the present war would be responsible for a great number of nervous affections and nervous breakdowns. No manner of living would seem to be more conducive to nervous shock than that which has been experienced by the soldiers in the trenches. Indeed everything would appear to have conspired to shake the nerves of the hardiest and most phlegmatic, the artillery, the hand grenades, the continual sinking and mining, the poisonous gas, and the imminence of death or mutilation while men were huddled together in damp and miserable quarters.

Nervous breakdowns among those fighting, however, have been conspicuous by their absence, which goes to show that a sound nervous system has marvellous resisting and recuperative powers, and that a man may become accustomed to almost any kind of life, and bear with unshaken equanimity happenings that when merely described to neurotic persons in the course of a humdrum existence, have caused to totter the foundations of reason.

Dr. Harry Campbell, writing in the *Practitioner* for May, 1916, points out that it is chiefly among those possessing unstable nervous systems that neuroses and psychoses are met with in war; a sound stable nervous system is endowed with remarkable powers of resistance. Perhaps the greatest number of war neuroses which appear to be purely functional, are really in large measure due

to organic lesions. Eliminating cases of shell shock, which may cause notable changes in the spinal cord, it will be found, according to Campbell, that war neuroses occur essentially among those who are temperamentally neurotic. Attention may be drawn to the fact that fear is one of the most potent factors in the causation of war neuroses and that the conditions of active warfare are such as to excite the emotion in its most intense form.

Most of the war neuroses can be grouped under the head of insanity, of neurasthenia, of psychasthenia, or of hysteria. Actual insanity is stated to be uncommon among soldiers, while the symptoms which may be denominated as neurasthenic—tachycardia, fine tremor, and nervous agitation, a combination generally met with in Graves's disease—are common. Hysteria in one or other of its protean forms looms large among the war neuroses. Blindness from shell shock is less common than at the beginning of the war. Deaf mutism, which almost invariably proceeds from the same cause, is more common by far than functional blindness. Hallucinations of hearing are frequent, and stammering is encountered with comparative frequency.

With regard to treatment, it must be emphasized that soldiers suffering from functional nervous disorders should be sorted out as soon as possible and placed under special care. In the case of hysterical patients this procedure is particularly necessary. Such cases can usually be cured rapidly while in the nascent stage, but tend to become obstinate and chronic if treated as organic diseases. Hysterical cases need kindness combined with the strictest discipline.

The present war has brought out many surprises, one of which has been the absence or comparative absence of epidemics, and the remarkably good health of the armies engaged, especially of the armies of Great Britain and France. It is also a matter for surprise that nervous diseases have not been engendered and developed on a large scale, by the appalling conditions which exist in this war. It was predicted, and it seemed with reason, that civilization and self indulgent habits had so sapped the vital and nervous powers of the population of some of the warring countries that nervous disorders would ensue on an immense scale. Such has not been the case, which gives rise to the belief that the members of the most civilized races have not degenerated to the extent believed. France is generally admitted to be the most highly civilized nation of the world, and her sons have fought with as great phlegm and steadiness, and with no more manifestation of "nerves" than the notoriously stolid Russians and Turks.

News Items.

The S. Weir Mitchell Memorial Dispensary Building.—of the Philadelphia Orthopedic Hospital, was dedicated with suitable ceremonies on Thursday, June 1st.

Endowment Fund for Jefferson Medical College.—At the alumni dinner of the college, held on the evening of June 1st, the \$1,400 needed to complete the \$200,000 endowment fund was subscribed. This fund was started with a gift of \$100,000 from Mr. Daniel G. Baugh.

The Merger of Philadelphia Medical Colleges.—Tentative plans for a merger of Jefferson and the Medical-Chirurgical Colleges with the medical department of the University of Pennsylvania, are now in the hands of attorneys for the settlement of the final legal details.

Meetings of Medical Societies to Be Held in Philadelphia during the Coming Week.—Monday, June 19th, Philadelphia Clinical Association, Society of Normal and Pathological Physiology; Wednesday, June 21st, Philadelphia County Medical Society (business meeting); Thursday, June 22d, Northwest Branch, County Medical Society; Friday, June 23d, South Branch, County Medical Society.

Columbia University Commencement.—The 162d Commencement Day exercises of Columbia University were held on Wednesday, June 7th. In the long list of degrees and diplomas awarded appeared 2,212 names, the largest class ever graduated by the university. Of the total number of graduates, seventy-three received the degree of doctor of medicine.

Doctor Meltzer Honored.—A complimentary dinner was given to Dr. S. J. Meltzer, of New York, on the evening of May 15th at the Chemists' Club. Among the speakers were Dr. Haven Emerson, health commissioner of New York; Dr. W. J. Gies, Dr. Frederic S. Lee, Dr. Graham Lusk, Dr. Jacques Loeb, Dr. L. B. Mendel, Dr. T. H. Morgan, Dr. E. B. Wilson, and Dr. H. C. Jackson.

Cornell Medical College Commencement.—Thirty doctors of medicine, four of them women, received degrees at the annual commencement held Wednesday, June 7th. Dr. W. Gilman Thompson, acting dean, presided. The degrees were conferred by President Jacob Gould Schurman, and the address to the graduating class was delivered by Dr. Lewis A. Stimson, professor of surgery at the college.

The Alumnae Association of the Woman's Medical College, of Philadelphia, elected the following officers at the annual business meeting of the association, held during the week of June 5th: Dr. Frances C. Van Gasken, president; Dr. Martha Tracy, first vice-president; Dr. Lida Stewart Cogill, second vice-president; Dr. M. Taylor, recording secretary; Dr. Caroline Croasdale, corresponding secretary; Dr. Ellen C. Potter, treasurer.

Rhode Island Medical Society.—At the annual meeting of the society, held in Providence, under the presidency of Dr. Frank L. Day, of Providence, Thursday, June 1st, the following officers were elected: President, Dr. E. D. Chesebrough, of Providence; first vice-president, Dr. John Champlin, of Westerly; second vice-president, Dr. G. T. Swarts, of Providence; secretary, Dr. J. W. Leech, of Providence; treasurer, Dr. Winthrop A. Risk, of Providence. At the annual dinner, which was held at the Narragansett Hotel, Dr. G. Alder Blumer acted as toastmaster.

Personal.—Dr. Howard A. Kelly, of Baltimore, has been granted leave of absence for a year from the Johns Hopkins Hospital, in order to devote all his time to research work in radium. Dr. Thomas S. Cullen will take charge of Doctor Kelly's work during his absence.

Dr. Harold Neuhoof, of New York, was awarded the Alumni Association Prize at the 162d annual commencement of Columbia University. This prize of \$500 is awarded biennially to an alumnus of the College of Physicians and Surgeons for the best essay on a medical topic.

A Laboratory Building for the State Department of Health.—A bill has been passed by the legislature providing for an appropriation of \$65,000 for the purchase of a site and the erection of a laboratory building for the Department of Health of the State of New York. A site has been chosen which closely adjoins the new Albany Medical School and the Albany Hospital, and the work of construction will be begun at once. The laboratory work of the department is at present carried on in a building which is not only much too small, but has been condemned as unsanitary.

The Death Rate of New York City.—During the week ending June 10, 1916, there were reported to the Department of Health of the City of New York 1,362 deaths from all causes, corresponding to an annual death rate of 12.72 in a thousand of population, compared with a rate of 14.11 for the week ending June 12, 1915. Of the total deaths reported, 174 were from pulmonary tuberculosis. The death rate for the first twenty-four weeks of 1916 is 15.02, compared with 15.28 for the corresponding period last year.

The Mortality from Cancer Throughout the World.—As the result of a careful statistical study of the cancer problem, Hoffmann concludes "that the actual frequency of malignant disease throughout the civilized world has been ascertained to be much more of a menace to the welfare of mankind than has generally been assumed to be the case, and that in contrast to a marked decline in the general death rate, cancer remains one of the few diseases actually and persistently on the increase in practically all of the countries and large cities for which trustworthy data are obtainable."

Health Insurance.—In response to public interest in health insurance, the Massachusetts Legislature has created a commission to study social insurance, with special reference to sickness. The State department of health and the bureau of statistics are directed to cooperate with the commission of nine members which will prepare a report and recommend the form of legislation to be introduced in January, 1917. California has a similar State commission already at work on this problem, which is attracting wide attention since the introduction this year of bills for health insurance in Massachusetts, New York, and New Jersey.

The New Floating Hospital.—The new floating hospital of St. John's Guild, the *Helen C. Juillard*, was opened for inspection on June 7th. The department of health was represented by the director of the bureau of child hygiene and the chiefs of the divisions of baby welfare and school medical inspection. The boat is a model of its kind, containing all the necessary wards, apparatus, and equipment for the care of 1,200 persons. The Bureau of Child Hygiene cooperates with St. John's Guild in distributing tickets for the daily trips made by this boat, and, as the result of contributions made by inspectors of the department during the year 1902, the department of health has an endowed bed on board the boat.

An Institute of Public Health and Hygiene in Baltimore.—The Rockefeller Foundation has decided to establish in Baltimore as an integral part of Johns Hopkins University a school of hygiene and public health which will be devoted to training students in preventive medicine and public health work. It is expected the school will be opened in October, 1917. It will take a year to construct and equip the necessary building and organize a staff of teachers. The work of organization will be undertaken by Dr. William H. Welch, professor of pathology, and Dr. William H. Howell, professor of physiology, of Johns Hopkins. Doctor Welch has been selected as director of the new school.

Alumni Association of the Medical Department of the University of Buffalo.—The following officers were elected at the forty-first annual meeting of this association, held in Buffalo, Tuesday to Friday, May 30th to June 2d: President, Dr. Walter D. Greene, '76, of Buffalo; first vice-president, Dr. William H. Bergtold, '86, of Denver, Col.; second vice-president, Dr. Henry A. Eastman, '92, of Jamestown, N. Y.; third vice-president, Dr. Ross G. Loop, '97, of Elmira, N. Y.; fourth vice-president, Dr. Henry A. Stadingler, '97, of Buffalo; fifth vice-president, Dr. M. Louise Hurrell, '02, of Rochester, N. Y.; secretary, Dr. Julius Richter, '04, of Buffalo; treasurer, Dr. Frank E. Brundage, '09, of Buffalo; trustee for five years, Dr. Lesser Kauffman, '04, of Buffalo; executive committee, Dr. W. F. Jacobs, '08 (chairman), Dr. William G. Bissell, '92, and Dr. Harry R. Trick, '01, of Buffalo.

At the annual dinner, which was the principal social event of the meeting, announcement was made that \$10,000 had been subscribed toward an alumni fund which is to be managed by the board of trustees, the interest to be used as the association will direct for the benefit of the Medical Department of the University of Buffalo. An active campaign will be started for the purpose of completing this fund in the next few months.



RIVER FRONT OF DETROIT.

DETROIT RIVER FROM THE BRIDGE TO BELLE ISLE.

AMERICAN MEDICAL ASSOCIATION Sixty-Seventh Annual Meeting

Held at Detroit, June 12 to 16, 1916

Place of Meeting

DETROIT, the city selected for the sixty-seventh annual meeting of the American Medical Association, June 12th to 16th, is one of the oldest cities of North America, having been founded in 1701 by Sieur Cadillac, who called it Fort Pontchartrain, though the colonists, who accompanied him, from the first called their home Detroit, "the city of the strait." It is the first city in the world in the manufacture of automobiles. Its output of automobile accessories, of stoves, of brass, of varnish, of adding machines, of soda, and salt, and of pharmaceuticals is larger than that of any other city in the United States. It is estimated that 942,000 automobiles, valued at more than \$600,000,000, will be built in Detroit by thirty-four factories during this year. All of these factories welcome visitors and gladly show them the interesting and intricate processes involved in the manufacture of the modern automobile. Detroit is the second largest fur centre in the United States, and has the largest ship building industry on the Great Lakes. Through the Detroit River, connecting Lake Huron and Lake Erie, which divide the United States from Canada and provide Detroit with eleven miles of valuable water front, more tonnage passes than through any other river in the world; an average of one boat every eight minutes during the season.

The main streets of the city are laid out in radial lines from the centre and a handsome, parked boulevard twelve miles long circles about what were at one time the city limits. The city has long since overflowed this boundary, now covering an area of upward of fifty square miles. In 1900 the population was 285,000, and in 1915 this had risen to 750,000, making Detroit the seventh in population of the cities of the United States. Within the city

limits there are thirty parks, covering an area of twelve hundred acres; the largest, however, is Belle Isle, lying near the centre of the river, the whole of which is a city park. Here are zoological gardens, public bath houses, yacht clubs, casinos, an automobile drive around the island of five and a half miles, and almost endless canals for boating. Ferry boats give access to this island, pending the rebuilding of the bridge from the mainland, which was burned last year.

Detroit has eight hospitals with a capacity of over nineteen hundred beds. It also boasts of a Class A medical college, the Detroit College of Medicine and Surgery, the students of which have access to the clinical material in all the hospitals of the city.

A large fleet of swift and well appointed steamers provides means of access to numerous pleasure resorts on the river and on the lakes.

Among the attractive resorts which are within the limits of a one day trip, and which may be reached by steamer, are: Put-in-Bay, the St. Clair Flats, Sugar Island, Bob-Lo Island, Tashmoo Park, Cedar Point, Port Huron, Grosse Pointe, and Grosse Isle. Last year over eleven million pleasure seekers took passage from the city of Detroit without the loss of a single life. The finest passenger steamers on fresh water sail from Detroit to all points on the Great Lakes, making this city a delightful headquarters for summer tourists.

Forty miles away to the west is the University of the State of Michigan, at Ann Arbor, which is connected with Detroit both by railroad and an excellent suburban trolley service.

At Clemens, one of the best known watering places in America, is only twenty miles from Detroit, and may be reached by automobile, by trolley, or by the Michigan Central Railway.



DETROIT BOAT CLUB.

BELLE ISLE PARK.

Proceedings

HOUSE OF DELEGATES.

At ten o'clock, Monday morning, June 12th, the House of Delegates, convening in the auditorium of the Wayne County Medical Society building, was called to order by the president, Dr. Albert Vander Veer, of Albany, N. Y. After the first order of business, the preliminary report of the committee on credentials, the House was declared duly organized. Roll call was dispensed with. Since the minutes of the 67th session had been printed and sent to each delegate, reading of these minutes was omitted and upon motion they were approved.

President's Address.—Doctor VANDER VEER approached the duties of the day with great sorrow due to the death of Dr. William L. Rodman, whom he succeeded. An earnest desire to continue the labors of the late president should be their tribute to him.

Medical laws.—Members of this body should be on the alert to advance good laws and to oppose poor ones, as well as to wisely guide legislation. He urged a widening of the scope of medical school inspection and a closer study of industrial diseases. Mention was made of the Trudeau school for the study of tuberculosis, the object being to raise a fund of \$500,000 as a memorial to Doctor Trudeau.

Preparedness.—His personal recollections of the harm done by medical unpreparedness at the beginning of the Civil War and the experiences of others at the beginning of the Spanish War, convinced him of the necessity for adequate preparedness. The Clinical Club of Albany had formulated plans, which they had submitted to the surgeon general, which looked to a unifying and standardizing of military medical preparation throughout the country. There should be closer cooperation between the physicians and the Red Cross. It was best that each body maintain separate identity, but there should be a hearty cooperation to further the common cause.

Reference Committees.—The following were named: Committee on Credentials.—Dr. D. C. Brown, of Connecticut, chairman; Dr. W. A. Coventry, of Minnesota; Dr. J. H. J. Upham, of Ohio; Dr. H. E. Randall, of Michigan; Dr. H. P. Newman, of California.

Committee on Miscellaneous Business.—Dr. L. J. Hirschman, of Michigan, chairman; Dr. D. D. Lewis, of Illinois; Dr. F. W. McRae, of Georgia; Dr. Don Palmer, of Washington; Dr. A. E. Bulson, Jr., of Indiana.

Committee on Reports of Officers.—Dr. A. R. Mitchell, of Nebraska, chairman; Dr. E. R. Stitt, of the United States Navy; Dr. W. E. Anderson, of Virginia; Dr. B. R. McClellan, of Ohio; Dr. John Polak, of New York.

Committee on Constitution and By Laws.—Dr. F. M. Crandall, of New York, chairman; Dr. E. A. Hines, of South Carolina; Dr. J. R. Kean, of the United States Army; Dr. C. L. Stevens, of Pennsylvania; Dr. J. J. McLoone, of Arizona.

Committee on Medical Education.—Dr. L. W. Littig, of Iowa, chairman; Dr. A. H. Levings, of Wisconsin; Dr. William H. Seaman, of Louisiana; Dr. Hugh MacKechnie, of Illinois; Dr. W. S. Lator, of New Jersey.

Committee on Rules of Order.—Dr. D. H. Murray, of New York, chairman; Dr. G. W. Cook, of District of Columbia; Dr. S. G. Kahn, of Utah; Dr. J. L. Crook, of Tennessee; Dr. S. D. Swope, of New Mexico.

Committee on Legislation and Political Action.—Dr. E. J. Goodwin, of Missouri, chairman; Dr. H. R. McGraw, of Colorado; Dr. F. L. Van Sickle, of Pennsylvania; Dr. C. P. Meriwether, of Arkansas; Dr. Charles W. Hannaford, of New Hampshire.

Committee on Hygiene and Public Health.—Dr. A. T. McCormack, of Kentucky, chairman; Dr. J. W. Kerr, of District of Columbia; Dr. E. R. Kelley, of Massachusetts; Dr. W. F. Sawhill, of Kansas; Dr. J. A. Ferrell, of North Carolina.

Report of Secretary.—Dr. ALEXANDER R. CRAIG reported on Fellowship in the Association as follows: The Fellowship on May 1, 1915, was 42,366. During the past year 441 Fellows had died, 1,540 had resigned, 713 had been dropped as not eligible, 658 had been dropped for nonpayment of dues, and seventeen names had been removed, they being reported "not found," thus giving 3,360 names to be removed from the roll; 4,184 names had been added, 3,293 being transferred from the subscription list. The Fellowship roll for May 1, 1916, was 43,181, an increase for the year of 815. This gain



Detroit's river front.

was attributed, largely, to circularizing eligible subscribers to the *Journal*, urging them to become Fellows.

Wyoming State Medical Society was reported to be no longer active, there having been no meeting for the past three years. It was suggested that the matter be referred to the Judicial Council with power to revive the present society or to organize a new one.

Report of Board of Trustees.—Dr. W. T. Councilman, chairman, of Boston, presented this report: Various activities of the association had been prosecuted diligently and with good results during the past year. The *Journal* showed a distribution of 64,859 to Fellows. Receipts for advertising showed a satisfactory gain in spite of the close scrutiny of advertising copy. In the case of the *Archives of Internal Medicine* and the *American Journal of Diseases of Children*, there was a loss due to the effect of war on the mailing. Organization work had been followed by a corps of organizers working in connection with the constituent State societies, the gains being greatest where the cooperation of the local officers had been most diligent. Following the action of the House of Delegates to memorialize Congress regarding "patent" and proprietary medicines, the trustees appointed a committee to present the matter to the President, who seemed much interested. There was a prospect that the request for a government investigation would be granted. The financial condition of the association was good, in spite of some losses incident to law suits. To meet this, other welfare work must be temporarily curtailed if necessary.

1915.		<i>Treasurer's report.</i>	
Jan. 2—	Invested reserve.....	\$118,832.50	
	Certificate of deposit.....	20,000.00	
	Checking account.....	7,301.62	\$146,134.12

<i>Receipts.</i>	
Interest on invested reserve.....	\$5,175.00
Interest on certificate of deposit..	881.66
Interest on bank balance.....	125.13
Interest on uninvested reserve....	52.96
	\$6,234.75

<i>Summary of Balance.</i>	
Dec. 31—Invested reserve.....	\$118,832.50
Uninvested reserve.....	5,227.96
Certificate of deposit.....	20,000.00
Checking account.....	8,308.41
	\$152,368.87

1915.		<i>Davis Memorial Fund.</i>	
Jan. 2—Balance		\$3,241.82	
	Interest	97.97	
Dec. 31—Balance			\$3,339.79

Report of Judicial Council.—Dr. ALEXANDER LAMBERT, chairman, presented this report. Realization had been growing that increase in business coming before the House of Delegates caused crowding into hurried discussion many important matters. The first meeting of the delegates was occupied with routine reports, which were referred to committees and brought back for action. The next meeting occurred on the following afternoon, when the section meetings of the scientific assembly began. This practically prevented delegates from participating in the scientific assembly, depriving them of one of their chief objects in attending the annual session. The judicial councils suggested, to remedy this, the following amendments to the bylaws:

That in Chapter III, Section 1, the word "day" be stricken out and the words "two days" substituted, so that the section, which now reads: "Reg-

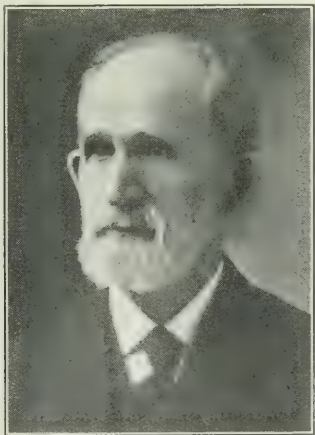


Waterworks Park, Detroit.

ular Sessions.—The House of Delegates shall meet annually on the day preceding the opening of, and at the same place as, the scientific assembly of the association," should read: "The House of Delegates shall meet annually on the two days preceding the opening of, and at the same place as, the scientific assembly of the association." It was also recommended that Chapter II, Section 2, "No new business shall be introduced into the House of Delegates after the second day of the scientific assembly (third day of the House of Delegates), unless with unanimous consent," should be changed to read: "No new business shall be introduced into the House of Delegates after the second day of the annual session of the House of Delegates unless by unanimous consent; and such new business, so presented, whether in the form of a motion, resolution, or memorial, shall require a two thirds affirmative vote for adoption; provided, however, that unless otherwise provided in these bylaws, new business referred to the House of Delegates by officers of the sections or by formal actions of the sections themselves, may be presented to the House of Delegates any time preceding the meeting at which the election of officers takes place."

Report of Council on Health and Public Instruction.—This report was presented by Dr. R. W. Corwin, chairman. The program of the council included: 1. A thorough investigation of present public health conditions in the United States with a view to securing more accurate information on all phases of the public health program than is now available.

2. Education of the public by every possible means in order that the people may understand the ad-



ALBERT VANDER VEER, M. D.,
Of Albany, N. Y., retiring president

vances in medical knowledge during the last generation, and the possibility of utilizing such knowledge in the prevention of disease, the reduction of the death rate, and the prolongation of human life.

3. The crystallizing of such educated public sentiment into necessary public health laws, regula-

tions, and ordinances which will render possible a conservation of human life, commensurate with our advanced knowledge, and which will render such laws more effective through an educated and enlightened public opinion.

Report of Council on Medical Education.—

Each year the report of this council has shown continued progress in medical education. When the practice of medicine throughout the country is entirely on this scientific basis, the public will soon become familiar with the possibilities of modern medicine, and this will eliminate the dogmas and cults which have done and are doing so much harm. The former ideal of the council has been somewhat modified. Educators demanded two years of premedical college work, and at present fifty-four of the ninety-five medical colleges require for admission two years of college work. It is evident that the American standard of medical education that is most widely accepted and which will soon be legally adopted is as follows:

- a. After a four year high school course;
- b. Two years of collegiate work, including courses in physics, chemistry, biology, and a modern language;
- c. A four year medical course, and
- d. A year as an intern in a hospital.

June 12th; Afternoon Session.

The House of Delegates was called to order by Dr. Rupert Blue, president-elect.

Report of the Committee on Scientific Exhibits, presented by Dr. Frank B. W. Young, of Minneapolis.—From the standpoint of variety and quality the exhibit of this year is fully the equal of any of previous years and is a tribute to those who have labored so unsparingly, untiringly, without money and without price. An ultrascientific exhibit is not of interest to the rank and file of the profession—they must be fed on plain, solid, wholesome food. The committee had this in mind and worked to correct the error of other years. Over one third of the exhibits were from practising physicians rather than from laboratory workers. Many of the exhibits were to illustrate mistakes. He suggested some changes in method of administration. The committee should consist of three members elected by the House to serve for three years; the directors of the exhibit should be elected by the House on nomination of the Board of Trustees; names of the Committee on Scientific Exhibit should be published in the *Journal* to facilitate the work of the committee. There should be a stipulated honorarium for the director of the exhibit. His is a task of severe mental and physical strain, and he faces hard labor



RUPERT BLUE, M. D.,
Surgeon General, U. S. Public
Health Service, President
elect.



Canpus Martius (the heart of Detroit). Hotel Pontchartrain at the left.

for several days preceding the meeting and during the time of the meeting. This honorarium should be commensurate with the dignity of the position.

Report of Reference Committee on Legislation and Political Action.—Dr. E. J. GOODWIN, St. Louis, Mo., chairman, reported that the committee makes but one recommendation requiring the action of the House, namely, that a committee be appointed to draft resolutions concerning the death of Dr. Henry B. Favill, late chairman of the Council on Health and Public Instruction. The committee approves the report on Social Insurance from the Council on Health and Public Instruction, and recommends that each of the constituent associations appoint a committee on Social Insurance to work in conjunction with the committee of the American Medical Association.

Report of Reference Committee on Constitution and Bylaws.—Dr. FLOYD M. CRANDALL, New York, chairman, stated that the following recommendations of the Judicial Council were approved:

That the House of Delegates shall meet annually on the two days preceding the opening of the Scientific Assembly;

That no new business shall be introduced in the House after the second day except by unanimous consent, and shall require a two thirds affirmative

vote for adoption, allowing an exception in favor of new business referred to the House by the officers of sections or by formal action of the sections themselves, such being receivable at any time preceding the meeting for the election of officers;

That they approve an amendment to the constitution to add to the number of general officers of the House, a chairman and vice-chairman. This requires tabling for a year. Amendment to the bylaws is also necessary, providing that such chairman and vice-chairman must have been Fellows of the American Medical Association for two years prior to their appointment, but need not be members of the House of Delegates.

The recommendation of the Judicial Council was approved that it be given appellate jurisdiction in matters of law and procedure where cases arise between a constituent association and one of its component county societies, between component county societies of the same constituent State association, between a member of a constituent State association and the component society to which he belongs, and between members of different component societies of the same constituent State association.

The House, after considerable discussion of this last recommendation, adopted it, members from Kentucky and Mississippi asking that their vote ap-



Detroit's newest sky line, Grand Circus Park buildings, all erected in past five years.

pear as "no" in the record. The recommendations for amendments to the bylaws were adopted.

The House of Delegates went into committee of the whole to discuss the motion of Dr. Dwight H. Murray, of Syracuse, that to the Section in Stomatology be added Gastroenterology and Proctology. Dr. L. J. Hirschman, of Detroit, pointed out that the gastroenterologists and proctologists have for several years asked for recognition at the hands of the association; that it was eminently fitting that these allied subjects be joined. Proctology has been making very rapid advances and much valuable research work is being done.

The motion was made and carried that the committee report favorably on Doctor Murray's motion.

Resolutions were offered that advertising material relating to infant foods should be referred to the Council on Pharmacy and Chemistry the same as with drugs, and also that the House should establish a Council on Infant Mortality and Morbidity. The House adjourned to two p. m. Thursday, June 15th.

SECTION IN MEDICINE.

June 13, 1916.

Blood Transfusions, with Special Reference to Group Tests and Group Reactions.—Dr. WALTER V. BREM, of Los Angeles, considered the work of Doctor Moss very accurate, since his principles had not been changed during the past six years, but he had worked out an improved technic, so that in accident or emergency cases blood transfusion might take place rapidly and without tedious preliminary grouping. He determined the condition of a number of donors by Wassermann, and grouping of their respective blood so that he kept them "on tap" as it were, ready to be called in for donation on short notice. There were four standard serums used in determining the grouping of the blood, which depended upon the phenomena of

one, two, three, or four, and the corresponding donor was sent for. In 160 cases this method had been successful. Severe reactions simulating anaphylaxis occurred where the donor belonged to group three and was used to patient belonging to group four, for example. Either whole, defibrinated, or citrated blood was used, the latter in 0.2 per



JAMES S. McLESTER, M. D.,
Of Birmingham, Ala., Secretary of Section in Practice of Medicine

cent. solution. A solution as strong as one per cent. gave a severe reaction, with a rise in temperature and chill.

Doctor NOVY, of Ann Arbor, pointed out that the poisonous effects in transfusion of blood—citrated or otherwise—was due to anaphylaxis, and sounded a note of warning, as he had determined by animal experiments the danger of these procedures.

Doctor LEWISON pointed out the great value of the use of citrated blood in transfusions. It could be used, he said, with perfect safety by the general practitioner in old and young alike.

Preliminary Observations on the Apparently Immunizing Behavior of the Mixed Serums of Immune and Hypersensitive Guinea-pigs.—Dr. HENRY SEWALL, Dr. WILLIAM C. MITCHELL, and Dr. CUTHBERT POWELL, of Denver, believed that the quantity of a foreign serum injected into a guinea-pig determined its biological effect. Animals which had been treated by horse serum, small quantities applied on their nose in four doses on alternate days, were injected intravenously with horse serum in varying doses: 0.04 to 0.02 c.c. did no harm, while the dose of 0.1 c.c. invariably killed the animal. Serum from protected guinea-pigs (those having been treated with horse serum on the nose) when injected into normal guinea-pigs, protected them, given an intravenous dose of horse serum. In this way an active immunity was present at once instead of after ten days of treatment. It was thus proved that transference of protected serum produced metabolic cell changes which protected the animal when otherwise deadly serum was injected.

Doctor NOVY, of Ann Arbor, said that anaphylaxis was a purely physical phenomenon—not chemical. This he illustrated by showing how an animal receiving an injection of potassium cyanide died of anaphylactic shock. A rat sensitized to egg white, would not die from a second injection of egg white except when it was diluted with distilled water—pure distilled water alone, injected into a sensitized rat, would kill it. Serum diluted with distilled water went through a series of changes, making it deadly poisonous, then perfectly atoxic, at intervals of about fifteen minutes.

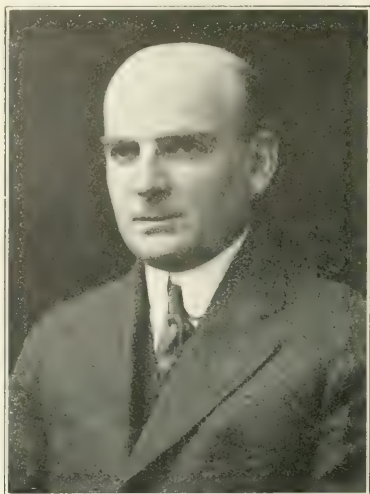
Comparative Results in Antirabic Treatment with the Pasteur Method and with Desiccated Virus.—Dr. DOWNEY L. HARRIS, of St. Louis, had succeeded in modify-



EDWARD M. REYNOLDS, M. D.,
Of Boston, Mass., Chairman of Section in Obstetrics, Gynecology,
and Abdominal Surgery.

hemolysis and agglutination. The modification in the grouping used was that it was microscopic and consisted of adding a corpuscle suspension in salt solution to a standard serum on a slide. In ten to fifteen minutes reaction occurred one way or the other, and the patient belonged to group

ing the original Pasteur treatment so that a quicker and greater immunity was produced. In the Pasteur treatment it took a comparatively long time to get the treatment under way, sometimes with disastrous results. Doctor Downey described a method of grinding, freezing, and treating with



E. S. JUDD, M. D.,

Of Rochester, Minn., Secretary of Section in Surgery, General and Abdominal.

sulphuric acid the brain and cord of the rabbits used in producing the virus. This virus could be kept for a long time—years, in full strength and quite active. This, when administered subcutaneously, created quite an immunity of considerable activity. The average time taken was seven days; in very severe cases, ten to fourteen days. In treating 1,159 patients, there was a saving of about 9,000 days. In this series of cases there were only two deaths; these patients failed to acquire any immunity whatsoever.

SECTION IN SURGERY.

June 13, 1916.

Suggestions as to Methods of Teaching Surgery.—

Dr. JOHN A. WYETH, of New York, in addition to the methods ordinarily employed in up to date medical schools, and not in any way to supplant the immediate personal contact of the student with the operator, advised the use of films. These were especially useful to send to the general practitioner who could not attend clinics.

Practical Results of Newer Methods in Surgery of the Stomach and Intestines.—

Dr. GEORGE W. CRILE, of Cleveland, remarked that gastrointestinal operations presented a narrower margin of safety than other abdominal operations because of the interference with digestion and the tendency to acidosis. This was particularly true of operations for cancer and ulcer of the stomach and duodenum. Acidosis required plenty of water, sodium bicarbonate, and free elimination. Deep anesthesia was contraindicated in cases of starvation, as they were in a condition of acidosis. Local anesthetics were used, novocaine, one in 400, being injected into the skin and fascia. This lessened shock and the depth of anesthesia necessary. Quinine and urea hydrochloride gave relief for about eight days. Operation was completed in two stages. In suturing the peritoneum they should use interrupted silk. A cobble stitch was used in uniting the stomach to the intestine in gastroenterostomy. Three or four extra stitches were made at each end of the anastomosis, holding the intestine to the stomach and thus preventing angulation. The diet should be carefully regulated for a year following operation. Their death rate had been reduced two thirds by following these methods.

Nitrous Oxide Anesthesia in Major Surgery.—Dr. A. BENNETT COOKE, of Los Angeles, speaking from the viewpoint of the operator, had administered nitrous oxide to 300 patients in major operations, including all varieties, except nose, throat, and mouth work, because the mask could not be removed successfully. In ninety per cent. no ether was used, but when it was used, never over two ounces. This was sometimes necessary to secure relaxation, especially in alcoholics. The average length of anesthesia was one hour, and the gas was always combined with the use of local anesthetics. The disadvantages were that a skilled anesthetist was required, although now competent men were making this a special study; the apparatus was cumbersome, and the cost was relatively high, because pure gas was necessary. The advantages to the patient were safety; it was as safe as ether when given by a competent anesthetist; the transient effect; although ether necessitated increased elimination when the patient was not in a condition to eliminate properly, gas avoided this; comfort; it removed the great fear of operation; the absence of odor; there was no sensation of strangling; no nausea; if vomiting did occur, it was usually confined to one attack; convalescence was shortened; and the anesthesia was never unnecessarily deep. This method broadened the field of surgery, because patients who could not stand ether could be operated upon under nitrous oxide. The advantages to operator and hospital were that the method saved time at the operation and in postoperative care; no recovery room was necessary; disturbance of other patients was less; and the patient approached operation with an easier mind.

Tuberculosis of the Cervical Lymphatics.—Dr. CHARLES N. DOWD, of New York, stated that tuberculosis of the cervical lymphatics was at first usually a local disease. It was divided into three stages: 1. When confined to glands in upper part of neck; 2. nodes involved all down the neck; 3. disseminated tuberculosis. The speaker reported 452 cases operated in during the first stage, the average age being eight years. Ninety-one per cent. were apparently cured, nine per cent. showed some indication of recurrence, and one was fatal because of intercurrent disease.

Of 185 cases of the second group, sixty-eight per cent. were apparently cured, twenty-three per cent.



E. WYLLIS ANDREWS, M. D.,

Of Chicago, Ill., Chairman of Section in Surgery, General and Abdominal.

and recurrence, two per cent. had intercurrent diseases, and there was four per cent. mortality. He had had forty-four cases in the third stage, with forty-three per cent. apparently cured. This presented a very grave

problem. He urged early removal of tuberculous glands. A transverse incision parallel to the jaw was all that was needed in the first stage, care being taken to find and avoid the eleventh nerve, which might be between or behind the nodes.

Dr. J. F. GOLDEN, of Chicago, cited the tendency of these glands to subside in children, and advocated the use of tuberculin.

Dr. ROBERT T. MORRIS, of New York, advocated Bier's hyperemia and intermittent hot water and ice bag applications.

Dr. WILLY MEYER, of New York, advised elastic pressure to cause passive congestion and thus simplify the treatment.

Dr. LADD, of Boston, advised removal of the tonsils with their capsules, as well as of the glands of the neck.

Dr. CHARLES N. DOWD, in conclusion, remarked that all enlarged glands of the neck were not tuberculous and it was wise to avoid removing tuberculous glands, but it was unwise to tamper long with a condition so easily cured and so serious if neglected.

Incorrect Technic as a Cause of Failure in the Application of Bismuth Paste in Chronic Suppurative Sinuses and Empyema.—Dr. EMIL G. BECK, of Chicago, thought that failure to cure was not because the treatment was not indicated, because it was a method employed when other means were impossible or had all failed. Indications for its use were decreasing in this country by the prevention of sinuses, but because of infected gunshot wounds its indications were on the increase in Europe. It was being used with good results in the hospitals of France. The speaker explained sinus formation as follows: An abscess was first formed and owing to increased pressure, the tissues were undermined. The pus breaking through the abscess wall, followed the muscle sheath. Upon discharging, the abscess shriveled, leaving a complex network behind. Failures of bismuth paste to cure were due to the following causes: 1. The bismuth was not sufficiently incorporated into the petrolatum, leaving large masses of pure bismuth. 2. Water accidentally got in and made a mass like curdled milk. 3. The mixture was not heated sufficiently before injection. 4. Improper instruments were used. 5. Undue force was used; the paste must be forced in very slowly. 6. The sinus was incompletely filled. 7. The sinus was injected too frequently. 8. The patient was allowed to dress



OTTO P. GEIER, M. D.

Of Cincinnati, Ohio, Secretary of Section in Preventive Medicine and Public Health.

his own wounds. Two bacterial examinations should be made, one before and one after injection; if the second was negative, they must not repeat the injection. Finally, the wound should be dressed daily.

SECTION IN LARYNGOLOGY AND OTOTOLOGY.

June 13, 1916.

Purulent Infections of Ear, Nose, and Throat.—Dr. HILL HASTINGS, of Los Angeles, Cal., observed that infections of the nose and throat were regarded by the public with very little care, especially as to the nasal secretions,



ROBERT A. HATCHER, Ph. G., M. D.

Of New York, N. Y., Chairman of Section in Pharmacology and Therapeutics.

Infections in general had as their starting point a "cold." A filterable virus was found in most cases of cold. Atmospheric pressure and infections were etiological factors of cold. Ninety per cent. of mastoiditis resulted from neglected colds. Mastoid abscess seemed to be most common during the swimming season, owing to the fact that many suffering with colds and having nasal and ear discharges went to the swimming beach, allowed the discharge to be washed off by the surf, only to be taken up by a poor innocent party who happened to be a good medium for the infection. To prevent the spread of purulent infections best was, first, a law preventing persons suffering with colds from bathing; second, cleansing of the swimming pools with calcium hyposulphite or by dragging a bag of copper sulphate along the surface of the water for fifteen minutes or until the copper sulphate was dissolved. Complications resulting from colds were a serious matter. Ninety per cent. of cases suffering with mastoiditis, middle ear infections, nasal accessory sinus infections, etc., gave a history of having a cold that had been neglected. Acute nasal infections should be brought to the attention of a man doing nose and throat work. Persistent nasal discharges required immediate attention. The removal of tonsils and adenoids afforded best protection against middle ear infections. Statistics showed eighty per cent. of mastoiditis to occur among patients who still had their tonsils. They should incise the drum membrane as soon as an abscess formed. They should condemn nasal douches, the snuffing of salt water or forcible blowing of the nose, as such practices were agents for complications. In conclusion, their responsibility to the public was to educate them along the lines of preventive medicine, when and how properly to take care of themselves. The best teachers were the doctors themselves.

Xanthosis and the Causes of Septal Bleeding.—Dr. CHESTER C. COTT, of Buffalo, recalled the fact that xanthosis was a yellowish pigmentation of the pituitary membrane, a result of interstitial hemorrhage, according to Zuckerkandl. This was the usual cause of septal hemorrhage. At a further stage, atrophy of the mucous membrane and perichordium occurred with increased hemorrhage. Severe bleeding might occur on the nasal floor or maxillary ridge. It was not recognized in the early stages.

As to treatment, before perforation occurred, the mucous membrane and perichondrium should be raised by an incision well anterior to the lesion, and packed for two days. The same was done when the hemorrhage occurred on the

of preventing scabbing, but they were of no benefit in chronic cases.

Throat Infections and Their Sequelæ, with Especial Reference to Arthritis. Dr. JAMES J. KING, of New



WILLIAM C. RUCKER, M. D.,
Of Washington, D. C., Chairman of Section in Preventive Medicine
and Public Health.

ridge or floor of the nose. After perforation the crusts were gently removed and the epithelium was encouraged to grow over the ulcers. Healing, as a rule, was rapid and the prognosis was excellent in operative cases. Rarely was



F. P. GAY, M. D.,
Of Berkeley, Cal., Chairman of Section in Pathology and Physiology.

York, pointed out that throat infections in general were caused by the Conellan-King diplococcus, an organism growing best in moisture, veal agar, or human blood agar. It was Gram negative and was analogous to the Klebs-Loeffler and tuberculosis bacilli found in the aural and



ISABELLA C. HERB, M. D.,
Of Chicago, Ill., Secretary of Section in Pathology and Physiology.

the healing power poor. One side should be operated on first, in order to avoid perforation in case both sides were infected. The object of treatment was to thicken the membrane. Oil tampons were useful in acute cases to the extent



A. S. HAMILTON, M. D.,
Of Minneapolis, Minn., Secretary of Section in Nervous and
Mental Diseases.

nasal secretions. Clinical reports of cases showed or rather found the patients giving a history first of having tonsillitis, later having rheumatism, and finally arthritis.

The prognosis in general had been good, that was, when the patients received an injection of autogenous vaccine from the Conellan-King diplococcus twice a week in doses of 200,000,000, followed by enucleation of the tonsils after

that they could not take nourishment or even nurse properly. There were various types of cleft palate, and various degrees of cleft. In some cases only the superior maxillary bone had failed to unite, and the lip was not affected. In



RUSSELL A. HIBBS, M. D.,
Of New York, N. Y., Chairman of Section in Orthopedic Surgery.

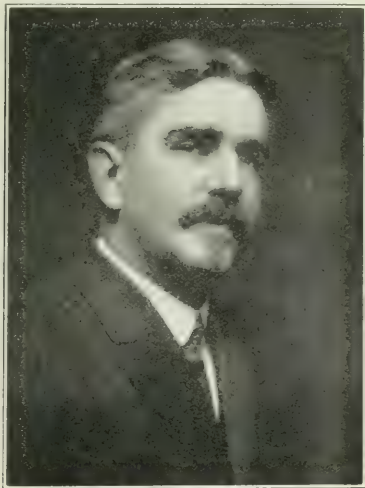


FRANK P. GENGENBACH, M. D.,
Of Denver, Colo., Secretary of Section in Diseases of Children.

the temperature had dropped and the soreness of the joints had ceased. The focus of infection was apparently at the roots of the teeth.

Cleft Palate and Hare Lip.—Dr. THOMAS E. CARMODY, of Denver, remarked that the causes of cleft palate and

other cases, the superior maxilla, soft palate, and lip had failed to unite. Different types of operations were therefore performed by different operators. The one most favored was the Brophy operation with a little modification. The operator forced the superior maxillary together by drawing with silver wire, using in this method an ordinary



THOMAS C. McCLEAVE, M. D.,
Of Oakland, Cal., Chairman of Section in Diseases of Children.



W. F. BRAASCH, M. D.,
Of Rochester, Minn., Secretary of Section in Genito-urinary Diseases.

hare lip were foci of infection, entering or lodging between the maxillæ and preventing the union of the cleft. It was stated by some to be due to incomplete coarctation. Children succumbed to the malformation owing to the fact

saddler's needle, one without the eye, in order to make a hole through the superior maxillary bone; this was followed by the needle with the eye threaded with the silver

wire, and then the operator drew the two ends together. The time at which the operation should be performed depended on the method used, but the earlier the better. The method just described was generally employed at the third month; the soft palate at the fifth month; the lip at the



WALTER R. PARKER, M. D.,

Of Detroit, Mich., Chairman of Section in Ophthalmology.

eighth month. No stage of the procedure was attempted until the patient had regained weight and strength after the previous stage. The anesthetic, if given, should be warm. The most beneficial method was with the Ben Morgan nose breathing apparatus, in which the patient did not get the liquid ether, but only the ether vapor well warmed.

The Method of Tonsillectomy by Means of the Alveolar Eminence of the Mandible and Guillotine.—Dr. GREENFIELD SLUDER, of St. Louis, recalled that tonsillectomy had first been done by finger enucleation; this was followed by the resection method, with a sharp knife, and this in turn was followed by sectioning and suturing, and this again by the latest method—the Guillotine or Sluder method. The anatomical bases on which the principle rested varied with the age of the patient. The general type of instrument which might be employed was a long flat plate with a circle cut in the extreme end. Along this plate passed a blade that was dull, but not blunt. The tonsil was fed into this circle, pulling the instrument up and forward. In this manner the capsule slipped from under the plate and the blade was forced forward by the thumb, removing the tonsil in its entirety, and crushing the walls of the tonsillar arteries together, causing but little bleeding. Several types of handles had been devised for this apparatus, the Ballinger being used in about seventy per cent. of cases. The greatest part played in this technic was by sense of touch, in splitting what was called the capsule, i. e., the aponeurosis and true capsule. Any man getting better results from an operation by some method other than Sluder's should by all means stick to it.

R. L. GUTHRIE, GY. TUBALIA, AND ABDOMINAL SURGERY

June 18, 1916

The Uterine Secretions, Spermatozoa, and Ovaries in Fertility and Sterility.—Dr. EDWARD REYNOLDS, of Boston, stated that sterility in the male depended upon more than one characteristic of the semen. Contrary to the general belief that all males whose semen contained active spermatozoa were capable of fertilization, the speaker held that fertilization depended upon the numerical quantity of spermatozoa in a given amount of semen, and also to their

individual characteristic forms of motility, only the most actively motile (as observed in specimens taken from the vaginal pool and examined ten minutes after coitus) reaching the fundus or tubes. The chemical characteristics of the uterine secretions, with their action upon the semen, played an important part in increasing or decreasing the activity of the spermatozoa.

The Corpus luteum and Its Role in Menstrual Disorders.—Dr. EMIL NOVAK, of Baltimore, stated that many cases of amenorrhea were traceable directly to absence of corpus luteum owing to the degeneration of unruptured follicles.

Role of the Anteposed Uterus in the Causation of Backache and Pelvic Symptoms.—Dr. H. T. HUTCHINS, of Boston, stated that in malpositions of the uterus, the position of the cervix in backache and pelvic drag was the determining factor. Even though the uterus was found to be retroflected to a considerable degree, it was not a cause for symptoms, and did not call for interference just because it happened to be so found. The determining factor would be found in cases where there was posterior descent of the cervix toward the coccyx. As to treatment, they should insert a tampon or a Smith-Thomas pessary, forcing the entire uterus upward toward the symphysis, and allow it to remain for forty-eight hours. If symptoms were relieved and the tampon or pessary were not objectionable to the patient, or if the patient refused operation, the treatment was continued. The proper operative treatment was suspension.

Value of the Wassermann Test in Pregnancy.—Dr. FREDERICK H. FALLS, of Chicago, advocated the routine application of the Wassermann test in all cases of pregnancy, so that active treatment might at once be administered to those who gave a positive reaction. There was often great difficulty in making a diagnosis of syphilis clinically, and by the use of the Wassermann test, the interests of the mother, child, other members of the family, the physician, the wetnurse, and society were duly protected.

Adenomyoma of the Rectovaginal Septum.—Dr. THOMAS S. CULLEN, of Baltimore, stated that many cases which were diagnosed as rectal carcinomata, were in reality adenomyomata of the rectovaginal septum. They



GEORGE A. MOLEEN, M. D.,

Of Denver, Colo., Chairman of Section in Nervous and Mental Diseases.

might be small or grow to great size. They were easily palpated by rectal examination just behind or at the side of the cervix. There was no involvement of the rectal mucosa. The main symptoms were painful defecation and

profuse menstrual flow. Histologically, these new growths resembled hyperplastic endometrium. Late cases showed a so called glue pot tendency, which caused pronounced pelvic adhesions. As to treatment, early tumors might be shelled out through the vaginal vault, while late cases required colostomy and a thorough cleaning out of the pelvis.

SECTION IN PREVENTIVE MEDICINE AND PUBLIC HEALTH.

June 13, 1916.

Dr. WILLIAM C. RUCKER, Assistant Surgeon General, of Washington, D. C., presided. Doctor Johnson, of Illinois, was appointed delegate of this section to the House of Delegates.

Chairman's Address: The Health Education of the General Public.—This was the subject of the chairman's address. In order that the greatest good should be attained, the moral support of the general public was essential. The largest degree of publicity was required in health education. Publicity was the handmaid of sanitation. In the past, work in this direction had been too spasmodic and as a consequence the results had been merely temporary. Although speech making had a place in public health education, too much reliance had been placed on the power of public addresses. The great problem was to convince those who did not know they should be convinced or else did not want to be. Epidemics of disease might even be considered as temporary benefits, provided the lessons they taught were used as means of promoting public health education. The appeal to the eye was convincing, and whenever possible, working models should be used in spite of the expense. Puzzle models were most effective. The greatest medium for publicity was printer's ink. Every public health curriculum in medical schools should afford a course in public health newspaper work. The point of main importance should be made clear in the first few lines, using no medical terms. The average citizen was interested in the news columns and would read what came to his eye as a news item. Special bulletins on single topics were of the greatest value if they could be made to reach the citizens. In all such bulletins the public required accuracy and service. Demonstrations of health topics by health officers of towns and cities were of great value. There was need of a far greater number of demonstrations. The

had not realized as yet how much good could be done through greater efforts in public health education.

Municipal Health Administration.—Dr. ERNEST C. LEVY, of Richmond, Va., regarded public health work today as a matter of great complexity. The power of



FREDERICK B. MOOREHEAD, M. D.,
Of Chicago, Ill., Chairman of Section in Stomatology.

the public health official was strictly limited by the appropriation available. Each city had to judge of its own needs and work out its own program, incorporating an increased appropriation for better work each year for each community. The single standard health program for communities should not be approved. The climate naturally affected health administration, tuberculosis and diphtheria requiring special attention in northern climates, and typhoid and hookworm in southern climates. The negro problem was especially difficult, inasmuch as the negro had civilization thrust upon him, and at present it was not possible to equalize the negro and the white death rates. In seaports, immigration with difference of habits, languages, and ideas complicated health administration. Age distribution differed also. In a community of 5,000 it was estimated by insurance companies that \$100,000 was required to fight tuberculosis. This amount was scarcely comparable with the twenty cents or thirty cents per capita allowed to most health officers for this purpose. He did not advocate the single score card.

Doctor HASTINGS, of Toronto, remarked that the expenditure of money by insurance companies was regarded by them as a sound investment rather than as an expense. He advocated uniform standards of municipal administration as far as might be practicable. The social problem was of the utmost importance, and boards of health should be educated to the importance of this and similar health problems.

Maritime Quarantine.—Dr. LELAND E. COFER, of Washington, D. C., being absent, this paper was read by Dr. Hugh S. Cummings. The essential point was that all ports should be under the control of United States Public Health Service. Maritime quarantine was the scientific outgrowth of empiricism. Progress in quarantine must keep step with scientific advancement in order to protect health and conserve commerce. On account of the great length of the coast line and diversity of climate, maritime quarantine in America was a complex problem.

District Health Organization.—Dr. C. ST. CLAIR DRAKE, of Springfield, Ill., said that Illinois was undergoing reorganization along three lines, namely, public health, food, and medical registration. These matters required,



LOUIS E. SCHMIDT, M. D.,
Of Chicago, Ill., Chairman of Section in Genitourinary Diseases.

public health nurse could be of immense value to public health education in the country as well as in the city. The thorough education of the child of today made the sanitary citizen of tomorrow. It was clear that the general public

first, a good central or State organization; second, a good local health organization; and, third, a strong connecting link between the two. Heretofore the relation between the State and local health organization had been cordial but not intimate; now a progressive constructive policy had



Campus Martius and Monroe Avenue.

been adopted, and the State epidemiologist kept in touch with the health officers of local districts. Health schools or conferences in each district should be held twice yearly.

Dr. H. M. BRACKEN, of Minnesota, emphasized the fact that the local board of health was usually out of touch with the State board and advocated closer relations to effect the best results.

Dr. B. F. ROYER, of Pennsylvania, looked with less favor on district health officers, believing that county organizations were more practical.

Dr. J. N. HURTY, of Indianapolis, emphasized the importance of providing definite salaries for district health officers.

County Health Organization.—Dr. WATSON S. RANKIN, of Raleigh, N. C., stated that the administration of public health in counties was of importance because of the size of the field, which included fifty-three per cent. of the American population. Business efficiency and the democratic form of administration were not synonymous, but if the matter of educating people first was adopted, effective results would be attained. As yet no one had outlined satisfactorily the duties of the whole time health officers. There were two principal methods of county administration; in one the county did its own work through its own health officer without central supervision or direction. Of necessity he dealt with many problems best handled by specialists. The second method or unit system divided the total county health problem into its component parts, or units, attacking the various problems by a well devised plan, under the supervision and direction of State authorities, the county paying the State board of health what the work cost. This second or unit system was definite, free from political influence, and gave health work at the minimum cost. It substituted the specialist for the general health officer and was best adapted to meet the present needs of counties. Under such a system a campaign for typhoid vaccination, for a county population of 25,000 need cost but \$400.

SECTION IN PHARMACOLOGY AND THERAPEUTICS

Dr. R. A. HATCHER, of New York, spoke of the necessity for physicians to cooperate in the effort to discard all nostrums. They should use drugs or remedies whose therapeutic action was assured, not merely presumed.

Dr. JOSEPH P. REMINGTON, of Philadelphia, in a report of the American Pharmaceutical Association, observed that the ninth revision of the U. S. P. had been completed and would be put on the market very shortly. The high cost of drugs was due to Germany turning many of her pharmaceutical manufacturing institutions into factories for munitions. The unique idea, original in America, of re-

porting to the different manufacturing concerns before publication of the U. S. P. the new methods of standardization of drugs, was exceptionally valuable to prevent delay.

Dr. TORALD SOLLMANN, of Cleveland, in his report of the Council on Pharmacy and Chemistry of the A. M. A., stated many new points. The important ones were as follows: The natural salicylates were not of more value than the synthetic salicylates. Knowledge of this fact was of value because of the lessened expense of prescribing synthetic salicylates. The action of trypsin was weakened in presence of acid. Pepsin was not affected. Pancreatin preparations should be used with care because of their instability. Urotropin had no therapeutical value without the liberation of formaldehyde. Its action could be enhanced by the use of sodium salicylate, which produced an acid urine.

Caffeine and strychnine should not be depended upon in pneumonia to relieve vasomotor disturbance. Caffeine was of value in constitutional disturbances, but not for acute infectious diseases. Theobromine was of greater value in myocardial insufficiencies than caffeine; it did not give rise to digestive complications. Infusion of digitalis did not lose its strength under ordinary conditions, for a considerable length of time.

It had been proved absolutely that sodium bicarbonate was the best uric acid neutralizer.

June 11, 1916; morning session.

Action of Cinchona Alkaloids on the Uterus and Their Possible Use in Obstetrics.—Dr. WILLIAM

WORTH HALE, of Boston, brought out the frequency with which quinine alkaloids had caused premature expulsion of the fetus. He showed that cinchonidine sulphate was much more valuable than quinine; that the uterus was irritable when quinine sulphate was used in as small doses as five grains. It had been proved many times that when a pregnant woman was treated by quinine for some other condition, the drug produced marked contractions of the uterus. Giving cinchona alkaloids in large doses would produce tetanus, which, as he showed, caused much discomfort. The speaker presented many experiments in which the different alkaloids of quinine had been tested, with the result that cinchonidine sulphate had proved more active than the other alkaloids. The method of administering was to give three grain doses every half hour in uterine inertia.

Results of Treatment in Cases of Arterial Hypertension, Due to and Associated With Syphilis.—Dr.

LOUIS A. LEVISON, of Toledo, Ohio, brought out the results of observing eighteen cases. While there had been no definite proof that lues caused hypertension, from his observations, hypertension came later in life, while syphilis



Cadillac Square.

existed in early life. By taking Wassermanns in his doubtful cases where a hypertension existed, he had shown that syphilis existed in the majority of cases. He further showed his belief that syphilis caused this condition in

many cases by its response to antisyphilitic treatment. He presented case histories of patients who had a systolic pressure of 180 mm. Hg., and a diastolic of 100 mm., and by faithful and vigorous antisyphilitic treatment he brought the blood pressure down to normal, and had held it there as shown by the taking of their blood pressure every week. He brought out that the physicians should at all times keep the kidneys in mind in hypertension. The urine should be examined and functional tests made. The retina should be examined for hemorrhage or engorgement of its bloodvessels.

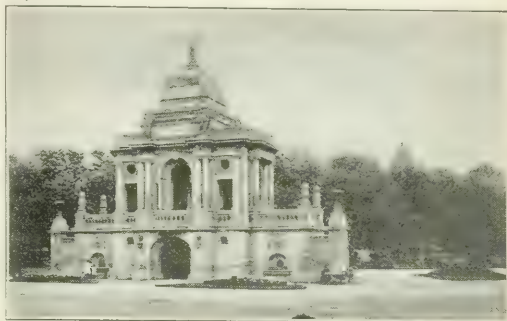
Doctor LEVISON observed that just because a case of hypertension did not improve at once, it did not necessarily mean that it was not due to syphilis, because he had shown these cases which were eventually cured.

Intensive Treatment of Syphilis.—Dr. LLOYD THOMPSON, of Hot Springs, Ark., emphasized very strongly that the pills and drops method of treating this condition had passed forever, and needle injections had taken their place. The drugs used by him were metallic mercury in one gram doses intravenously. Iodine, he said, had not a true antisyphilitic germicide action, but showed good effects in cases of gummata. In cases where gummata were present, the patient received frequent doses of potassium iodide in increasing amounts. He did not believe that the water of spas had any effect on syphilis except that the patient was in pleasant surroundings and was making a business of getting well. Such patients, he said, did have a greater tolerance for mercury. He used all methods for administering mercury. He declared that no absolute cure of syphilis could be assured, but that a physician should never let a patient go before having a Wassermann test of the spinal fluid. He also used metallic mercury for these cases by injecting the solution into the spinal canal; of course after it had been properly prepared. A case of syphilis should not be pronounced cured until the following tests had been made: Negative blood Wassermann, negative Wassermann on spinal fluid. The physician should not be satisfied by making these tests once. The patient must be compelled to come back every six months for further Wassermann tests. Salvarsan was more valuable than neosalvarsan; according to his observations there was a ratio of three doses of neosalvarsan to two of salvarsan. Other men, he said, had proved a much greater ratio. Care should be used in administering insoluble mercury in injections, as accumulation might cause trouble. The soluble preparations were much more efficacious.

New Development in Sanatorium Treatment.—Dr. D. E. DRAKE, of Newfoundland, N. J., expressed his high opinion of the treatment in such an institution, because of the value of rest, quiet, and, most important, diet. He

believed that a true diagnosis should be the prime object in a sanatorium.

Chronic Intestinal Stasis.—Dr. C. REESE SATTERLEE, of New York, brought out the value of a simple diet in this condition. The colon bacillus, in order to do harm



HURLBURT MEMORIAL WATERWORKS PARK, DETROIT, MICH.

and liberate toxins, must be broken up as shown by many experiments. Treatment consisted in keeping the bowels open and in doing certain surgical procedures, such as colotomy. Another valuable treatment was immunization by subcutaneous injection of vaccines, 50,000 of the bacteria up to a million or more. The index of a cure was the mental improvement, the headaches disappearing, abdominal symptoms modified, etc. He believed in giving small doses of the vaccine at from five to seven days' interval. The large doses would cause untoward symptoms and could be avoided. It was of interest how quickly the patients responded to treatment. The intestinal conditions might not always be due to the colon bacillus, but sometimes to fermentation. No stock vaccine should be used—the length of time (four or five days) required to prepare an autogenous vaccine would be repaid by a quicker recovery. The diagnosis of these cases was borne out by the improvement of the patient under the vaccine treatment.

Dr. B. TURCK, of New York, spoke of the value of injecting 300 c. c. of warm water into the colon, and using a rubber bulb to pump air to set up antiperistaltic movements, then by exercising the muscular coat of the entire colon, overcoming its debility.

June 14, 1916; afternoon session.

Physical Exercise in College.—Dr. E. P. EGGLESTON, of Battle Creek, spoke in detail of the necessity of such exercise. The brain should not be the only part of the body developed. Certain kinds of exercise should be prescribed to different individuals, depending on the personal equation.

Doctor FANTUS, of Chicago, said that the physician who used only drugs must necessarily retrogress, because the laymen were daily becoming better acquainted with the value of other therapeutic methods.

Artificial Pneumothorax.—Dr. A. G. SHORTLE proved conclusively the value of this procedure in very difficult cases. The difficulty of following up discharged patients caused some trouble in determining the actual results of this mode of treatment.

Doctor BOWDMAN reported three cases in which re-expansion occurred.

Doctor GILBERT reported three reexpansions of the lung, with two that remained collapsed. Other reports from trustworthy sources showed that this means of treatment was of value. The successes were in cases where the hope of recovery was very doubtful, and this treatment was resorted to only in the eleventh hour. If such cases showed great improvement, less serious cases should do even better. Six patients out of twenty-one were able to do some manual work, in spite of the fact that certain physical signs were present, such as some displacement of the apex of



THE CANAL, BELLE ISLE PARK, DETROIT, MICH.

showed the undoubted fact that gastric ulcer must have rest and that that was best secured in a sanatorium. He showed that the stomach symptom was often a reflex sign of a pathological condition in some other organ. He

the heart and rates at the end of respiration. He spoke of the value of a sanatorium in these cases, and he warned operators never to attempt to do such an operation outside of an institution. He said that there should never be more than 300 c. c. of gas admitted to the thorax at one time.

New Diagnostic Methods.—Dr. HARVEY G. BECK, of Baltimore, introduced several new and original methods of diagnosis. By contrivances he could maintain a continuous suction for the following uses: Pumping out stomach, obtaining blood from an adult for Wassermann test, and a very clever method for obtaining blood from an infant or child. His contrivance was a Bier's cap with a test tube attached to a rubber tube, which was fastened to a glass tube by an ordinary filter water spigot. He could draw the blood from the infant's back with ease and simplicity. The value of this apparatus lay in its simplicity. His method for obtaining gastric contents was by passing a tube of medium calibre down the esophagus; this was attached to a T tube, which fitted into the top of large beaker in a rubber stopper. The other end of the T tube was attached to the tube (rubber), which was fastened to a gauge, especially contrived to allow only the exact vacuum pressure desired. With a rubber tube running to the filter water spigot, the physician could see how simply and easily this arrangement could be operated. Doctor Beck proved this by reporting a series of cases. This new method was in full vogue at the Johns Hopkins Hospital, Baltimore. The contents of the duodenum could be obtained by this method very easily and with comfort to the patient.

COMMITTEE ON INDUSTRIAL SANITATION.

Dr. J. W. KERR, of Washington, D. C., was in the Chair. **Industrial Medicine and Surgery, the New Specialty.**

—Dr. HARRY E. MOCK, of Chicago, called attention to the fact that under present industrial conditions in well conducted establishments every injured employee was required to report at once to the doctor, no matter how slight the injury. He described a good first aid kit. Each man received a small bottle of tincture of iodine for immediate use on small cuts. The speaker advocated thorough medical examination of employees, not a mere inspection. Examination of applicants was introduced, not to pick out the healthiest to the exclusion of weaker ones, but for the proper division of employees as to suitable work, etc. He advised State or Federal control of industrial medicine and surgery.

Medical Supervision of Factory Employees; Results of Five Years' Experience.—Dr. W. IRVING CLARK, Jr., of Worcester, Mass., asserted that tincture of iodine decreased in efficiency at the rate of twenty-five per cent. for each fifteen minutes elapsing before it was applied after a wound had been made. Infection of wounds occurred only where home treatment was used. He advocated dressings every four hours as much more efficient than daily dressings.

Medical Supervision of Street Railway Employees.—Dr. CHARLES H. LEMON, of Milwaukee, said that the cost for injuries and accidents had been reduced by \$100,000 in one year. Owing to relief from personal worry, because a workman's family would be cared for, greater efficiency was induced in the worker.

Relation of Health Insurance to National Health.—Dr. BENJAMIN S. WARREN, of Washington, D. C., was of the opinion that fifty cents for each employee a week was sufficient for health insurance benefits. This would include hospital as well as medical service. The funds arising from contributions should be administered by employee, employer, and State.

Relation of Health Insurance to the Wage Earner.—Dr. J. M. RUNKOW, of New York, said that thirty years' trial in Europe had showed that social insurance would be limited almost entirely to workmen, unless it was made compulsory for all citizens.

American Association of Industrial Physicians.—The interest of physicians in health of workers has been steadily increasing with the rapid extension of compensation legislation. Heretofore physicians connected with industrial plants or interested otherwise in occupational diseases and work conditions have held meetings in connection with various national organizations such as the American Public Health Association and the National Safety Council. On Monday, June 12th, physicians connected with more than 100 of the largest industrial establishments in the country

met at the Hotel Cadillac in Detroit for the purpose of organizing the American Association of Industrial Physicians. The formation of this organization marks the beginning of a new era in industrial, medical, and social history in the United States. The objects of the organization are to foster the study of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employees; and to unite in one organization members of the medical profession specializing in industrial medicine and surgery for their advancement in the practice of their profession.

Dr. J. W. SCHERESCHESKI, opening the afternoon session, as his first act in the capacity of president of the new organization, said that the occasion was indeed a deeply significant one, and should mark a definite step in the preparedness, in a larger sense, of this country and in the development of its future social organization, so that in time to come they should be equipped consistently to pursue their forward march, undisturbed by menace of a cataclysm—ready to cope with emergencies as they arose. Doctor Schereschewski laid stress on the educational function of the "company doctor," as physicians connected with industrial work formerly were called. They were on the brink of important social advances. Of these, health insurance was among the probabilities of the near future.

Dr. C. G. FARNUM, of Chicago, gave the initial paper on The Scope of Medical and Surgical Supervision, which, with the subsequent discussion, brought out the keynote of the organization, that the prevention of accidents and disease by medical examination and supervision and safety first methods increased the efficiency of employees.

Others who addressed the meeting in the afternoon were Dean S. S. Marquis, on the factory doctor, and Dr. John B. Andrews on health insurance and the prevention of sickness.

The morning session was opened with Dr. A. M. Harvey, of Chicago, acting as temporary chairman, and Dr. H. E. Mock of Chicago, temporary secretary. A constitution and bylaws were adopted and the following officers elected: President, Dr. J. W. Schereschewski, of Chicago; first vice-president, Dr. Francis D. Patterson, Philadelphia; second vice-president, Dr. R. M. Legge, Berkeley, Cal.; secretary and treasurer, Dr. H. E. Mock, Chicago.

Dr. A. M. Harvey, the temporary chairman of the morning session, was the original organizer of the association. The members of the organization committee were Dr. J. C. Stubbs, Dr. H. E. Mock, Dr. A. M. Harvey, Dr. Thomas R. Crowder, Dr. Wilber E. Post, all of Chicago; Dr. Sidney M. McCurdy, of Youngstown, Ohio; Dr. C. G. Farnum, Peoria, Ill.; Dr. O. P. Geier, Cincinnati, Ohio; Dr. H. M. Clarke, Bridgeport, Conn.; Dr. W. Irving Clark, Worcester, Mass.; Dr. R. W. Convin, Pueblo, Col.; Dr. F. D. Patterson, Harrisburg, Pa.

NEW SECTION ADDED TO MEDICAL ORGANIZATION.

Members of the house of delegates, the legislative and business body of the A. M. A., at their meeting in the Wayne County Medical Society Building, Tuesday, added a new section to the organization, to be known as the section on stomatology, gastroenterology, and proctology. There is a stomatology section at present, which will merge into the new section.

Necessity for the closest cooperation between dentist and physician for the prevention and cure of many serious cases of illness traceable directly to faulty teeth and gums was the subject of discussion before the section in stomatology in the Hotel Pontchartrain, Tuesday afternoon.

Dr. FREDERICK B. MOOREHEAD, of Chicago, chairman of the section, in his opening address, pointed out that many cases of neuritis, gastric ulcer, and other serious ailments could be attributed directly to pyorrhea, or bleeding gums, and abscesses of the mouth due to faulty teeth. In a majority of cases he declared that removal of the diseased teeth was the only certain way to get rid of the infection.

Dr. ERNEST E. IRONS, of Chicago, following the same line of discussion, said that physicians had been notoriously careless in overlooking the mouth as a source of disease. The cure of alveolar abscesses would very often cure puzzling bodily ailments. Heart disease and tonsil troubles were very often traceable to alveolar abscesses, and removal of the abscess did not always bring a cure of the resulting physical ills.

THE SCIENTIFIC EXHIBIT.

An interesting feature of the convention was the scientific exhibit, held in the Detroit Armory. Dr. J. Walter Vaughan, of Detroit, was chairman of the committee having the exhibit in charge. So far as could be shown objectively, the exhibit was a demonstration of the most advanced ideas in the art of healing. Chemical, physical, and electrical apparatus, so far as it has to do with medicine, was on view. Statistical charts, showing in a graphic way the data obtained from long observation of physiological conditions, as well as charts showing the results of autopsies, were shown. The results of the most advanced research in pathology also formed a part of the exhibit, to which leading hospitals, medical schools, and research laboratories contributed.

The Augustana Hospital, of Chicago, had an exhibit showing its advanced work in the treatment of cancer and its methods in blood transfusion. The New York Lying-in Hospital had a large exhibit and the New York Post-Graduate School showed the result of its study of pellagra. Charts and maps were a feature of this exhibit.

From the Craig Colony for Epileptics in Sonyea, N. Y., was an exhibit showing the advances made in the treatment of epilepsy. The University of Michigan medical school showed the effects of lead poisoning, especially the prenatal results of this poison. The medical school of the University of Cincinnati was another school which exhibited.

The Mayo clinic at Rochester, Minn., displayed graphically the results of its study of goitre and the thyroid gland. It also showed an extensive array of its work in scientific photography.

One department of the exhibit was devoted to the exhibition of advanced work of individual investigators, medical schools, and hospitals which wish to make a bid for financial support necessary to continue the research in which they are engaged. Prizes were awarded in this department to individual investigators to encourage continuance of their endeavors.

From Detroit, the Harper Hospital and the city board of health were the important exhibitors.

The program of exhibits and demonstrations was as follows:

PROGRAM OF DEMONSTRATIONS.

Director—Frank B. Wynn, Indianapolis.

Committee—Louis B. Wilson, Rochester, Minn.; H. Gideon Wells, Chicago; A. S. Warthin, Ann Arbor, Mich.; Plinn F. Morse, Detroit.

I. INSTITUTION EXHIBITS.

1. Exhibit of Case Records from the Massachusetts General Hospital with Necropsy Results. Richard C. Cabot, Boston.

2. Exhibit from the Pathological Laboratory of the University of Michigan. Continuous demonstration.

3. Series of Brain Dissections for Teaching Nerve Anatomy. J. H. Hathaway, Detroit.

4. Exhibit from the Augustana Hospital. Frank Smithies, Chicago, in charge.

a. Demonstration of the Actinotherapy on Normal and Carcinomatous Tissue, with special reference to the treatment of cancer of the uterus. Henry Schmitz, Chicago.

b. Demonstration of a New Method of Blood Transfusion. Nelson M. Percy, Chicago.

c. Demonstration of Effects of Multiple Transfusions of Whole Blood and Splenectomy in Pernicious Anemia

(serial blood films, methods of selecting donors, blood count charts, lantern slides, photomicrographs and pathological specimens). Nelson M. Percy, Frank W. Smithies, Hubert Dunn, Herman Schumm and Oscar Nadeau, Chicago.

d. Clinical Significance of Röntgen Plates in Lesions of the Heart and Aorta, with special reference to the effects of treatment. Andre Frick and Leo Blam, Chicago.

e. Röntgen Plates Showing the Aftereffects of Bone Plating. Nelson Percy.

5. Exhibit of the New York Lying-In Hospital.

a. Gross Specimens, illustrating various phases of prenatal pathology.

b. A Preliminary Study of the Thymus Gland in the Infant, showing morphologic variations illustrated by specimens, röntgenographs and photographs.

c. Birth Dislocations of the Lower Humeral Epiphyses, demonstrated by röntgenographic studies.

d. Statistical Charts Showing the Activities of the Hospital During the Past Year, with especial reference to the work of the outdoor department as a substitute for the midwife. George W. Kosmak, New York.

6. New York Post-Graduate Medical School.

a. Epidemiology of Pellagra in Spartanburg County, S. C., illustrated by charts, blank forms, spot maps, etc.

b. Methods of Teaching Röntgenology.

7. Exhibit from the Craig Colony for Epileptics, presenting facts well known in epileptic institutions, but too little known to practitioners.

a. Institutional methods were shown by means of statistical charts, legends, photographs and transparencies.

b. Gross specimens, photographs, etc., dealing with the clinical and pathological aspects of epilepsy.

c. Stereoscopic Presentation of Some of the Problems Concerning Epilepsy and Epileptics. William J. Shanahan, Sonyea, N. Y.

8. Battle Creek Sanitarium. In charge of J. H. Kellogg.

a. Work in the Electrocardiograph Department.

b. Pathological Material.

c. Motion Pictures.

II. RESEARCH EXHIBITS.

1. Exhibit Dealing with Fatty Degeneration and Allied Biological Problems. Martin H. Fischer, University of Cincinnati, Ohio.

2. Acidosis, Acapnia, and Shock. Demonstration of experimental methods by means of apparatus, charts, etc. B. B. Turner and E. N. Kime, Indiana University, School of Medicine, Indianapolis.

3. Exhibit Illustrative of Experimentally Produced Joint Diseases. Leonard W. Ely, San Francisco, Leland Stanford Junior University, San Francisco.

4. The Elastophoric Effects of Lead. C. V. Weller, University of Michigan, Medical School, Ann Arbor.

5. Experimental Exhibit.

a. Reversal of Circulation in the Leg.

b. Reconstruction of the Common Bile Duct. J. Shelton Horsley, Richmond, Va.

6. Exhibit Illustrating the Action of Röntgen Rays in Syphilis, Leprosy, and Other Infections; also the effect on the testis. Alfred S. Warthin, University of Michigan, Medical School, Ann Arbor.

7. Exhibits Dealing with Renal Pathology.

a. Research Work Completed. Experimental work on ascending renal infection by way of the lymphatics was illustrated by means of enlarged photomicrographs, diagrams and slides. Types of renal pelvis shown.

b. Research Work in Progress. Exhibit showed effect of ligation of renal vessels on kidney, an experimental study of transabdominal ligation preliminary to lumbar nephrectomy. Daniel N. Eisendrath, Chicago.

8. Exhibit from the Mayo Clinic, Rochester, Minn. Drawings and photographs illustrating studies in:

a. Blood in Cancer. Georgine Luden.

b. Histogenesis of Cancer. William C. MacCarthy.

c. Sympathetic System in Goitre. Louis B. Wilson.

d. Active Principle of the Thyroid. Edward C. Kendall.

e. Amebiasis. A. H. Sanford.

f. Elective Localization of Organisms. Edward C. Rose-nov.

g. Drawings Illustrating Surgical Operations. Eleonora Frye.

h. Methods in Scientific Photography. Earl Irish.

- i. Röntgenological Studies. R. D. Carman and A. B. Moore.
9. Exhibit Illustrating the Lesions of Osteitis Fibrosa Cystica, with studies in calcium metabolism. E. W. Haass, Detroit.
10. Exhibit Showing Experimental and Clinical Results Obtained with Quinine and Urea Injection in Certain Types of Goitre.
- a. Photomicrographic Enlargements of Clinical Cases.
- b. Photomicrographic Enlargements of Human and Dog's Thyroids after Injection.
- c. Microscopic Demonstrations of Slides. Leigh F. Watson, Oklahoma City.
11. Series of Photomicrographs Illustrating Researches Made. George W. Crile, Cleveland.
12. Exhibit on Malaria. Photomicrographs shown in a specially devised apparatus. They illustrated all phases of the life cycle of the malarial parasite in the mosquito and possibly certain phases in man. C. C. Bass and F. M. Johns, New Orleans.

III. EXHIBITS RELATING TO LABORATORY METHODS OF DIAGNOSIS.

1. Demonstration of a Model Medical Laboratory for the General Practitioner, arranged with especial reference to economy. George Drescher, Detroit.
2. Röntgen Ray Exhibits. These were presented in lantern slide form. An excellent room was available for the purpose adjacent to the Scientific Exhibit. A wide range of subjects was illustrated.
- A separate program was issued giving the names of those who participated. General supervision of the demonstrations was in the hands of P. M. Hickey, Detroit.

IV. PUBLIC HEALTH EXHIBITS.

1. Exhibit Relating to the Institution Handling of Tuberculosis. J. W. Vaughan, Detroit.
2. A Study of the Epidemiology of Typhoid Fever in Detroit. Henry Vaughan, Detroit.
3. Indiana State Board of Health.
- a. Exhibit of Unique Pictures for Health Instruction.
- b. A Portable Exhibit with Special Features.
- c. Epidemiology of Rabies in Indiana, 1906-1915.
4. Michigan State Board of Health.
5. Detroit Board of Health.
6. Exhibit of the American Posture League. Results of original research of the technical committee of the league, including classification of feet, principles of correct seating, the standardization of wearing apparel in its effect on posture, and practical application of all these anatomical principles; Röntgen ray studies of the effects of posture and dress; the schematograph and other educational material.
7. Gross Exhibits Illustrative of Animal Pathology. Dr. Day, U. S. Bureau of Animal Industry, Chicago.

V. MEDICAL SOCIETY EXHIBITS.

1. Exhibit by the Indiana State Medical Association. The results of an investigation by questionnaire addressed to each member of the association.
- a. The physician's economic problems—existing abuses, lay and professional.
- b. The problem of criminal abortion; laxness of the public conscience on the subject and what the profession may do toward abatement of the criminal practice. In charge of Alfred Henry, Indianapolis.
2. Exhibit Showing the Methods of the Detroit Physicians' Business Bureau, of the Wayne County Medical Society. Accounting, bookkeeping, collection of accounts, etc. In charge of James F. Davis, Detroit.

American Academy of Medicine.—The election of officers brought to a close the annual meeting of the American Academy of Medicine, held in Detroit Friday, Saturday, and Monday, June 9th, 10th, and 12th. Dr. J. E. Tuckerman, of Cleveland, was elected president, succeeding G. A. Hare, of Fresno, Cal.; Dr. Frederick L. Van Sickle, of Oliphant, Pa., was elected first vice-president; Dr. Ray Connor, of Detroit, second vice-president; Dr. T. W. Grayson, of Pittsburgh, reelected secretary.

The New Officers are: President, Dr. Charles H. Mayo, Rochester, Minn.; first vice-president, Dr. Lewellys F. Barker, Baltimore, Md.; second vice-president, Dr. John Leeming, Chicago, Ill.; third vice-president, Dr. J. Henry Carstens, Detroit, Mich.; fourth vice-president, Dr. George F. Keiper, Lafayette, Ind.; secretary, Dr. Alexander R. Craig, Chicago, Ill.; treasurer, Dr. William Allen Pusey, Chicago, Ill.; chairman of the House of Delegates, Dr. Hubert Work, of Colorado; vice-chairman of House of Delegates, Dr. Dwight H. Murray, New York; Board of Trustees: Dr. A. R. Mitchell, Ne-



CHARLES H. MAYO, M. D.,
Of Rochester, Minn., Elected President.

braska; Dr. E. J. McKnight, Connecticut; Dr. Oscar Dowling, Louisiana.

The next meeting will be held in New York City.

MEETINGS OF OTHER ASSOCIATIONS.

As usual, the meeting of the American Medical Association brought together a number of organizations not directly affiliated therewith, but whose members belong also to the A. M. A. Among these were the American Academy of Medicine, which met from June 9th to 12th; the American Association of Anesthetists, which met on June 10th; the American Bacteriologic Society, which met on June 12th; the American Therapeutic Society, which met on June 9th and 10th; the Alpha Omega Alpha Society, which met on June 12th, and the National Association for the Study of Epilepsy, which met on June 16th. The American Association of Industrial Physicians and Surgeons met on June 12th, and completed its organization.

During the meeting informal dinners of various alumni associations were held at the hotels which were the headquarters for the several sections.

On the Sunday previous to the association meeting, June 11th, addresses on Public Health were delivered by members of the association in nearly all the churches of Detroit.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis

Original and Adapted

HEAVY LIQUID PETROLATUM IN THE TREATMENT OF BURNS.

By CREIGHTON BARKER, M. D.,
New Milford, Conn.

After the successful application of the use of neutral liquid petrolatum for the preservation of pathological museum specimens, it was thought that such oil possessed bactericidal properties, and laboratory tests were conducted with that theory in mind. It was found that agar cultures of *Streptococcus albus*, *Streptococcus aureus* and *Bacillus subtilis* covered with mineral oil were checked in growth, but were not killed after seventy-two hours' incubation. Liquid petrolatum mixed with nutrient bouillon in the proportion of ten parts oil to ninety parts broth, inhibited the growth of these same organisms and killed the cultures of *Streptococcus albus* and *Streptococcus aureus* in five days, but the cultures of *Bacillus subtilis* were not affected after seven days. The cultures, however, to which the oil had been added did not show as luxuriant a growth as did the controls planted in plain bouillon.

From these somewhat meagre data it was concluded that heavy liquid petrolatum of the naphthene series does possess some weak bactericidal power, but that its greatest value as a disinfectant lies, as was demonstrated in the first series of tests, in forming an air tight film over the culture, thus shutting off the supply of oxygen and killing the organism. This fact is also demonstrated by a well known method for the cultivation of anaerobic bacteria.

We have then in such heavy liquid petrolatum an agent possessing slight bactericidal powers and capable of forming an air tight covering. That this oil is not irritating is very easily proved by the fact that it may be applied to raw or abraded surfaces without discomfort. These three facts apparently qualify this product as an excellent dressing for burns. It was therefore given clinical application in twelve cases of burns of all degrees with the following results:

Cases I, V, VII, IX, first degree burns, were dressed with gauze soaked in mineral oil and covered with a dry bandage. The pain usual in such cases was considerably lessened and the period necessary for complete healing was somewhat shorter than in similar cases treated with boric ointment or one per cent. picric acid.

Cases II, III, IV, VI, VIII, second degree burns, were treated in like manner with heavy liquid petrolatum, and healed quite as quickly as those treated with boric ointment and rubber tissue.

Case XII, a third degree burn, was treated with liquid petrolatum and at first showed marked improvement, but the filling in of the burned area with scar tissue and epithelium was so slow that the treatment was discontinued.

Case X, extensive second degree burns of both forearms and hands, was treated by two methods. The left arm was covered with a constant wet dressing of one per cent. picric acid solution, the right dressed with gauze soaked in mineral oil and changed twice daily. The dressing from the right arm was permanently removed, complete healing having taken place, three days before it was deemed advisable to leave the left arm without further treatment.

Case XI, of a child, extensive second degree burns of the back and buttocks, was dressed with heavy liquid petrolatum following two days' treatment with sodium bicarbonate. The pain and discomfort seemed to be markedly lessened at once. The dressings were changed twice daily for ten days and then heavy liquid petrolatum to which had been added one per cent. of scarlet red, was applied. Healing was rapid and uneventful and epithelialization complete.

From the foregoing small but representative series of cases it may be said that heavy liquid petrolatum of the naphthene series offers a valuable addition to our methods of treatment of burns. Its greatest value is in its application to first and second degree cases; it lessens the pain almost at once and makes an impervious covering over the burned area. It does not stain as does picric acid, is easier to apply than rubber tissue to uneven surfaces, and allows dressings to be easily removed without sticking.

UNITED BANK BUILDING.

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M. D.,
Department of Biology, Olivet College.
Twenty-fourth Communication.

ARSENIC.

Having reviewed briefly the pharmacodynamics of the more widely used drugs it may not be amiss to refer to a few of the relatively less important ones before beginning our consideration of the pharmacologist's reasoning concerning the treatment of definite diseases.

As a medicinal substance arsenic has had varied recommendations by physicians, but its field of usefulness has become more limited in recent years. Much of our trustworthy information concerning the action of arsenic has been derived from the laboratory of the therapist, more than from that of the pharmacologist. It has been shown that small doses of arsenic show no direct appreciable action on the central nervous system, though in chronic arsenical poisoning there ensue both peripheral neuritis and secondary degeneration of the cord,

thereby indicating that arsenic exerts a definite though obscure influence on the metabolism of nerve tissue—a fact somewhat blindly utilized in the treatment of some forms of subacute neuritis.

This effect on nerve tissue probably will account for many other phenomena appearing under arsenic medication. Varying with differing stages of drug influence there appears a dilatation of the capillaries, especially of the intestines and of the infraocular region, accompanied not infrequently by serious leakage. This leakage in the infraocular region, with the consequent bagging under the eyes, constitutes a well recognized sign to the practitioner that limits of safety are near; later symptoms of warning are lacrymation, coryza and serious diarrhoea. This capillary relaxation may be assumed by analogy to be due to arsenic depressor action on the terminals of the vasoconstrictor fibres, not on the muscle itself, inasmuch as the other symptoms, both of acute and chronic poisoning, point to disturbances not of muscle, but of nerve tissue. Toxic doses are followed by fall in blood pressure, a direct result of splanchnic capillary dilatation, and by weakening of heart action from local effect, probably also of neurotoxic nature.

Arsenic is irritant and escharotic on the broken skin and mucosa. Internally it continues to show irritant action, even when in very dilute form, producing a specific fatty degeneration of the gastrointestinal epithelium. This tendency to stimulate replacement of normal tissue by fat is seen likewise in the lungs, liver, and kidney, and even in the muscle cells of the heart.

Arsenic is said to reduce the relative alkalinity of the blood, a condition misnamed "acidosis," readily provocative of many systemic disturbances. Its general irritant effect is shown also on the hematogenic tissue of long bones, with frequently a marked augmentation of red blood corpuscles.

These several reactions point rather unsteadily toward a rational therapeutics. In combination with iron, arsenic may often be used with good results in treating the anemia of adolescent girls. In chorea minor no other remedy has given such good results as Fowler's solution, the action of the arsenic in these cases being such apparently as to stimulate readjustment of nerve tissue to a more nearly normal condition. We do not yet know the real neuropathology in chorea, so can scarcely guess in what manner arsenic brings about the undeniably favorable result. Some skin diseases also are favorably affected by arsenic administration, but whether by local nerve influences or otherwise is yet obscure.

Chronic syphilis and trypanosomiasis are frequently cured by specially adapted arsenic compounds, the curative effect being assumedly wrought by establishing a relative toxemia of sufficient intensity to just destroy the invading organism without at the same time killing the host. Unfortunately this happy mean has not been obtained in every case. The several compounds used for this purpose, paradiamidodioxarsenobenzolium for example, are assumed to liberate the arsenic molecules very slowly, but the rapidity of release is apparently differently affected by varying bodily conditions,

with the outcome remaining problematical. However, the odds are such that the chronic syphilitic may as well cast his dice and take the chance, especially if his physician is a wise experimenter who endeavors to predetermine probabilities.

Management of Gonorrhea.—J. Dellinger Barney (*Boston Medical and Surgical Journal*, May 25, 1916) finds that vaginitis of little girls and babies is astonishingly common. In most cases the gonococcus can be demonstrated if many smears are examined, but even when it is not found, he regards a chronic vaginitis in a baby or little girl which resists a fair amount of treatment as of gonococcal origin. Treatment consists of douches of potassium permanganate, one in 5,000, or silver nitrate, one in 1,000, and more particularly a distention of the vagina once or twice a day with a five or ten per cent. solution of argyrol or a one per cent. solution of protargol. Male babies and little boys are affected less often. While internal medication generally is unnecessary in little girls, measures should be taken to reduce the irritability of the bladder and urethra in boys by an excess of liquid in the form of water or milk, together with a urinary antiseptic, preferably sandalwood oil in five minim doses three times a day. Locally, argyrol or protargol should be injected into the urethra frequently. The resistance of the external sphincter is so slight in children that injection with a simple medicine dropper is sufficient to irrigate the entire urethra and the neck of the bladder. In the adult female the treatment may drag on for months or even years. In a minority of cases the infection is confined to the urethra and may be cured in a few weeks; in most the cervical canal has become infected, necessitating weeks or months of local applications of tincture of iodine, ten per cent. silver nitrate, or crude carbolic acid. In many cases nothing less than a thorough curettage of the cervix and an application of the actual cautery will effect a cure. Infection of the endometrium and of the Fallopian tubes introduces a serious chain of complications. Infection of Skene's glands is frequent and treatment is difficult because of the inaccessibility of the glands. The mouths of the glands lie just within the external meatus and may be exposed after local anesthesia by everting the lips of the orifice with forceps. A two to ten per cent. solution of silver nitrate is then injected into the glands with a hypodermic syringe with a blunt needle. In addition the entire urethra is flooded with argyrol. When Bartholin's gland is involved, drainage is only palliative and the only cure is the entire removal of the gland. Gonorrhea is far more common in the adult male than among women or children, and a thorough understanding of its extent, and of the difficulties associated with its diagnosis and cure is of the utmost importance. A simple anterior urethritis which may be cured in about a month, forms only about a tenth of the cases in the writer's experience, while bad treatment and neglect may hasten invasion of the deep urethra; this may happen in spite of the best treatment. To understand the case it is nec-

essary to take a careful history of the number and date of previous infections, to consider the frequency, pain, and urgency of urination, as well as any symptoms pointing toward disease of the kidney or bladder, and to inspect the genitals carefully in search of little pockets in the urethra. The epididymides and vasa deferentia should be carefully palpated to detect pathological changes, and the urethra calibrated from meatus to external sphincter. Before asking the patient to urinate, his anterior urethra is to be washed out with plain water, or with a solution of boric acid or of permanganate. Then he is requested to pass his urine into two glasses. As the anterior urethra is clean, shreds or turbidity in the first specimen must come from behind the cut off muscle. The second glass will be clean unless the infection of the posterior urethra and prostate is extensive, or all the urine from the bladder or kidneys is infected. Without the preliminary washing the two glass test may be of no value. It most cases it is justifiable to pass a small soft rubber catheter into the bladder, which will show the presence of residual urine, or of an obstructing prostate, and will allow the bladder to be filled with irrigating fluid. After this has been done, rectal examination will detect pathological changes in the prostate, seminal vesicles, or ampullæ. Gentle massage usually will express a drop of prostatic and vesicular secretion from the external meatus. Pockets and fistulæ may have to be excised. Free drainage is most important. The writer has not found vaccines to be of value, but still hoping for one that will be efficient.

Ophthalmic Injuries of Warfare.—A. W. Ormond (*Practitioner*, May, 1916) groups the cases that have come under his care at the base hospital into those which have consisted in repairing lids, replacing skin that has been torn away, and rendering sockets capable of holding artificial eyes, those in which the vitreous is filled with blood in cases of concussion blindness, and those in which constitutional disease has become apparent owing to the strain and stress of trench life. With regard to the plastic operations on the lids, he considers it unfortunate that, owing to army regulations, it is necessary to deal with these cases as early as possible, while better results could be obtained if a much longer period was allowed to elapse before any attempt to repair the damage was made. As the result of the primary antiseptic treatment and cleansing of the wound, the tissues recover a more or less healthy appearance, but when they are again interfered with by the surgeon a considerable amount of sepsis is apt to appear, owing, perhaps, to the fact that many organisms lodged in the deeper parts have been disturbed. Consequently, operations that would have been successful ordinarily sometimes miscarry because the parts are not really quiet, and primary union is prevented by a return of an original septic condition. Speaking of foreign bodies in the eye, the writer has been struck by the almost entire absence of sympathetic ophthalmia, and he has seen nothing of the insidious variety of iridocyclitis. This is quite contrary to expectation. Concussion blindness he seems to regard as a neurosis, which, when it is recognized early, and the patient's

mental condition is soothed and encouraged, does not develop into anything like the serious condition which occurs when the reverse is done. The only treatment he has found effectual is suggestion and hypnosis. An unusually large number of cases of interstitial keratitis have developed among the soldiers during the past twelve months. The average age of the patients is greater than is usual in a normal civilian population, nearer thirty than twenty years. The condition differs from the usual attack only in being more severe. A number of cases of recurrent iritis have been seen, most of them associated with urethritis. These are ascribed to the breaking down of resistance to a latent infection by the cold, wet, and fatigue of trench life.

Treatment of Dysentery.—Study of dysenteric conditions affecting the troops engaged in the present war has led Menzer (*Berliner klin. Wochr.*, Nov. 29, 1915) to the view that such manifestations are often the result of infection by organisms normal to the intestine, but which have become greatly modified through environmental changes resulting from improper diet and prolonged exposure to unfavorable conditions of chilling and moisture. Specific treatment with vaccines, therefore, yields unsatisfactory results except in so far as certain group reactions may play a part in immunity. In such dysenteric infections, cathartics should be sedulously avoided, since their use merely aggravates the inflammatory condition already present. The treatment should be a protective one throughout, combined with a diet of warm drinks such as slightly sweetened tea, thin gruels, etc. Much symptomatic relief can be secured by the employment of warm abdominal poultices and hot sitz baths. Warm saline enemas also relieve the suffering and tenesmus greatly. The use of bolus alba or animal charcoal has not proved of much value. Opium should also not be used unless absolutely necessary and then only in small doses. After treatment requires the use of tannalbin, dermatol, and similar preparations; hydrotherapy hastens recovery.

Application of Diathermy to the Cervical Vertebrae.—A. E. Scherbak (*Roussky Vrach*, January 2, 1916) obtained good results from the application of diathermy to the cervical vertebrae in cases of circulatory disturbances of the brain, organic as well as functional. In a case of severe headache which accompanied right sided hemiparesis, hemianopsia with atrophic changes in the eye grounds and loss of hearing, twelve to fifteen applications relieved the headache—the only troublesome symptom. In another case of cerebral syphilis, ten applications relieved the headache, hyperemia, and the noise in the ears, and restored the patient to working capacity. It is interesting that the Argyll Robertson sign, which was present, disappeared after the treatment. Equally good results were obtained in fifteen cases of functional disorders accompanied by circulatory disturbances in the head. In the majority of cases the blood pressure, when above normal, was lowered after each treatment and remained so after a number of applications. The method of application consisted in the use of two electrodes with a combined area of 57.5 square cm. The up-

per electrode was applied to the upper cervical vertebra and the lower to the middle dorsal. From 0.5 to 0.7 ampere was employed, each treatment lasting five to six minutes. The author cautions against prolonged treatment in view of the marked circulatory changes produced in the cerebral circulation, and mentions anemia of the brain, low blood pressure and and excitement as contraindications.

Ulcerative Stomatitis.—After describing the symptomatology and etiology of this condition Kenneth Goadby (*Lancet*, May 6, 1916) suggests the following measures for its treatment. The mouth should be washed carefully with a solution of chromic acid varying in strength from one in 400 to one in 200, and the necrotic membrane should be carefully removed by means of cotton swabs soaked in the same solution. The infected areas should then be painted with a mixture of twenty grains of chlorotone in an ounce of equal parts of alcohol and glycerin, or failing this, a solution of ten grains of cocaine with thirty grains of salol to the ounce may be similarly applied. External heat in the form of fomentations relieves the pain. The diet should be restricted to fluids or semisolids and doses of ten to fifteen grains of potassium chlorate with ferric chloride and magnesium sulphate should be given internally. The interdental spaces should be irrigated, with the aid of a suitable syringe, to cleanse the mouth after each meal. Vaccine treatment should be instituted and is specially demanded in the chronic stages. Owing to the slow growth of the organisms stock vaccines will usually have to be employed. After the acute stage and during convalescence measures should be taken to build up the patient's general health and the mouth should be treated to prevent recurrence of stomatitis and a chronic pyorrhea.

Some Neglected Aspects of Common Colds.—F. P. Smart, in the *Virginia Medical Semi-Monthly* for May 26, 1916, divides common colds into two groups, the infectious, which gradually extend through an entire family, and the vasomotor, caused primarily by exposure, especially unequal exposure of different parts of the body, or by anything that lowers local resistance in the head, the normal saprophytic nasal germs at once becoming parasitic and producing the customary coryza symptoms. When one feels one is taking a fresh cold, the simplest and often the best preventive is to engage in a little vigorous exercise or, if this is not practicable, to take a number of deep respirations in rapid succession. After the vasomotor cold has gained a firm footing it presents the same features and dangers, aside from contagion, as the infectious cold. Probably the best constitutional treatment consists of a brisk purge, a hot mustard foot bath at night, a glass of hot lemonade, ten grains of Dover's powder, keeping well covered, and sleeping late in the morning. Too often overlooked is the matter of preventing complications after the cold has become established. The key to the situation is to secure and maintain free drainage and ventilation of the accessory sinuses and to provide for the removal of irritating products. Where the author has reason to fear sinus trouble he prescribes, in addition to the constitutional treatment, a powder consisting of one

grain of menthol, two grains of sodium bicarbonate, three grains of light magnesium carbonate, four grains of cocaine hydrochloride, and one and a half dram of milk sugar. A little of this is to be snuffed up in each nostril sufficiently often to keep it open and clear, but in no case often than once every two hours. There is practically no danger of contracting a fondness for cocaine from this measure, as no patient uses more than half the amount of the powder mentioned, introducing, therefore, only about two grains of cocaine, most of which, moreover, is washed out again in the nasal secretions. The author also has the patient irrigate the nose with a teaspoonful each of salt and soda in a quart of warm water two or three times a day, using a fountain syringe placed not over two feet above the head. To increase comfort and lessen secretions, S. MacCuen Smith's tablets are ordered, each containing, among other less important ingredients, 1/600 grain of atropine and one quarter grain of camphor. Two tablets are taken every three hours until dryness of the throat or cardiac palpitation is noticed.

Prescription Writing in English.—Bernard Fantus, writing in the *Journal A. M. A.*, for May 27, 1916, presents the various arguments which have been raised in favor of preserving the use of Latin in prescription writing and shows their general invalidity. Many excellent reasons for the use of English in place of the Latin are offered, and as a result of a questionnaire sent to teachers and State boards he concludes that the general sentiment is in favor of adopting the English form of expression for the entire prescription. The advantages of such a method are many, not the least of which would be the considerable time spared the student which could be devoted to the more profitable subjects of pharmacology and the practical aspects of the technic of medication.

Menthol in the Treatment of Tuberculous Sinuses.—Charles Bennett, in the *Glasgow Medical Journal* for February, 1916, calls attention to the good results obtainable in surgical tuberculous conditions by prolonged exclusive use of menthol, which he holds superior to iodoform, iodine solutions, bismuth salts, and other substances hitherto used in these cases. As a substitute for iodoform, menthol is of value in avoiding the odor, skin rashes, and doubtful antiseptic properties of the former, and likewise the necessity of submitting it before use to dry sterilization. Bennett now uses menthol alone in surgical tuberculosis, particularly in the postoperative treatment of conditions where surgical eradication of infected tissue cannot be complete. The solution of menthol found most generally serviceable was as follows:

R Menthol, gr. xl;
Alcohol, 3i.
Fac solutionem.

Sterile white gauze ribbon was soaked in the solution and, the excess of fluid having been pressed out, was ready for immediate use as packing. Such a dressing, Bennett finds, need not be changed for three days. Comparative trials with gauze soaked in alcohol alone left no doubt as to the efficacy of the menthol. The granulations of the sinuses remained of a healthy type, discharge was rapidly reduced to

a minimum, and healing noticeably accelerated. An added benefit was the local anesthetic action, preventing postoperative pain. The skin remained healthy around the sinus margin throughout the treatment, and no undesirable effects from absorption of the menthol were noticed at any time. From the successful action of menthol in tuberculous sinuses with secondary infection, a like beneficial effect in chronic, nontuberculous, septic conditions is inferred.

Treatment of Pulmonary Hemorrhage.—Absolute rest in bed without permitting the patient to make any voluntary movement is the first step in the control of this condition. The effects of such physical rest can be increased, according to John Ritter (*Chicago Medical Recorder*, May 1916) by darkening the room and by the application of an ice bag to the chest over the region from which the bleeding is thought to come. Morphine should be injected at once. Nothing but cold fluids should be allowed, and unless there is need of stimulation, coffee and tea should be forbidden. This total rest must be continued for five days to a week. The chance for clotting of the blood should be increased by repeated exclusion of the extremities from the circulation. Applying adhesive plaster strapping to the affected side of the chest is also of some value. The administration of horse serum or gelatin is often of some value to promote coagulation of the blood and the oral use of pills of liver extract serves the same purpose. The majority of medicinal remedies suggested and used in the past are either useless or actually dangerous, but the temporary reduction of blood pressure in some cases is helpful, for which purpose nitroglycerin is serviceable.

Treatment of Lacerated and Contused Wounds. Robert T. Morris (*International Journal of Surgery*, May, 1916), cites a lacerated hand as an example. His treatment is to anesthetize the patient and to immerse the hand in benzine. The hand is thoroughly scrubbed. After removing it from the benzine the latter is allowed to evaporate, the hand is dried and aristol powder is dusted into the nooks. Iodoform gauze is then loosely packed about it in such a way that the lacerated surfaces are kept apart. The hand is then done up in loose iodoform gauze and the dressing is allowed to remain for several days. When this method has been followed out opportunities for conservative surgery present themselves when the first dressing is removed. For stimulating wounds, balsam of Peru one part in three parts of castor oil is employed.

War Neuroses.—Harry Campbell (*Practitioner*, May, 1916) says that soldiers suffering from functional nervous disorders should be sorted as soon as possible and placed under special treatment, otherwise cases that can be cured rapidly in the nascent stage become chronic, obstinate and fixed, if treated as organic diseases. Neurasthenic patients are best treated by rest and common sense. Hysterical cases need kindness, combined with the strictest discipline. The personality of the physician, who should assume authority, counts for much; some have a kind of genius for treating these cases—a way of handling them that cannot be taught. Much

good may be done by suggestion in the early stages of hysterical cases, especially in those of hysterical blindness; sometimes the patients are told that they will see at a certain time, the exact minute being specified, sometimes a surprise is efficacious. Deaf mutes are more refractory; the best treatment is to reeducate the voice, as in institutions for the deaf. Stammering is treated in the ordinary way. The treatment of hysterical contractures often presents considerable difficulty. One plan is to overcorrect the deformity by means of a plaster of Paris splint, and tactfully to reiterate the suggestion that all spasm will disappear on its removal. Massage and electricity should be avoided.

The Influence of Phosphatic Albumin on the Growth and Development of Bones.—In 1901, A. I. Danilevsky described a substance discovered by him in milk, which he designated as "phosphatic albumin." It is precipitated from the milk whey by alkalis and is apparently in loose combination with the phosphates. It gives no reaction with Millon's reagent, and is therefore not a true albumin, but an albuminoid. According to Vilenkin, the amount of this substance in milk varies from 0.15 to 0.48 per cent. It is rich in salts, the composition of the ash being 50.19 per cent. CaO; 4.48 per cent. MgO; 32.96 per cent. P₂O₅; and 2.44 per cent. SO₃. Vilenkin obtained two albuminoids, one giving the Millon's reaction, the other not. B. I. Slovtssoff (*Roussky Vrach*, February 6, 1916) undertook a series of experiments with this phosphatic albumin to determine its effect on growth and nutrition. He added certain amounts of the substance to the food of pups, rabbits, and rats, and determined the development of the teeth and bones, compared with the controls. His observations lead him to the conclusion that phosphatic albumin has a marked effect on the development of the teeth, and in young animals, also on the long bones. Coincident with more rapid growth, a beneficial effect on the bone marrow was also observed. Apparently this substance in milk belongs to the bone forming elements.

Useful Suggestions in the Treatment of Children.—Polypharmacy is even less permissible in children than in adults; where convulsions have to be treated, Newell Jones (*Western Medical Review*, May, 1916) says that the physician should have a definitely outlined plan of procedure. The first thing to be done is to empty the alimentary tract by gastric and colonic lavage and the administration of a full dose of castor oil or salts, preferably by stomach tube before this has been withdrawn. To suppress the convulsions and reduce the likelihood of recurrence nothing gives better results than full doses of chloral hydrate. Doses of seven to fifteen grains may be given to a child of two years and may be administered either orally, by the rectum or subcutaneously. After the child is quieted, a hot pack may be given. Calcium retention should be increased through administration of codliver oil or a diet rich in calcium salts. Acute coryza may be cut short in children by early application to the nose of a dilute solution of adrenaline every hour or two and the administration of

several doses of atropine. This drug can be given to children safely in a dose of from 1/2000 to 1/1000 grain for each year of age every two or more hours. It must be pushed until there is some drying of the mouth and some flushing of the face. Persistent vomiting will be found to yield to alkalies, in the form of sodium bicarbonate. One rounded teaspoonful of this should be dissolved in a half glass of water and one teaspoonful of the solution given every fifteen minutes.

The High Frequency Cautey for Hemorrhoids and Rectal Bleeding.—Extremely satisfactory results are reported by John A. Hawkins (*Journal A. M. A.*, May 27, 1916) to follow direct electric cauterization of internal hemorrhoids, bleeding spots in the rectum and villous tumors. The cauterization should be preceded by local anesthesia. At each sitting one of the regions to be treated should be thoroughly burned and one or two others lightly done. The burned area should be painted with liquid petrolatum or oil of eucalyptus and two weeks allowed before the next cauterization to give time for complete healing. The method has the advantage of being almost painless.

Office Treatment of Varicose Veins.—Douglas H. Stewart (*American Medicine*, April, 1916) recommends the following:

R	Zinci sulphatis,	gr. x;
	Phenol, .....	.5ss;
	Sp. camphor. }	
	Alcohol, }	ãã 5i;
	Aqua, q. s. ad.....	3i.

A large, superficial, visible vein should be transfixed with the syringe needle and an endeavor made to inject one drop just beyond the wall, a second in the lumen of the vessel, and a third just outside the proximal wall. A bandage making direct pressure should be employed rather than a "round and round" bandage. The dressing should remain in place one week.

Accidental Discovery of a Possible Cure for Pellagra.—W. F. Cole (*Southern Medical Journal*, May) tells how a woman whose children had both round worms and pellagra, gave them a vermifuge, the nature of which she did not know, which cured the pellagra at the same time that it removed the worms. He suspected that a cure had been accidentally effected by sweeping out the intestinal tract and freeing it from pellagra germs along with the round worms, and tried out the result of his reasoning in an apparently hopeless case of pellagra in a boy eight years old, by giving him three grains of calomel, three of soda, and one of san-tonin at bedtime, followed by castor oil in the morning. The feces were found to abound with motile intestinal bacteria that indicated a very polluted condition of the intestinal tract. No blood appeared in the stools after the second day, and the general condition began to improve. Medium doses of calomel and soda followed by oil were given frequently for several weeks, and the boy recovered. Cole believes pellagra to be an infectious epidemic germ disease, that it is not contagious, and that the infection enters through the digestive tract. He suspects the agent to be a protozoon

similar to the plasmodium of malaria, and thinks that it probably attacks the liver, pancreas, and other glands, at an early stage, crippling metabolism and the chemistry of the body, and causing profound derangements of the digestive and nervous systems.

Treatment of Chronic Suppurative Otitis media.—Coates and Ernsner (*Penna. Med. Journal*, May, 1916) recommend vaccines. They start with staphylococci, 250 million, pyocyanus, 500 million, streptococci, 25 million and pseudodiphtheria, 250 million. The dose is repeated every third or fourth day. If there is no improvement after six doses the vaccine is discontinued for two or three weeks, after which a fresh vaccine is prepared. At times the vaccine is administered directly into the middle ear and it may also be given by mouth.

Postoperative Antiseptic Treatment of the Tonsillar Fossæ.—By using a twenty-five per cent. solution of tincture of iodine after the removal of the tonsils, George P. Marquis (*Annals of Otolaryngology, Rhinology and Laryngology*, December, 1915) has reduced the patients' discomfort to a minimum, the majority being able to eat without pain. Immediately following the removal of the gland, a tonsil sized tampon, saturated with alcohol, is placed in the fossa and pressure is made for a couple of minutes. This is usually sufficient to prevent hemorrhage. The pillars are then retracted, so as to give an unobstructed view to every part of the fossa, and the iodine is carefully applied to the entire surface. As a rule, there is almost no soreness the next day, but when it is present the same solution is applied.

Treatment of Itching Due to Cold.—The first requisite, according to P. G. Unna (*Berliner klin. Wochr.*, Dec. 6, 1915), is to convert the congestion of the part from one of passive stasis to one of active congestion. This can be accomplished by massage, the movements of which are to be made in the direction of the venous return. Warmth should be secured for the skin by baths and by mild counterirritation through painting the skin of the affected region with the following:

R	Ichthyolis, .. }	
	Olei ricini, .. }	ãã to grams;
	Ætheris, ... }	
	Alcoholis, .....	.70 grams.
M.	Ft. lotio.	

After this has dried for a few minutes the hands or feet should be immersed in hot water for twenty to thirty minutes and massaged as directed. This should be repeated about twice daily. The remainder of the edema and escaped blood cells may be removed from the tissues by applying the following ointment to the parts:

R	Tincture arnicae, }	
	Calci carbonatis, ... }	ãã to grams;
	Sulphuris præcipitati,	
	Unguenti zinci oxidi, q. s. ad.....	100 grams.
M.	Ft. unguentum.	

Where the measures outlined cannot be applied, the painting of the parts with pure ichthyol and their subsequent enclosure in a dressing of leucoplast will give great relief.

Pith of Current Literature.

BERLINER KLINISCHE WOCHENSCHRIFT

December 6, 1916.

Neuralgia of the Pudic Nerve, by G. Zuelzer.

—Although not a common condition, this affection is probably of more frequent occurrence than usually supposed. Its importance lies in the fact that its symptoms closely resemble those of cystitis, and in the amount of suffering entailed. The symptoms are intense desire to micturate, painful pressure in the region of the bladder, painful micturition, increased frequency and the passage of small amounts of urine at a time—usually between twenty and 100 c. c. of urine. It differs from cystitis clinically in the larger amount passed at the minimum and in the fact that the urine voided is clear and free from microscopical or chemical abnormalities. Sensory examination of the perineal region with the aid of a needle will reveal a rhomboidal area of hyperesthesia corresponding to the distribution of the pudic nerve. The condition yields readily to the administration of the coal tar analgesics such as pyramidon, aspirin, etc., and the local application of heat.

PRESSE MÉDICALE.

April 6, 1916.

Injuries to the Sympathetic Fibres and Blood-vessels in Wounds of the Extremities, by Henry Meige and Athanassio-Bénisty.—Attention is called to the importance of injury of sympathetic fibres in the causation of vasomotor, thermic, trophic, and secretory disorders in wounds of extremities, especially those involving the sciatic or median nerves, which are particularly rich in sensory fibres and vessels, and hence also, in sympathetic fibres. The latter fibres accompany not only the spinal nerves, but also all arterial vessels down to the capillary loops, the glands of the skin, the hair follicles and some of the terminal nerve corpuscles themselves. Painful manifestations of the causal type are closely related to vasomotor disturbances. Recent observations in operating in cases of nerve wound showed in a striking manner the presence of congestion of the nerves where causal symptoms had existed. Associated injury to vessels was often a marked feature in nerve wounds, and partly to it, partly to injury of the sympathetic fibres accompanying the vessels or nerve trunks, are ascribed the cyanotic appearance, dryness, trophic changes, and atypical anesthesia often noted in wounds of limbs.

BRITISH MEDICAL JOURNAL.

May 6, 1916.

Congenital Atresia of the Duodenum Successfully Treated, by N. P. Ernst.—Operation was performed eleven days after birth on a normal, healthy infant who showed signs of congenital intestinal obstruction. The duodenum from a short way below the ampulla of Vater to its junction with the jejunum was found to be completely obliterated. Enterointerostomy was performed, uniting the duodenum, at about the junction of the superior and descending portions, with the upper end of the jejunum. After several days the symptoms of the

previous obstruction had completely subsided, food was well taken, and the infant began to gain. Recovery was complete and the child soon resumed its normal weight and development. This is probably the only case in which successful operation has been performed for the relief of congenital intestinal atresia occurring at so high a point in the alimentary canal.

LANCET.

May 6, 1916.

Factors in the Pathology of Gas Gangrene, by W. d'Este Emery.—*Bacillus perfringens*, contrary to popular conceptions, is a very frequent contaminating organism in wounds, but in the majority of instances it fails to produce gas gangrene and seems nonpathogenic. Emery has sought the reasons for the failure of the organism to prove pathogenic in some cases while in others it is rapidly destructive to tissue with death of the victim as the common result. Investigation led the author to the belief that the organism was readily destroyed by the normal blood serum and plasma and was strongly chemotactic toward leucocytes which promptly destroyed it in great numbers. Under ordinary conditions, therefore, the organism is overwhelmed by the natural protective forces of the body. The special conditions which were found to lead to the rapid development of this bacillus with the production of gangrene and death were found to be such as resulted in destruction of tissues and interference with the local circulation. Any retardation or occlusion of the local circulation deprived the part of the capacity to throw out sufficient defense against the organism and, since the organism was capable of extremely rapid multiplication, it readily overcame the feeble defense offered. Spread of the disease was then made possible by an overwhelming of the region infected with the toxins of the bacillus, which are destructive to leucocytes when present in abundance. Further, the action of the toxic materials and of the gas produced was found to be such as to cause further interference with the blood supply to the part. The logical deduction from these observations would be to keep infected wounds well drained and to take every possible means to promote the circulation through the injured part.

BOSTON MEDICAL AND SURGICAL JOURNAL.

June 1, 1916.

Five Years' Progress in the Diagnosis and Treatment of Consumption by Massachusetts Physicians.—John B. Hawes, 2d, says that in the early diagnosis of tuberculosis distinct improvement has been made during the past five years, as shown by the increased number of diagnoses of incipient tuberculosis without positive sputum. There has been a large increase in the number of patients who have consulted a physician before they suspected that they had consumption, as shown by the figures 77 out of 500 in 1911, and 408 out of 500 in 1915. In cases of hemorrhage fewer patients have previously been told that they did not have consumption in 1915 than in 1911; likewise with regard to patients who were told that they did not have consumption at the first consultation. There has been an encour-

aging increase in the number of applications for admission to State sanatoriums made by physicians on examination of the patient or soon after. Of the patients who consulted two or more physicians, forty-one per cent. went to another physician in order to be sure that the first was right, twenty-three per cent. because they did not improve under the treatment given by the first physician, and seventeen per cent. because the first physician advised them to do so. According to the statements given by the 500 patients it cost \$5,435, or approximately \$10 a patient, for them to obtain diagnosis and treatment for their condition.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

May 27, 1916.

Scarlet Fever, by Louis I. Dublin.—A total of 1,153 cases were studied with special reference to the sequelae of the disease and its influence upon the subsequent death rate of insured patients. Nearly eighty-two per cent. of the cases occurred between the ages of two and ten years, but the greatest disposition to the disease was found to be between the ages of three and seven years. The total death rate in this series amounted to 7.8 per cent. of the cases, but between the ages of two to ten years the death rate was nearly nine per cent. After the latter age this fell rapidly. Over ninety per cent. of all deaths from scarlet fever were found to occur in children under ten years of age. In sixty-two of the ninety deaths recorded there were complications—eleven of kidney involvement, seven of the heart, thirteen pneumonias and four of meningitis. Among the 1,063 survivors, thirty-one had nephritis, the same number had otitis media, there were twenty-two cases of adenitis and eleven of pneumonia. Quite contrary to expectation, the occurrence of scarlet fever had no influence upon the subsequent mortality among its victims. The calculated average death rate was 18.6 and actually was eighteen for the number and age average under consideration. Among those dying none succumbed to kidney disease, which would seem to indicate that if the renal complications of scarlet fever are survived during the active stage of the disease they do not lead to permanent damage of such an extent as to result fatally in five years.

Duration of the Nursing Period in Women of the United States, by A. Graeme Mitchell.—The literature of European studies relating to this subject is reviewed and, although the evidence is somewhat conflicting, it indicates that there is little or no decline in the duration of the lactating period. The conclusions regarding the nursing period in this country, so far as women of the poorer class are concerned are, that here also there has been no decline in breast feeding during the past fifteen years; that the women of this class compare favorably with those of the more prosperous classes; that the average duration of nursing is about six months; that twenty per cent. of women do not nurse at all, forty-two per cent. nurse for six months or over and thirty-four per cent. nurse for nine months or longer.

Etiology of Typhus Fever in Mexico, by Peter K. Olitsky, Bernard S. Denzer and Carlos E. Husk.—Cultural and animal experiments carried out with

blood obtained from cases of typhus fever in Mexico revealed the presence in most of the cases during the height of the disease of *Facillus typhi exanthematici* described by Plotz, Olitsky and Baehr. Cultures taken from the lice found in the clothing of typhus fever patients also showed the same organism and agglutination tests performed with the serum of typhus cases after the crisis showed completely positive reactions against the organisms isolated.

Selective Localization of Streptococci in the Bronchial Musculature, by Sverre Oftedal.—Following the methods of his associate, E. C. Rosenow, the author was able to isolate from the sputum of a number of cases of bronchial asthma streptococci which, when inoculated into susceptible animals, produced characteristic changes in the lungs and bronchial musculature. The inoculated animals showed clinical evidences suggestive of asthma, and post mortem their lungs were found to have undergone decided alterations including the fusion of many alveoli, development of true emphysema, and evidences of spasmodic contracture of the bronchial musculature. The organisms were obtained in pure culture from the lungs of such infected animals, but could not be found in the blood stream or in other tissues. The characteristic localization of the organisms in the lungs was in the muscular coat of the bronchi. These findings harmonize, on the one hand with the recent observations regarding the specific affinities of many strains of streptococci, on the other, with many of the clinical features of spasmodic asthma in man.

MEDICAL RECORD.

May 27, 1916.

Sterility in the Female, by William P. Healy.—Absolute sterility is due to malformations or congenital anomalies, or to inflammations and infections. Relative sterility is occasioned by tumors such as fibroids, by uterine displacements, or by traumatic lesions of the pelvic organs. Gonorrheal inflammation is the chief cause of absolute sterility. Congenital malformations belong usually to one of three groups, namely, a poorly developed uterus with scanty menstruation, a small anteverted uterus with a normal period except for dysmenorrhea, or a uterus normal in size but with a long conical stenosed cervix accompanied by profuse, prolonged, and painful menstruation. Each of these groups may be complicated by retroversion. Other causes of absolute sterility are endometritis with intra-uterine or submucous uterine fibroids, rarely tuberculosis of the endometrium, and increased acidity of the vaginal secretion. Sterility associated with uterine anomalies is benefited by dilatation and curettage and the use of a stem pessary for three weeks; an elongated cervix in addition should have a Dudley operation. The treatment of gonorrheal cases is unsatisfactory, as the disease is usually not active when the patient appears for treatment.

Arteriosclerosis, by Edward Livingston Hunt.—Syphilis and lead poisoning are common causes of arteriosclerosis, while alcohol is not so potent as excessive eating, which inevitably induces high blood pressure. An important point is that the sclerotic process does not affect all arteries equally; another

is that in different patients the process may affect different coats of the vessels. Furthermore, there is a variability in the character of the process which is diffuse, multiple, and varied. The symptoms will depend upon the type and situation of the disease.

Anatomical Cause of the Frequency of Hydrocephalus in Childhood, by William Browning.—From a mechanical standpoint there are three causes of hydrocephalus, namely, oversecretion, closure of the outlets from the ventricles, and interference with the efferents from the subarachnoid space. Its frequency in childhood is explained by the closure of the spinal outlets from the time of birth and the imperfect development of the Pacchionian bodies at this period.

ARCHIVES OF DIAGNOSIS.

January, 1916.

Two Varieties of Palpatory Percussion, by E. E. Cornwall.—What the author terms "feel" percussion is effected by rapidly making a series of light touches or taps along a line on the surface of the body with the tip of a bent finger, motion being mostly at the wrist. Between the taps the finger tip is raised but slightly from the skin, and no sound is made by its impact. The sensation sought is one of difference in density at different points, informing the physician of the presence of a solid mass. The procedure is of value in mapping out the cardiac, hepatic and splenic areas, the lower border of the stomach (which yields a narrow area of increased density), the inner border of the cecum and ascending colon, and the lower border of the transverse colon. The second variety, or "punch" percussion, is based on the fact that the pressure sense of the examiner is more responsive to a sudden impact than to slow pressure of the same intensity. The middle finger of the right hand is partly flexed on the palm, held rigidly straight, and thrust vertically, with considerable force, into the region to be examined. The method is of value in exploration of the abdomen for deep lying masses or a displaced kidney.

The Tongue in the Diagnosis of Gastric Diseases, by Douglas Vander Hoof.—There is but one condition of the tongue from which any conclusion can be reached as to the state of the gastric secretions, viz., the bald, red, and often glazed tongue seen in many cases of gastric acidity—often erroneously ascribed to gastric states associated with excessive hydrochloric acid secretion. In a series of 1,500 cases, the author found the tongue coated in sixty-five per cent. of cases of normal gastric acidity, subacidity, or acidity, and in seventy-two per cent. of cases of hyperacidity. In the diagnosis of gastric diseases, practically no significance can be attached to the appearance of the tongue. Common causes of coated tongue are nasal obstruction (including that of febrile conditions), absence of friction (due to liquid diet, hurried eating, or a high, arched palate), and perversion of the salivary secretion. The treatment of coated tongue consists in removal of the cause, whatever that may be, and removal of the accumulated epithelium and fungous growths constituting the "fur" by means of a small silver hoe, a procedure first recommended by Oliver Wendell Holmes.

ARCHIVES OF RADIOLOGY AND ELECTROTHERAPY.

May, 1916.

Tuberculosis of the Bones and Joints, by R. W. A. Salmond.—In the knee joint the disease may start in the femur, tibia, patella, synovial membrane or fibula. It is to be differentiated from hydrops articuli, Schlatter's disease, bleeder's knee and rheumatoid arthritis. In the ankle joint the sites of origin are the astragalus, tibia, synovial membrane or the fibula. Here it is to be differentiated from sprained ankle. In the tarsus any of the bones may be the primary seat, or it may be secondary to disease of the ankle joint. Flat foot is to be differentiated. The shoulder joint is rarely affected, and, if so, it is often accompanied by disease of the lung. Here, rheumatoid arthritis, subacromial and subdeltoid bursitis have to be differentiated. In the elbow joint it may start in the humerus, olecranon, head of the radius or in the synovial membrane. Any of the bones entering into the formation of the wrist joint may be affected. In the metacarpals and phalanges either the shaft or the joint is involved, the former being the more common and usually seen in young children. It is to be differentiated from syphilis of the phalanges, bone cyst and enchondroma. In the skull, syphilis and secondary malignant disease are sometimes difficult to differentiate from tuberculosis. In the ribs it usually starts as a periostitis—rarely in the interior.

Radiographs of the Orbital Region, by H. M. Stenvers.—In studying the deformities of the ethmoid, Rhese has described a method of applying the plate to the skull: "The plate is so adjusted to the face that one edge rests upon the zygoma of the side under examination and the other upon the ridge of the nose." The other orbit of the same individual should be taken in an exactly similar manner for the purposes of comparison. After citing several cases the author reaches the following conclusions: 1. Rhese's method is, beside being important for the ethmoid, still more significant for the orbit; 2, in taking radiographs the individual construction of the skull should be taken into consideration; 3, radiographs are of great importance for clinical diagnosis—in some cases indispensable; 4, hemorrhages in the orbit can be reproduced by means of x rays; 5, dimness in the picture of the os ethmoidale does not always indicate an injury of the bone.

Pin in Esophagus, by Emry-Jones.—The patient was seen several hours after the pin had been swallowed. The screen showed the pin to be open with the angle upward. An esophagoscope was passed and the pin clearly seen. It could not be grasped with the special forceps so an incision was made along the anterior border of the sternocleidomastoid muscle. The muscle was drawn outward while the trachea was retracted inward. A longitudinal incision was made in the esophagus and the pin removed. The incision was sutured with catgut. A drain was inserted for thirty-six hours. A curious feature of this case was the fact that the x ray revealed the presence of bilateral cervical ribs.

Treatment of the Scars of War, by Noel H. M. Burke.—Two cases of dense scarring were treated with electric light bath for twenty minutes followed

by ionization with chlorine at and around the scar for one half hour. This was done three times weekly and massage and movements were done daily at a later hour. Both cases showed decided improvement. One patient was able to rejoin his regiment.

Letters to the Editors.

CONCERNING THE ETIOLOGY OF GASTRIC ULCER AND MICROBIC AFFINITY.

NEW YORK, June 5, 1916.

To the Editors:

In reading over the back numbers of your esteemed JOURNAL, which I had no time to read till now, I came across an article by Dr. Charles H. Mayo, of Rochester, Minn., in your issue for March 4th, entitled Gallbladder Diseases, about which you will permit me to say a few words, even at this late date, in view of the eminence of the author, whose statements will be widely quoted and erroneous ideas will thus be spread. Doctor Mayo indulges a great deal in bacteriological discussions and appears to believe that gastric or peptic ulcer is due to bacterial infection, and he is furthermore elated over Doctor Rosenow's discovery of the selective affinity of bacteria.

I regret very much that I must disagree with my illustrious confrère, who, of course, relies only on the reported findings of so called investigators, he not being a bacteriologist. As I must be brief in a letter, I will simply say, I entirely deny the correctness of his statements.

Concerning the experimental part of the work, if the reader is not overawed simply by a name, and thinks that not everything published in a certain official medical organ is the sacred truth, I will refer to some of my published works: Vide, Experimentelle Untersuchungen zur Bestimmung der Toxizität des Mageninhalt, etc.; *Archiv für Verdauung Krankheiten*, xiv, 3; La Bactériologie du carcinome de l'estomac, *Presse médicale*, December 12, 1906; On Diplococci and Pneumococci, Their Pleomorphism, etc., *Medical News*, November 18, 1905.

Of course I cannot blame those gentlemen for not noticing any of those works, which do not emanate from the workshop bearing the name of or supported by some multi-millionaire. But if any one has only a little power of reasoning, he is bound to admit that peptic ulcer is not a bacterial infection, certainly not caused by the coli bacilli and cocci group as some investigators allege: 1. Why is gastric ulcer so rare in children who are so subject to affections caused by those bacteria? 2. Why should it be more frequent in connection with hyperchlorhydria than hypochlorhydria, or entire achlorhydria, where the development of these bacteria is less hindered? 3. How would simple gastroenterostomy, i. e., simple drainage of the stomach contents, so easily cure a bacterial infection, especially if it penetrates through the blood, as is asserted by some of those who favor this theory? Some other objections I cannot raise here. As for Doctor Rosenow's discovery concerning the selective affinity of bacteria, I must say that I found them devoid of such special affinity, and so do others, if you read reliable works on the subject. Thus, for instance, by injecting intraperitoneally or subcutaneously pneumococci obtained from the expectoration of man into a mouse, I found the result to be a general infection, with very little lung changes; by injecting the same strains into a rat intraperitoneally, the result was a peritonitis, or a local abscess when injected subcutaneously. These latter results are not, however, always obtained. In fact, you cannot obtain even a typical experimental pneumonia except in certain animals, such as the sheep, and only by injecting the pneumococci into the lungs, and then some authors are dubious even about this fact. By what hocus pocus Rosenow obtained his results I know not, no more than I know how Cannon, who is much quoted, concluded from his experiments that the acidity of the stomach is the cause of the pyloric opening, which is not so.

If, however, we keep in view the fact that a certain professor of Pennsylvania University stated in an article about milk that "the coli bacilli do not coagulate milk, they have spores and are not easily destroyed by heat," all of which is revolting ignorance, as it is quite the contrary, and a

New York Hippocrates, to whom monuments are erected to perpetuate his name, says, "aerobic bacilli—the streptococci and hay bacilli—require high temperature to be destroyed," which sentence is sheer nonsense, and one might imagine it was a printer's mistake, if the whole article was not teeming with such absurdities—the reader will do well to use judgment in hearing or reading things emanating from persons in high positions, and not consider them as sacred truths.

There is a premium on ignorance nowadays, provided you have what is called personality, i. e., you can attract a crowd and get a following of knaves and fools.

E. PALIER, M. D.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

The Intestinal Putrefactions. Clinical Studies of Enterocolitis. By CHARLES FENNER PECKHAM, M.D. Providence, Rhode Island: Snow & Farnham Co., 1916. Pp. viii-91.

The title of this small volume fully implies the scope of the work, for the essential purpose of the author has been to discuss from as many points of view as possible the whole subject of the putrefactive processes which may occur within the intestinal tract. This he has done with an able hand and in the light of considerable experience; his remarks are the more valuable on account of the thoroughness with which he has studied his own material. The main conditions dealt with are enterocolitis, intestinal putrefaction of the indolic type, the saccharobutyric type, the acetic, the oxalic, the oleic, the ammoniacal, and the uric acid types. To each of these he has devoted a short, but well presented chapter. In addition he has given space to a valuable outline of the methods of urinary and fecal examination as they bear upon the subject in hand. Malaria, syphilis, and tuberculosis come in for brief mention, as well as the subject of protein poisoning. The work is closed with a chapter devoted to the treatment of enterocolitis, which is pregnant with useful and common sense suggestions, and one in which the subject of enterocolitis is considered in a general way, with special reference to the most common factors in its development. He takes his fling at several of our customs which have grown apace with the changing times, such as our tendency to underclothe ourselves, our neglect of the selection of suitable foods, their improper preparation, the practice of using large amounts of canned goods of doubtful age and soundness, and the habit of dining from the tables of restaurants where the chances of infection through the uncleanness of the personnel are enormous. No one, physician or educated layman, can read this little treatise without considerable profit, and while the brevity of the world leaves something to be desired, it is nevertheless a useful contribution to the literature of digestive disorders.

Diagnose und Therapie der Gonorrhoe beim Manne. Von Sanitätsrat Dr. S. JESSNER, Königsberg i. Pr. 2. verbesserte Auflage. Würzburg: Verlag von Curt Kabitzsch, 1916. Pp. 169.

This work on gonorrhea in the male is good as far as it goes. It has not a few points worthy of commendation, noticeable among which are the author's clearness of diction and his orderly arrangement, as well as his treatment of the subject matter. It would seem, however, that in a book of 169 pages, much more ground might have been covered. Among the omissions we note the following: There is no reference to the complement fixation test, notwithstanding that it has been one of the approved methods of diagnosis in America for a number of years. Only one page is given to the important subject of the seminal vesicles, and no mention is made of the surgery thereof. In like manner, the subject of surgical intervention in epididymitis is shunned, and nothing is said of the operations for sterility. Too little space is given to prostatic abscess, and none at all to the indications for surgical interference in this condition.

Interclinical Notes.

According to the *Survey* for June 10th, Doctor Cabot says that "one of the saddest chapters in the history of science is the psychoanalytic movement." Other sad chapters are those written on the medical profession by Doctor Cabot for a popular monthly.

Dr. James Frederick Rogers, a good friend of this JOURNAL, contributes a paper on Shakespeare as Health Teacher to the *Scientific Monthly* for June. He seems to be the only physician represented in this issue, although there are doctors of other sciences. The Punch Bowl, by Dr. Vaughan McCaughey, promised to be sensational, but the reference is to Honolulu's famous volcano. This magazine is quite as valuable and entertaining as it was under its former name, and we still commend it gladly to our friends.

The *Journal of the Outdoor Life* for June is a most attractive looking number, handsomely illustrated. Dr. A. M. Rothrock, Dr. Karl Schäffle, and Dr. Eugene R. Kelley contribute instructive papers, while convalescent patients write on various aspects of the white plague, first hand observation lending value to their communications. We think it a pity that the usefulness of this journal to the tubercular subject is indicated only in a subtitle.

A review of the world's history for the past month, and interesting details concerning persons in the foreground open the ball in the June *Current Opinion*. Kind words are spoken of the drama, *The Cinderella Man*, which has been severely roasted by other, more sophisticated critics as a wishy washy production. In Science and Discovery, we note an analysis of the opinions of Dr. John D. Quackenbush on the influence of the subconscious mind on health. We fear that the doctor's opinions are confined to himself and certain of the laity. Bad luck to some people is as hardening as physical obstacles are; others seem to starve unless they overeat. Such theories as the doctor's should not be presented to the public without a warning that they are unorthodox.

The *Outlook* for May 31st discusses editorially the conflicting accounts of the health of German babies, Dr. E. von Mach having appealed to American sympathy on account of their being starved to death, while S. S. McClure has insisted that the death rate among German babies is steadily falling, and that never have they thriven as they do today. It is a curious fact that the infantile death rate in Berlin, with all the vaunted medical science of that town, where our graduates have been anxious to study, is higher than in New York. We shall be doing the medical teaching of the world ere long.

We should not like to publish the NEW YORK MEDICAL JOURNAL in the circumstances which surround the issuance of *La libre Belgique*, which the *Outlook* for May 31st discusses editorially. It is now sixteen months old and has never been issued twice from the same office of publication, on account of German disapproval. There is plenty of hard work and excitement in getting out a weekly paper even at the same address. The *Outlook* pays its respects to the army bill, as ridiculous an act as Congress could devise, even with its customary neglect of expert advice. The absurd medical regulations are in point, although it is now over twelve years since Japan showed the way.

According to *Commerce and Finance* for June 7th, the well known physical trainer, William Muldoon, attributes his admirable figure to a simple practice inculcated in early manhood. He says: "I was taught in early manhood not to throw my shoulders back, stick my chest out, draw my stomach in, or hold my chin down like a goat preparing to butt, but to always try and touch some imaginary thing with the crown of my head. If one tries to do that—first understands how to try and then tries—he doesn't have to pay any attention to the rest of his physical being; that effort to touch something above him, not with his forehead, but with the crown of his head, will keep every particle of his body in the position that Nature intended it should be. And as a boy I was advised to frequently back up against the wall and make the back of my head, my shoulders,

hips, heels, all press against the wall at the same time; and in that way get an idea of what was straight, or, in other words, how crooked I was becoming by drooping." This formula of Mr. Muldoon's is extremely simple and easily remembered. Our friends should put it in practice and teach it to their patients and their patients' children.

Meetings of Local Medical Societies.

MONDAY, June 19th.—Medical Society of the County of Erie; Elmira Clinical Society.

TUESDAY, June 20th.—Medical Society of the County of Kings; Binghamton Academy of Medicine; Syracuse Academy of Medicine; Ogdensburg Medical Association; Oswego Academy of Medicine.

WEDNESDAY, June 21st.—Medico-Legal Society, New York; Buffalo Medical Club; Bronx County Medical Society.

THURSDAY, June 22nd.—Ex-Interne Society of Seney Hospital, Brooklyn; Medical Union, Buffalo; New York Physicians' Association.

FRIDAY, June 23rd.—Italian Medical Society of New York.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending June 7, 1916:

Banks, Charles E., Senior Surgeon. Relieved from special temporary duty on Safety First Train about June 9th and directed to rejoin station at Milwaukee, Wis. **Cox, O. H.**, Assistant Surgeon. Granted fourteen days' leave of absence, from July 1, 1916. **Gardner, C. H.**, Surgeon. Granted one day's leave of absence, June 6, 1916, under paragraph 193 of the Service Regulations. **Gwyn, M. K.**, Surgeon. Relieved at Cape Fear Quarantine Station and directed to proceed to the Marine Hospital, Stapleton, N. Y. **Kearny, R. A.**, Passed Assistant Surgeon. Relieved at Bureau and directed to proceed to the Marine Hospital, Boston, Mass. **Mathewson, H. S.**, Surgeon. Granted seven days' leave of absence in the month of June, as the exigencies of the Service permit. **Paine, Liston**, Assistant Surgeon. Relieved at Victor, Montana, and directed to proceed to Chicago, Ill., to join Safety First Train, about June 9, 1916. **Robinson, D. E.**, Surgeon. Granted one month's leave of absence, from July 1, 1916. **Stoner, George W.**, Senior Surgeon. Granted five days' leave of absence, from May 30th, under paragraph 193, Service Regulations. **Sweet, E. A.**, Passed Assistant Surgeon. Directed to attend the annual meeting of the Association of Surgeons of Norfolk and Western Railway, June 7 and 8, 1916, at Old Point Comfort, Va. **Von Ezdorf, R. H.**, Surgeon. Granted five days' leave of absence, from June 12, 1916. **Warner, H. J.**, Passed Assistant Surgeon. Relieved at Tampa Bay Quarantine Station and directed to proceed to Immigration Station, Ellis Island, N. Y. **Wilbert, M. I.**, Technical Assistant. Authorized to attend the meeting of the American Medical Association at Detroit, Mich., June 12 to 16, 1916.

Boards Convened.

Boards of medical officers to convene Monday, June 26, 1916, at 10 o'clock a. m., for the physical examination of candidates for appointment to cadetship in the United States Coast Guard, with locations and detail as follows: Bureau, Washington, D. C., Assistant Surgeon General W. G. Stimpson, chairman; Passed Assistant Surgeon W. F. Draper, recorder. Marine Hospital, Detroit, Senior Surgeon H. W. Austin, chairman; Surgeon H. W. Wickes, recorder. Marine Hospital, Stapleton, N. Y., Senior Surgeon G. W. Stoner, chairman; Passed Assistant Surgeon C. P. Knight, recorder. Government Building, Milwaukee, Senior Surgeon C. E. Banks, chairman; Acting Assistant Surgeon R. J.

Bach, recorder. Marine Hospital, San Francisco; Senior Surgeon L. L. Williams, chairman; Assistant Surgeon D. S. Baughman, recorder. Marine Hospital, Chicago, Surgeon J. O. Cobb, chairman; Assistant Surgeon R. R. Spencer, recorder. Marine Hospital, Boston, Surgeon B. W. Brown, chairman; Passed Assistant Surgeon W. M. Bryan, recorder. Marine Hospital, Buffalo, Surgeon C. H. Gardner, chairman; Acting Assistant Surgeon William L. Varn, recorder. Marine Hospital, New Orleans, Surgeon R. H. von Emdorf, chairman; Assistant Surgeon S. L. Christian, recorder. Marine Hospital, Baltimore, Surgeon C. W. Vogel, chairman; Acting Assistant Surgeon Harry Schnuck, recorder. Seattle, Wash., Surgeon B. J. Lloyd, chairman; Passed Assistant Surgeon E. Krulish, recorder. Galveston, Texas, Surgeon L. P. H. Bahrenburg, chairman; Assistant Surgeon A. R. Sweeney, recorder. Philadelphia, Surgeon H. McG. Robertson, chairman; Passed Assistant Surgeon Louis Schwartz, recorder. Norfolk, Va., Acting Assistant Surgeon R. W. Browne, chairman; Acting Assistant Surgeon W. W. Silvester, Jr., recorder.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending June 10, 1916:

Austin, Thomas C., Captain, Medical Corps. Ordered to Fort Sam Houston, Texas, for temporary duty at the base hospital. **Brechemin**, Louis, Jr., Major, Medical Corps. Ordered to proceed to Harlingen, San Benito, and Mercedes, Texas, in turn, for administering the typhoid prophylactic and smallpox vaccine to the Third Regiment of Texas troops. **Bull**, Raymond C., First Lieutenant, Medical Corps. Relieved from duty with Ambulance Company No. 3. **Chamberlain**, Weston P., Major, Medical Corps. Relieved from duty with the Thirtieth Infantry in camp at Fort Sam Houston, Texas, and ordered to report to the department surgeon for temporary duty in his office. **Connor**, Clarence H., Captain, Medical Corps. Having completed the duty for which he was ordered to Washington, D. C., will return to his proper station; leave of absence for ten days is granted. **Hewitt**, John E., First Lieutenant, Medical Reserve Corps. Ordered to active duty and will proceed to Fort Riley, Kansas, and report to the commanding officer of that post for duty. **McDill**, John R., First Lieutenant, Medical Reserve Corps. Resignation of his commission as an officer of the Medical Reserve Corps has been accepted by the President, effective June 7, 1916. **McDonald**, Robert C., Captain, Medical Corps. Ordered to proceed to Harlingen, San Benito, and Mercedes, Texas, in turn, for administering the typhoid prophylactic and smallpox vaccine to the Third Regiment of Texas troops. **Moore**, Harvard C., First Lieutenant, Medical Reserve Corps. By paragraph 3, Service Order 122, is ordered to the Cantonment Hospital, Columbus, N. M., for temporary duty. **Morse**, Arthur W., Major, Medical Corps. Ordered from Fort Sam Houston, Texas, to Marfa, Texas, for the purpose of completing the physical examination of and administering the typhoid prophylactic and smallpox vaccine to the Fourth Regiment of Texas troops. **Murtagh**, John A., Major, Medical Corps. Ordered to report to the commanding officer, Fort Sam Houston, Texas, for temporary duty. **Noyes**, Edward A., First Lieutenant, Medical Reserve Corps. Ordered to Fort Sam Houston, Texas, for temporary duty at the base hospital. **Page**, Henry, Major, Medical Corps. Granted fourteen days' leave of absence, effective on or about June 7, 1916. **Petters**, Frederick H., First Lieutenant, Medical Reserve Corps. Directed to proceed to the Walter Reed General Hospital, Washington, D. C., and report to the commanding officer of that hospital for temporary duty. **Rice**, William F., First Lieutenant, Medical Reserve Corps. Ordered to proceed to Fort Sam Houston, Texas, for assignment to temporary duty. **Robbins**, Chandler P., Major, Medical Corps. Ordered to temporary duty as surgeon of the Eleventh Infantry, at Douglas, Ariz., from Fort Sam Houston, Texas. **Rogers**, Thomas A., First Lieutenant, Medical Reserve Corps. Ordered to

active duty in the service of the United States on account of an existing emergency, and will proceed to Plattsburg Barracks, New York, and report to the commanding general, Eastern Department.

Each of the following named officers of the Medical Reserve Corps is assigned to station at the post specified after his name, and upon his relief from his present duty in the Southern Department will proceed to join the station to which he is assigned: First Lieutenant Joseph L. Farden, Fort Meade, South Dakota; First Lieutenant Arden Freer, Fort Bayard, New Mexico; First Lieutenant Edwin B. Maynard, Fort Benjamin Harrison, Indiana; First Lieutenant Harvard C. Moore, Ambulance Company No. 1, Fort D. A. Russell, Wyoming; First Lieutenant Paul A. Schule, Fort Des Moines, Iowa.

Births, Marriages, and Deaths.

Born.

Robbinovitz.—In Brooklyn, N. Y., on Tuesday, May 30th, to Dr. and Mrs. Samuel Robbinovitz, a son.

Married.

Marsh—Briggs.—In Wollaston, Mass., on Wednesday, May 31st, Dr. Harold Edward Marsh and Miss Iva Mitchell Briggs. **Megahan—Lichty**.—In Elkton, Md., on Wednesday, May 31st, Dr. Alvin Ray Megahan, of Jeannette, Pa., and Miss Alice Lichty. **Nagle—Kennan**.—In New Haven, Conn., on Thursday, June 1st, Dr. William T. Nagle and Miss Alberta Kennan. **Sullivan—O'Connor**.—In Omaha, Neb., on Wednesday, May 24th, Dr. John P. Sullivan and Dr. Kathleen O'Connor.

Died.

Corbett.—In Washington, D. C., on Sunday, June 4th, Dr. Elizabeth W. Corbett, aged eighty-two years. **Coxhead**.—In Oakland, Cal., on Saturday, May 27th, Dr. Thomas C. Coxhead, aged ninety-three years. **Delano**.—In Providence, R. I., on Friday, June 2d, Dr. Richard F. Delano, aged fifty-four years. **Duntun**.—In Brooklyn, N. Y., on Tuesday, June 6th, Dr. Harlow E. Duntun. **Foerster**.—In New York, on Thursday, June 1st, Dr. Francis Foerster, aged sixty-two years. **Gibson**.—In Lexington, Ky., on Sunday, May 28th, Dr. James Gibson, aged forty-six years. **Goodridge**.—In Flushing, N. Y., on Wednesday, May 31st, Dr. Edwin A. Goodridge, aged seventy-six years. **Greene**.—In Annis-ton, Ala., on Friday, May 26th, Dr. Allen A. Greene, aged forty-six years. **Hanson**.—In Sandusky, Ohio, on Thursday, June 1st, Dr. James S. Hanson, aged forty-eight years. **Jacob**.—In Waukesha, Wis., on Sunday, May 28th, Dr. Benjamin U. Jacob, aged sixty-six years. **Keam**.—In St. Paul, Minn., on Friday, June 2d, Dr. Alfred P. Keam, aged sixty-three years. **Kelly**.—In Woodman, Colo., on Tuesday, May 30th, Dr. Patrick M. Kelly, aged forty-nine years. **King**.—In Portland, Me., on Monday, June 5th, Dr. Alfred King, aged fifty-five years. **Miller**.—In Mason and Dixon, Pa., on Thursday, May 25th, Dr. Victor D. Miller, aged seventy-eight years. **Morris**.—In Santa Monica, Cal., on Thursday, May 25th, Dr. Sarah Morris, aged eighty-four years. **Page**.—In Santa Barbara, Cal., on Friday, June 2d, Dr. John E. Page, aged forty-eight years. **Pretlow**.—In Newport News, Va., on Thursday, June 1st, Dr. T. J. Pretlow, aged thirty-three years. **Sherman**.—In Newport, R. I., on Tuesday, June 6th, Dr. James T. Sherman, aged sixty-seven years. **Smith**.—In New York, on Tuesday, June 6th, Dr. Thomas F. Smith, aged eighty-four years. **Stenhouse**.—In Denver, Colo., on Thursday, May 25th, Dr. James Stenhouse, aged fifty-six years. **Stovall**.—In Bowling Green, Ky., on Thursday, May 25th, Dr. Charles J. Stovall, aged sixty-two years. **Talbot**.—In Kansas City, Mo., on Thursday, June 1st, Dr. Ambrose Talbot, aged fifty-six years. **Vannice**.—In Bishop Hill, Ill., on Thursday, May 25th, Dr. James F. Vannice, aged seventy-six years. **Werner**.—In Cincinnati, Ohio, on Wednesday, May 31st, Dr. George C. Werner, aged seventy-two years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and The Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CIII, No. 26.

NEW YORK, SATURDAY, JUNE 24, 1916.

WHOLE No. 1960.

Original Communications.

THE VALUE OF AUTOSERUM INJECTIONS IN SKIN DISEASES.

BY WILLIAM S. GOTTHEIL, M. D.,
New York.

It is now nearly two years since my last publication on this subject (1); a time sufficient for the formation of some definite conclusions as to the value of the procedure. Several articles and pronouncements by others have appeared during that time, and those that have come under my notice may be summarized as follows:

Howard Fox (2), speaking of autoserum injections in psoriasis alone, concludes that, while they do not directly influence the disease, they are of decided value when used in conjunction with local treatment; that obstinate cases which have long resisted a vigorous employment of chrysarobin will often yield to this remedy when autoserum injections are used at the same time; that the technic of these injections is simple, and that, if properly given, they are devoid of danger. Williams (3) says that the method is still on trial, but that his results have been very encouraging; the cases in which he used it being those in which itching was a marked symptom and in which the skin seemed to be abnormally irritable, as in general pruritus, chronic eczema, chronic urticaria, prurigo, and the pemphigus group, including dermatitis herpetiformis. Willock (4), on the other hand, basing his remarks on the treatment of ten cases of psoriasis, three of eczema, three of dermatitis, three of dermatitis herpetiformis, and one each of chronic urticaria and lupus erythematosus, concludes that in psoriasis the injections are valueless, even to sensitize the skin; that the eczema practically ceased when the serum was used, the results without its aid being poor; that the three cases of dermatitis herpetiformis all improved, but relapsed later; and that in the urticaria and lupus cases there were no results at all. Ravitch (5) summarizes experiences that are on the whole decidedly opposed to the autoserum therapy; which is not difficult to understand in view of his astonishing statements that intravenous injection is a rather dangerous procedure, that only a minority of patients have veins suitable for the purpose, that endophlebitis is an ever present menace, that the technic is neither simple nor safe, that the expense of the operation renders it prohibitive in most cases, and that he attributes the absence of infection in his own patients to good luck as much as to anything else.

In a discussion on the subject at the New York Dermatological Society, January 26, 1915 (6), G. H. Fox stated that he had seen some remarkable results from the autoserum treatment, and MacKee said that in psoriasis the injections so modified the system or the disease that recalcitrant and inveterate lesions responded quickly to weak chrysarobin ointments; he had also used them in dermatitis herpetiformis, pemphigus, and epidermolysis bullosa with encouraging results. Fordyce, Winfield, and Schwartz expressed themselves as favorable to the treatment in suitable cases; while Kingsbury and Trimble were skeptical. The reports of Swann (7) and Welch (8) may be omitted from this résumé, since they employed foreign serums in the treatment of urticaria and hemorrhagic disease in the newborn respectively. The foreign and older literature of the subject will be found in the articles quoted above.

I hold no brief for the autoserum treatment, and I should not call renewed attention to it if the experience of the last two years had not convinced me of its usefulness. I recognize the cogency of some of the criticism. It takes time and trouble, if done *secundum artem*; and it should never be done save under these conditions. There is necessarily some expense connected with its employment. It is not, therefore, suitable for routine treatment of dispensary patients, where rapidity and inexpensiveness are required. But these are not considerations of moment in private practice. Will it do good? Will it enable us to accomplish results otherwise, in some cases at least, unattainable? Will it enable us to avoid or mitigate the disagreeable features necessarily incidental to the treatment of an extensive and obstinate general dermatosis? Will it prevent or even postpone the reappearance of the malady? And, finally, is it a safe procedure? To all these questions I can unhesitatingly answer, Yes.

Let me be quite clear before proceeding, however, as to what we are entitled to hope or expect from the use of the autogenous serum. No one of experience has ever asserted that it is a directly curative measure; or that its use alone suffices for the treatment of any one of the obstinate dermatoses in which it is employed; and I say this with full knowledge of some as yet unsubstantiated statements of the cure of pemphigus and dermatitis herpetiformis by the injections alone. What it does do, however, is in some as yet unexplained way to modify skin reaction and skin resistance; so that in certain usually very obstinate or even entirely resistant dermatoses we get results in a small fraction of the time usually required, and with a certainty

that is a great improvement in our therapeutic outlook. I am in a position to make the further statement that, in some common dermatoses that are notoriously prone to reappear, and to reappear quickly, relapse is postponed for long periods, and possibly indefinitely; and that when it does occur, it is in extremely mild and manageable form.

Take psoriasis, for example. My experience with the autoserum treatment in this disease now extends to nearly fifty cases, most of them in private practice. Nearly all these cases were of the severe and rapidly relapsing type, with extensive dermal manifestations; the milder and localized cases do not usually fall into dermatological hands. As is usually the case, most of the patients had suffered for years, had been under all manner of local and general treatment; and some of them had become practically hopeless of finding any means of radical improvement, much less of cure of their affection. Yet I do not hesitate now to promise any patient with psoriasis, no matter how extensive, inveterate, and recalcitrant it may be, to clear the body of all lesions in from two to ten days. I also assure them that, while I cannot promise that the autoserum treatment prevents relapses, it certainly postpones them, possibly indefinitely; and that, if the disease does reappear, it will probably be in a very mild and localized form, and can be readily kept under control by very simple measures.

Most of the psoriasis cases that were treated with the serum a year or more ago have not reappeared; which of course is a fact that may be variously interpreted. Yet it is extremely likely, if a relapse into anything like their former condition had occurred, I should have seen them. Two or three of the early hospital cases did reappear in the ward, but with milder skin lesions of postponed appearance; these cases, of course, had absolutely no care at all during the interval. Of the private cases not a single one has returned as yet with a bad relapse. On the other hand, I have seen or heard from a number of them, under the circumstances, with very satisfactory results. One patient, with inveterate giant psoriasis of fourteen years' standing, who had been treated by many prominent specialists and had had dietary and x ray treatment with but slight and temporary benefit, came to me last fall, nearly a year after the autoserum treatment, to show me his skin, which was entirely clear of efflorescences. I have seen three other cases one year or more after the treatment, in which the body was entirely clear, or practically so. In some other cases there appeared, from nine to twelve months after the treatment, a few very small psoriatic plaques on the elbows, knees, or body, which were readily controlled and disappeared under oil of birch tar or liquor carbonis detergens locally. Two other psoriasis cases deserve mention. One was a bad general psoriasis, with the whole body, including the face and head, affected; the patient was the son of a psoriatic subject, and his mother was also under treatment. Four months after his autoserum and local treatment, the eruption began to reappear all over his body, and the attack bade fair to speedily put his skin in as bad condition as it was at first. Circumstances forbade his taking another autoserum course, though

he was anxious to do so; he was in business, and could not afford the time. Under local treatment alone, which included a very moderate employment of chrysarobin on the body, the entire eruption slowly disappeared, so that his skin is now clear. This patient had suffered from his affection for a number of years, and had come to me convinced of the entire inefficacy of local treatment in his case; he had had all kinds at the hands of various competent men in the past. The other patient was a young woman with a moderately severe psoriasis affecting chiefly the head and face; she was one of the earlier autoserum cases, having received her treatment in May and June, 1914. Her body remained entirely clear until March of this year, 1916, a period of nearly twenty-one months; she now had two small lesions, one on the elbow and another on the trunk. Neither was larger than a small bean, and both rapidly yielded to a little local treatment. Her scalp and face were entirely clear.

I have not made any essential change in the mode of procedure in treating psoriasis, except that I now give the injections at shorter intervals, say three days or so, so as to abbreviate the preliminary treatment, and complete it in two or three weeks. I do not start the local treatment until the last of the four or six autoserum injections are given. I have abandoned the employment of thyroid medication during the treatment, because I have not been able to convince myself that it was of any real aid, and in one or two cases the drug, even when guarded with strychnine, had a very bad effect on the patient's general condition. In one instance especially it took the patient several months to recover from the persistent tachycardia, fainting spells, and other symptoms occasioned by a month's exhibition of the drug.

I have before me fairly complete records of thirty-one cases of psoriasis, almost all of them of extensive, severe, and recurrent type, and almost all from private practice. In every case the body was cleared in a remarkably short time, and with mild local medication after the autoserum course; and the list includes a number of cases that had proved absolutely recalcitrant to local measures alone. Most of these cases have not reappeared; and I think many of them would have done so if the efflorescences had reappeared, especially if they did so in a comparatively short time. In those that I have seen again the psoriasis was delayed for a long time, as much as a year and a half or more; and the lesions that did appear were few and small, and were readily amenable to local treatment. The type of the eruption had changed into a mild and very manageable form of the disease.

Of various forms of obstinate chronic eczema I have nine private cases, with results that were variable. In three cases it failed entirely to influence the disease; in four cases it did well, though it is hard to say definitely the part that the injections played in the cure. In two cases only was the effect striking and apparently unmistakable.

In chronic urticaria, of which there were seven cases, the results were generally good. In two of them they were very good; the patients had unbroken sleep for the first time in months or weeks

after the first injection or two, thus gaining increased recuperative power.

In four cases of very bad pustular acne the results were, on the whole, satisfactory. Local treatment was employed at the same time; but these were all old and extensive cases that had had all kinds of treatment before; and both the patients and I thought they did much better under local treatment alone. Of furunculosis there were five cases also. I cannot say that I noted any marked improvement in them from the autoserum injection. Five cases of pemphigus, two of the ordinary type, two vegetating, and one foliaceous, were treated with the injections. Only temporary improvement was noted, and all the patients finally succumbed. In one case of ulcerative radiodermatitis the effect of the injections was unmistakable and brilliant. This case has already been reported.

Eight cases of florid secondary syphilis were treated for short periods with the injections for experimental purposes, without in any way influencing the progress of the disease. In several cases of chronic lichen planus, leprosy, and other chronic affections no influence upon the disease was noted from the injections.

My conclusions, then, are the following:

1. In psoriasis the autoserum treatment, while not in itself curative of the disease, is an important factor in the treatment. It cuts down the time required for the troublesome local treatment from weeks to days, and enables us to promise to clear the skin in from two to five days in even the worst and most obstinate cases. It postpones relapses for a long time, possibly indefinitely. In most cases it so influences the type of the disease that the relapsing lesions are few and insignificant, and are readily amenable to mild local treatment.

2. In chronic urticaria, neurodermatitis, pruritus senilis, and other obstinate itchy dermatoses, it is worthy of trial. In some cases its action is effective and brilliant.

3. It is of some value in bad pustular acne; but in furunculosis, folliculitis, and other pus infections I have not found it useful.

4. In chronic eczema the same may be said as of acne; the injections are sometimes apparently effective, and at others fail entirely.

5. In pemphigus, lepra, and obstinate lichen planus it is ineffective.

6. In syphilis it is useless.

REFERENCES.

1. *Journal A. M. A.*, June 8, 1915. 2. *Ibidem*, December 19, 1914. 3. *Ibidem*, June 26, 1915. 4. *Ibidem*, July 3, 1915. 5. *Journal A. M. A.*, April 10, 1915. 6. *Journal of Cutaneous Diseases*, June, 1915. 7. *Journal A. M. A.*, February 27, 1915. 8. *New York State Journal of Medicine*, November, 1913.

154 WEST SEVENTY-SEVENTH STREET.

Nitrous Oxide Analgesia in Obstetrics.—M. Sproat Heney (*Medical Record*, June 3, 1916) believes that with modern apparatus the administration of nitrous oxide gas is a safe and efficient means of relieving the pain of childbirth, that it shortens labor by making more efficient the expulsive power during the second stage, that it decreases fatigue, and so hastens convalescence, that it is devoid of danger, can be given in the home, and is within the reach of those of limited means.

TRACHEOBRONCHIAL SYPHILIS.*

By H. ARROWSMITH, M. D., F. A. C. S.,
New York.

In the *American Journal of the Medical Sciences* for July, 1903, Lewis A. Conner, of New York, published in connection with the history of a case of his own, an analytical review of the recorded observations of tracheobronchial syphilis (to that date 128 in number), which deserves a place in medical classics. I have made very free use of his material and of his bibliographic researches and herewith acknowledge my indebtedness to his comprehensive investigation of this important subject.

Conner's paper, evidently written in 1902, antedates any trustworthy endotracheal study beyond the territory which could be viewed by indirect laryngoscopy. The whole literature previous to the publication of Conner's paper, with a few exceptions, seems to be included in Vierling's collection in 1878 of forty-six cases. Conner found the reports of some that Vierling had missed, thus adding eighty-two cases including his own, reported between 1878 and 1902, a total of 128.

In 117 of these cases the character and site of the lesion could be determined; in ninety-seven by autopsy and in the remaining twenty by laryngoscopic examination.

As a summary of the 117 verified cases Conner submits the following tabulation:

Involvement of the upper third of the trachea alone..	23
Involvement of the middle third of the trachea alone..	2
Involvement of the lower third of the trachea alone..	18
Involvement of the large area of the trachea alone..	23
Involvement of trachea and bronchi.....	38
Involvement of both bronchi alone.....	5
Involvement of right bronchus alone.....	4
Involvement of left bronchus alone.....	4

117

He grouped them in four classes:

1. Gummatous swellings, circumscribed or diffuse.

2. Ulcers, single or multiple.

3. Endotracheal (bronchial) connective tissue new growth: a, distinct scars; b, diffuse thickening.

4. Fibrous peritracheitis or tracheobronchitis.

Of the first class, gummata, there were twenty examples. Of the second, ulcers, there were fifty-one, showing all possible variations in size, contour, depth, and position; sometimes involving the cartilages, which were found necrotic and partially destroyed. Perforation of the entire tracheal or bronchial wall occurred in twelve instances. Twice an ulcer in the right bronchus perforated a branch of the pulmonary artery. Once the aorta was perforated and once the vena cava. The esophagus was opened twice. Other complications were peritracheal and mediastinal abscess, and tracheocele.

Of the third group, forty-seven showed distinct scars, and thirteen diffuse infiltration of the tracheal or bronchial walls, within the cartilaginous framework; an obliterative endotracheobronchitis, with marked diminution of the lumen. Fourth, peritracheobronchitis. Among Vierling's cases none with this condition could be identified. In Conner's

*Read before the American Laryngological, Rhinological and Otolaryngological Society, at the Twenty-second Annual Meeting at White Sulphur Springs, West Virginia, May 5, 1916.

collation eight instances were enumerated. The development of enveloping fibrous tissue was usually seen at the lower end of the trachea and about the main bronchi. In this category is our own case.

Dyspnea was the most constant and conspicuous of all symptoms. It was either continuous, or spasmodic, or both. As to the paroxysmal variety, in half of the seventy cases with dyspnea, there were superadded spasmodic attacks of the most alarming air hunger, with orthopnea, cyanosis, stridor, and even unconsciousness. In no less than eleven instances did the patient die in such a suffocative attack. Stridor may be interpreted as a sign of laryngeal, not of tracheal or bronchial stenosis. Pain was noted in only three cases. The movement of the larynx is said to be less in tracheal than in laryngeal narrowing (Gerhardt).

A personal communication from Conner, dated March 13, 1916, says:

Since my paper I have had three cases of this condition, the last with autopsy only two or three months ago. I cannot say that my later cases have added anything of importance to the knowledge of the condition I gained in writing my article. They have, however, convinced me that the condition is by no means a great rarity, and that it has a clinical importance which entitles it to much more general recognition than it has received. . . . My experience has been that the diagnosis is by no means difficult, although the condition is regularly overlooked, and this failure to make a diagnosis is due chiefly to the fact that a possibility of the condition is not held in mind by most clinicians. In my last case the lesion was primary (*sic*) in the tracheobronchial lymph nodes and there was some constriction of both bronchi, with ulceration through at one point and almost complete occlusion of the lumen by a mass of gummatous tissue.

From the date of Conner's paper the literature of tracheobronchial syphilis is, for our purpose, entirely negligible; without information or instruction, notwithstanding that we have at our command many aids that he then lacked—direct endoscopic examination, the help of radiography, of the Wassermann test, and of salvarsan therapy—I think we may learn more from his article, that of a strict internist, than from any emanating from our own special cult of endoscopists. In the series cited, ninety-seven autopsies in 117 cases certainly far transcends our present day opportunity for control by post mortem investigation. The statements of two leading endoscopists will sufficiently indicate our present status.

Kahler, at the meeting of the Third International Laryngo-Rhinological Congress, in Berlin, 1911, said: "Tertiary syphilitic affections of the tracheobronchial tract are more frequent than formerly supposed. We have a record of thirteen cases. . . . Clinically two stages have been observed: a, Recent gummatous infiltrations and ulcerations; b, changes produced by secondary contractions."

Jackson, in his last book, gives but a short space to lues of the tracheobronchial tree, stating that he has seen a few cases; other bronchoscopists, notably Von Eicken and Kahler, many more. He cites four instances:

1. A man, aged thirty-three years, with a cicatricial web in the trachea, causing partial stenosis, incised with satisfactory results. (Tracheobronchoscopy, etc., p. 75.)

2. Ulceration of the carina, history of initial le-

sion four or five years before, recovery under specific treatment. (*Archives of Diagnosis*, April, 1908.)

3 and 4. A man of forty years, complaining of severe dyspnea and slight dysphagia, was found to have a sessile tumor projecting from the right posterior wall of the trachea. Four weeks of antiluetic treatment cleared up the tumor completely. In another similar case a specimen was removed because of suspected malignancy. The report was: "Not malignant, strong suspicion of lues." Treatment verified the biopsy. (Peroral Endoscopy, p. 434.)

A number of observations are found scattered through recent literature, but the reports are generally so casual that it seemed to me a waste of time to attempt to give all bibliographic references.

My observations comprise two cases. For the clinical history of the first, I am indebted to my colleagues, Dr. B. F. Corwin and Dr. Tasker Howard, physicians to the Kings County Hospital, Brooklyn.

CASE I. F. M., forty-four years of age, Italian, married, a laborer by occupation, was admitted November 10, 1915, complaining of shortness of breath and cough, with paroxysmal exacerbations of both. This first troubled him two and a half months ago. Family history: Father living and in good health; mother died of "stomach trouble" at the age of thirty-seven years. He had a wife and six healthy children. Previous history: The patient stated that he had always enjoyed good health; he denied venereal infection. He smoked in moderation, and drank beer at times to excess. His bowels were regular and his appetite good. Present illness: The patient had had some cough at night for an indefinite period. Two weeks before admission he had an attack of violent dyspnea and cough. The dyspnea was described as expiratory in type, and he was said to be cyanotic. He then remained in fair health until the night before his admission to the hospital, when he had a return of these symptoms.

Physical examination: On admission his temperature was 97.5° F., pulse 88, respiration 24. The patient assumed a semirecumbent posture, was cyanotic, apprehensive, and breathed with difficulty. The inspiration was labored and rattling, the expiration was also labored and prolonged, ending in a grunt. He coughed frequently and expectorated a frothy sputum. The pupils were dilated and reacted sluggishly to light and accommodation. The tongue was coated; the teeth were in good condition. The heart showed no enlargement and the sounds were clear, with a fair muscular tone.

Lungs. The type of breathing has been described. The accessory muscles of respiration were called strongly into play. Over the upper lobes the breath sounds were obscured by many bubbling and musical rales, there being fewer at the bases, where exaggerated vesicular breathing with prolonged expiration could be made out. Two days later, there was noted impaired resonance at the left base, with diminished fremitus and a shower of sticky rales at the end of respiration. The lung signs were changeable and indefinite.

The abdomen and extremities showed nothing noteworthy. The knee jerks were present. Blood pressure, systolic 100, diastolic 70. Repeated examinations of the urine showed nothing abnormal. The sputum was abundant, mucopurulent, and contained no tubercle bacilli. Hemoglobin 80 per cent., erythrocytes 4,928,000, leucocytes 13,800; of these sixty-three per cent. were polymorphonuclear, twenty-seven per cent. lymphocytes, seven per cent. large mononuclears, two per cent. transitional, one per cent. eosinophiles. The Wassermann test was four plus.

For the first week there was an irregular fever from 101° to 104° F. The day after admission he had a violent attack of dyspnea, in which he entirely stopped breathing for a minute, during which time his pulse became very feeble and his deepening blue changed to a grayish pallor. He was resuscitated by means of a pulmotor. Similar, though less serious attacks, occurred frequently up to the 10th; in the intervals he was markedly, but not so desper-

ately, dyspnea. Three very violent attacks occurred during the period of his first sojourn in the hospital. Little or no relief was obtained from the hypodermic use of adrenaline, or from the usual asthma mixtures, though morphine and atropine were of benefit. He was given mercury protoiodide one quarter grain *t. i. d.*, changing after a short time to mercury salicylate intramuscularly with potassium iodide in increasing doses. Digitalis was also necessary most of the time.

On December 1st I attempted a bronchoscopy under local anesthesia. The patient was so excitable and apprehensive that the procedure was abandoned for fear that persistence might precipitate an attack of dyspnea. On December 4th, against advice, he demanded his discharge from the hospital.

On January 4, 1916, he was readmitted in much the same condition as at the time of discharge, but with a recurrence of the fever, his temperature rising to 103° F. for the next ten days and subsiding to normal in the course of the succeeding five days. His lung signs on readmission were practically the same; everywhere noisy breathing with many moist and musical rales, but with the addition of an area as the right base of dullness and bronchovesicular breathing. This was clearly evident for one day only.

An x ray picture taken January 10, 1916, showed a normal outline of the aorta and left side of the heart, with definite thickening of the root of the left lung. Left side, otherwise clear. The right side showed some slight foggy shadow down to the fifth rib posteriorly, with a rather ragged shadow to the right of the vertebrae at the level of the heart, and extending out two inches. It differed from a skiagraph taken during his earlier admission, in the presence of a rather dense shadow at the right base, which entirely obscured the line of the diaphragm. These signs, together with shifting areas of impaired resonance, where no bronchial breathing could be made out (perhaps on account of the noisy respirations), were interpreted to indicate a bronchopneumonia.

The dyspnea was not so severe as formerly, and he had none of the violent paroxysms, though milder attacks did occur, and it was noted that they were apt to be induced by any excitement, such as a physical examination. The laboratory findings were substantially the same as on his previous admission. As soon as his condition seemed to warrant it he was transferred to the laryngological service for bronchoscopy. There was no hoarseness, no pain and no stridor.

On January 19, 1916, under oil-ether colonic anesthesia after Gwathmey, Dr. Charles J. Imperatori being present, direct laryngoscopy showed no lesion of the larynx. A 7 mm. Jackson bronchoscope was passed and a definite and symmetrical diminution of the tracheal lumen was encountered so that the tube was snugly held from the moment it entered the trachea, and a certain amount of pressure was necessary to advance it. (The average diameter of the trachea in the adult male is 14 to 20 mm.) This obstruction was not due to infiltration or edema of the mucous membrane, which was pushed in a loose fold before the bronchoscope and followed its withdrawal in the same way, the impression to the eye and touch being that the lining of the trachea (and bronchi) was too large for and very loosely attached to the surrounding narrowed, rigid, and unyielding air passages. There was no suggestion of the tracheal rings and the carina was identified with some difficulty, being thickened and rounded. The mucous membrane was uniformly somewhat congested, but not markedly so, and by palpation it did not appear thickened or edematous. The general appearance of the trachea is indicated by the fact that on inspection, Doctor Imperatori thought I had entered the esophagus, until he himself identified the carina.

Considerable pressure was required to enter the primary bronchi and the orifices of the secondary were only suggested, though I passed a small sponge into one or two. The stenosis was absolutely uniform and symmetrical throughout. The obstetric term, *just minor*, expresses it as well as any. There was a very decided sense of unyielding resistance *outside* of the mucous membrane. There were no localized constrictions or dilatations, no ulcerations, no scars. Diffuse indurative peritracheobronchitis with stenosis seems fully to describe the conditions found.

On the advice of Doctor Potter, of the syphilitic service, as to the most intensive antisyphilitic treatment available, the patient was then put upon injections of mercury ointment, beginning with half a dram a day, and increasing doses of potassium iodide (salvarsan was at that time unobtainable). The mercury was increased until signs of salivation appeared.

His response to this treatment was prompt and by February 3, 1916, he was up and about, with very little dyspnea, but still considerable cough at night. He continued to improve until he could walk about, even hurriedly, without a trace of dyspnea.

On February 22, 1916, he began to cough more and had a slight fever, with a return, in the night, of the dyspnea. This seemed at the time like an added bronchitis of the ordinary type, and his chest showed no abnormality except scattered sibilant rales. His condition became rapidly worse, however, and the exacerbations of dyspnea were much more frequent. At this time the dyspnea assumed a peculiar type. Inspiration was accomplished in two distinct phases. The first was evidently a violent diaphragmatic effort, at the end of which he would fix himself and pull with all his accessory respiratory muscles, to raise the chest and add a little to his poor supply of air. The expiration was prolonged and difficult. Rales and wheezes obscured the breath sounds during both inspiration and expiration.

On March 1, 1916, he became unconscious and was revived from another attack of orthopnea, which threatened to be terminal, by artificial respiration and stimulants. His difficulty seemed to be more expiratory at this time. His larynx moved only about half an inch during respiration. His systolic blood pressure was sixty and the diastolic unobtainable. That afternoon he became gradually weaker in his efforts to breathe, the pulse failed, and finally he died. Unfortunately no autopsy was obtained, although arduous efforts were exerted to that end.

This observation has been of extreme interest to me, although of course no endoscopic surgery or treatment could have availed in such a condition, nor, for that matter, general specific medication at such a stage. It certainly, however, is an adequate reason for us all to try to secure permission for bronchoscopy in all cases of dyspnea that are in any way obscure as to origin or manifestations, for the purpose of both diagnosis and treatment.

It is unfortunate, and to me inexplicable, that internists have been so apathetic toward endoscopy as a method of precision, when so many brilliant diag-

nostic triumphs have been achieved in diseased conditions.

Perhaps our reports have been restricted too much to foreign body work, possibly our observations have been published too exclusively in our special journals. Maybe we ourselves have emphasized to too great a degree the surgical possibilities and neglected what may be done in diagnosis. Yankauer's work in bronchiectasis has awakened interest in internists about New York, and each of us in his own circle can do much to impress on our medical confrères the value of endoscopic investigation of all respiratory troubles.

In closing, I wish to emphasize again the great value in these cases of Gwathmey's oil-ether colonic anesthesia. In this particular patient, any anesthetic seemed likely to be dangerous, but obviously it was impossible to examine him without. I am quite sure that even insufflation anesthesia would have precipitated a probably fatal attack of dyspnea.

The relaxation was perfect, the tracheobronchial tract free from secretions, the circulation was undisturbed, the anesthesia on a perfectly even plane throughout, there was no nausea, and the patient awakened with the statement that he felt better than in a long time before.

On the invitation of Doctor Conner on March 31st, I had the opportunity of bronchoscopic a patient of his, at the New York Hospital. In this patient the larynx was implicated to the extent of a decided thickening of the vocal bands, with some superficial scarring and serration of their free borders. The tracheal mucous membrane was greatly congested, the upper rings were ill defined, and in the lower two thirds indistinguishable.

On the posterior tracheal wall, about one inch above the carina, was a sessile fungating mass about the size of a marrowfat pea. Some of this tissue was removed and pronounced by the pathologist "probably luetic." Beyond the carina there was no lesion other than marked congestion.

The antecedent history was indefinite though suggestive, but at this writing vigorous antilutetic treatment has cleared up all subjective symptoms.

170 CLINTON STREET, BROOKLYN.

NEPHRITIS IN THE AGED.*

By I. L. NASCHER, M. D.,
New York.

Chief of Clinic, Department of Internal Medicine, Mount Sinai Hospital Dispensary.

I am glad to have the opportunity to discuss nephritis in the aged, as there is hardly any other pathological condition in the aged which is more frequently mistaken in life and in death than this. In Cabot's memorable paper, Diagnostic Pitfalls as Identified During a Study of 3,000 Autopsies, he gives these proportions of errors: Glomerulonephritis, twenty-six per cent.; interstitial nephritis, fifty per cent.; suppurative nephritis, sixty-five per cent.; acute nephritis, eighty-four per cent. These figures are for all ages, and cover cases occurring in the Massachusetts General Hospital, where the physi-

cians had the advantage of every diagnostic appliance and laboratory facility that a well equipped hospital can provide. It is safe to say that in private practice, where the physician has not all these facilities and appliances, the percentages of errors will be still greater. The frequent autopsy findings of interstitial nephritis in senile cases which gave no symptoms of the disease during life, and the frequent diagnosis of interstitial nephritis in senile cases which do not show the pathological condition upon autopsy, force the conclusion that either the pathologist or the physician was careless or ignorant, or else that nephritis in the aged does not present the clinical history or the pathological features that we find in earlier life.

Some years ago, Walsh, of Philadelphia, demonstrated a progressive fibrosis in the kidney from birth throughout life. This fibrosis consists in an increase of the connective tissue fibres between the apices of the pyramids, the increase being greater than the growth of the kidney substance. Were it possible to examine the kidney structure during life, we could get a fair idea of the age of the individual, not the years of life but the extent of the senile involution, from the extent of the renal fibrosis. This fibrosis is natural, normal, physiological. In advanced life there is impaired nutrition of the kidney through lessened assimilation, degenerated vessels, and probably some change in the character of the blood. As a result of these there is waste of the muscular tissue and contraction of the connective tissue, producing the small contracted kidney of old age, the *rein sénile* of the French. This is the kidney disease which pathologists so often report as interstitial nephritis, and the physician who attended the patient before death declares there was no symptom of the disease. It is the mistake of the pathologist who has failed to differentiate between the normal, senile, contracted kidney and the kidney of interstitial nephritis. In the normal senile kidney the fibrosis is uniform throughout the organ; in the pathological kidney there are areas of hyperplasia. If pathologists make this distinction in their reports, the physician will not be obliged to charge himself, innocently, with overlooking a pathological condition which he should have recognized. But the physician too fails to differentiate between the normal, senile, contracted kidney and the kidney of interstitial nephritis. Many of the symptoms usually associated with interstitial nephritis occur in the normal condition, and if the physician takes the trouble to trace each symptom to its source he will often find that not a single symptom is due to the condition of the kidneys. Let us take a case as we see it in practice.

The patient complains of gastric or respiratory trouble, or perhaps vertigo or palpitation. There is nothing in the history as he gives it which points to kidney involvement. A few questions bring out suspicious symptoms, occasional edema of the ankles when standing, urination two or three times at night, insomnia, irritability. With our suspicions aroused, we question more closely and we get a whole list of symptoms that are usually associated with interstitial nephritis. The man did not mention dyspnea because he has had it for years and has become so accustomed to shortness of breath that he no longer

*Read at a meeting of the Eastern Medical Society, New York, April 1, 1906.

notices it. He gets palpitation upon slight exertion, but this happens seldom; he does not exert himself if he can possibly avoid it. We shall probably get a history of gastric and intestinal disorders, emaciation, weakness, impairment of the special senses. Here is a symptom complex which, in a younger person, would justify a diagnosis of interstitial nephritis even without a urinary analysis. Yet in the aged person every one of these symptoms may be due to a cause which is neither directly nor indirectly traceable to the kidneys. The aged in whom the circulation is weak and who have dilated veins in the legs, frequently show a slight hypostatic edema on standing for a few hours. Frequent urination at night may be due to enlarged prostate, dilated bladder, senile cystitis, stone, or other bladder disease. Headache and vertigo are generally due to cerebral arteriosclerosis. The insomnia of the aged is usually a pseudosomnia, the patient having many short naps during the day. The palpitation may be due to cardiac hypertrophy, the usual condition of the heart in the aged, and the dyspnea may be due to senile emphysema. Weakness and emaciation is usual in the aged, especially if there is gastric disorder and there are many causes for gastric disturbance in advanced life. Physical examination will be necessary to clear up some of these points.

We have still to consider the uranalysis and the blood pressure. The normal systolic blood pressure in the aged can be figured as the age plus 100 in mm. Hg. If it exceeds this there is some pathological condition, and nephritis is one of the most frequent causes of high blood pressure. We still have the urinary analysis, the deciding diagnostic factor. The amount of urine passed by the aged normally is 1,000 to 1,200 c. c. daily by men, 900 to 1,000 c. c. daily by women. Specific gravity is never below 1010, usually between 1015 and 1025. In chronic interstitial nephritis the amount of urine passed daily is from 1,000 to 1,500 c. c., specific gravity 1002 to 1012, rarely higher. A trace of albumin may be found in the urine in the normal senile condition, but casts and blood elements are pathological. A case presenting this symptom complex was actually treated as interstitial nephritis for several months, the diagnosis being based upon edema of the ankles, nocturnal polyuria, and albuminuria. The edema was hypostatic, the polyuria was not a true polyuria as only a small amount of urine was passed at a time, and the albuminuria was slight and without casts. The various symptoms were traced to their sources, the conditions amenable to treatment were improved, and the whole clinical picture was changed, leaving only the usual manifestations of senile degenerations.

Faulty nomenclature is partly responsible for the misconceptions concerning chronic interstitial nephritis. Beside this term it is also called renal scirrhus, sclerosis of the kidney, gouty kidney, atrophic kidney, contracted kidney, granular kidney; and these terms are applied interchangeably to a primary pathological degeneration, a secondary pathological degeneration, and a physiological degeneration. The first is the true interstitial nephritis. If pathologists and physicians make the clear

distinction between chronic interstitial nephritis and senile contracted kidney that I have presented, it will be found that interstitial nephritis is infrequent in the aged and that many of the deaths now attributed to this disease are really due to arteriosclerosis and other senile degenerations. Primary interstitial nephritis in the aged is due to arteriosclerosis. In a paper, *A New Conception of Arteriosclerosis*,¹ I point out several forms of arteriosclerosis, some of which produce local tissue degenerations. The most frequent cause of tissue degeneration is deficient or perverted nutrition causing tissue starvation. The blood supply is insufficient to repair the waste of muscle tissue which requires a copious blood supply to regenerate the waste, but there is a sufficient supply for the growth of a lower order of tissue such as connective tissue. We thus get a fibrosis to repair the muscle waste. In senile arteriosclerosis there is a general waste of tissue and whole organs degenerate. Where there is more rapid degeneration in a portion of an organ, there is either a local cause or else a minute fragment of matter is carried in the circulation until it reaches some arteriole which it partly blocks. The embolus may be a bit of fibrin, a clump of bacteria, granular or pigment matter, or broken down epithelial cells. Arterioles may be partly blocked by swelling of the endothelial cells, whereby the lumen of the fine vessels is diminished. If so little blood passes through that there is not sufficient for connective tissue growth to repair the muscle waste, cysts remain and such cysts are occasionally found in interstitial nephritis.

Textbooks mention numerous complications of interstitial nephritis. Many of these are the usual senile degenerations. The complications that may be expected in this disease are those due to urea retention in the blood, and these give the symptoms of uremia. I have seen but one case of sudden blindness in an aged person having nephritis. In this case the ophthalmoscope revealed, a year earlier, tortuous retinal vessels. After the blindness occurred the ophthalmoscope showed rupture of some of these fine vessels, a condition similar to cerebral apoplexy.

As the disease advances the glomeruli become involved and the parenchymatous type of nephritis is produced, with abundant casts, pronounced edema, and later uremia, although in the aged uremic symptoms generally appear before the edema. The parenchymatous type of nephritis does not follow the senile contracted kidney and the only complications of this condition are the ordinary senile degenerations.

TREATMENT.

Senile contracted kidney requires no treatment. For the senile arteriosclerosis upon which it depends I give amorphous phosphorus in one grain doses three times a day, but this does not restore the degenerated organ. Let me say here incidentally, it is folly to try to restore a senile degeneration, whether of the kidneys, arteries, heart, or any other organ, to the state in which it was in maturity.

¹This paper was read at the meeting of the New York Physicians' Association, April 27, 1916.

There is no known cure for chronic interstitial nephritis. We must bear in mind that disease in the aged is a pathological process in a normally degenerating organ or tissue and not a pathological process in an organ or tissue such as we find in maturity complicated by degenerations. We have here a pathological degeneration in a normally degenerating organ. There is no known method of preventing or restoring the degeneration, and the best we can hope for is to retard the arteriosclerosis, relieve symptoms, and prevent secondary effects. As the alkalies diminish the viscosity of the blood the alkaline waters should be used to make the blood more permeable through the obstructed kidneys. Calcium is contraindicated in all senile conditions. If the blood pressure is excessive it should be brought down to the normal for the age, either by the nitrites which dilate the capillaries, by the use of thyroid extract which causes dilatation of the vessels through the vasomotor centres, or by the use of potassium iodide which inhibits adrenal activity, thereby preventing their vasoconstrictor effects, stimulates thyroid activity, and furnishes an alkaline base to reduce the viscosity of the blood. It is hardly necessary to say anything about the hygienic regulations, limited diet, care of the bowels, freedom from worry, regulated exercise, etc.

Acute nephritis occurs seldom in the aged, and then almost always follows septic infection of the bladder. The aged are comparatively immune from infection, and when infection does occur it is because the resistance is greatly lowered through disease or privation or when the microorganisms are virulent.

For this reason when acute nephritis follows a bladder infection or other infectious disease, it is always grave and generally fatal. It may be due to some substance causing renal irritation and inflammation, such as turpentine, cantharides, mercury bichloride, potassium chlorate, the phenols, gin, etc. Many of the so called renal stimulants are renal irritants, liable to cause inflammation. The senile kidney is working under difficulty, and slight irritation will suffice to cause the lining cells of the tufts and tubules to become inflamed, swell, and degenerate. A few inflamed cells will form the focus for a rapidly spreading inflammation and degeneration in the substance of the organ. This is the usual origin of chronic parenchymatous nephritis. A severe acute nephritis in which the cells are so swollen as to obliterate the lumen, or in which they break down, the debris completely blocking the fine tubes and obstructing the flow of the urine, is rapidly fatal in the aged. A mild inflammation will pass into the chronic parenchymatous state.

The symptoms and signs of acute nephritis are apparently sufficiently clear to enable one to make a positive diagnosis, yet according to Cabot's figures only sixteen per cent. of cases that came to autopsy were correctly diagnosed. The aged disregard subjective symptoms unless they are urgent or distressing, and in the mild inflammation they overlook the slight ache in the back, the edema of the feet and ankles, face, and hands, puffy eyelids, which are early symptoms of the disease. In the severe form the symptoms cannot be disregarded,

as the pain, headache, prostration, drowsiness, and tendency to vomit, force the patient to seek relief.

Acute nephritis in the aged cannot be cured. If severe it is rapidly fatal, the ensuing uremia causing death. If mild it passes into parenchymatous nephritis. I believe that in many cases death has been hastened through the renal stimulants given to overcome the urinary suppression. It is a question if the suppression is due to the inability of the kidney to elaborate urine or to the inability of the urine to pass through the blocked tubes. We have no means of determining which of these factors is responsible for the suppression of urine, although it is probable that both play a part in the diminished output. If due to blocked tubes alone, it would be clearly irrational to give renal stimulants which would increase the elaboration of urine without clearing the way for its removal.

In the severe form of acute nephritis, which is always fatal in the aged, the physician is justified in trying anything which might increase the output of urine. In one case, not of acute nephritis but of parenchymatous nephritis with suppression of urine, I used one agent, sodium theobromine salicylate, in forty-two grain doses, three times a day, for several weeks. In this case the ordinary diuretics in the usual doses failed to increase the urine output, but these large doses were effective.

Parenchymatous nephritis is infrequent in the aged and when it does occur it always follows an acute nephritis, although the latter may have been so mild as to have been unnoticed. While the origin of the disease can often be traced to some exogenous toxin, some drug that had been used for a long time, causing a mild but persistent irritation, in many cases the disease is apparently due to the irritation produced by endogenous toxins. The peculiar sallowness which is the earliest symptom of the disease in younger persons is not noticed in the aged, who are, as a rule, sallow from the poor surface circulation, and the earliest symptom of the disease usually is puffiness about the eyelids. The patients themselves will disregard this symptom, the edema about the ankles, dyspnea, and other symptoms, until the disease is far advanced, but the family generally notice early changes in the appearance of the patient. Like all degenerative diseases in the aged, whether primary degenerations or degenerations following inflammations, parenchymatous nephritis is incurable. Symptoms may be temporarily relieved, but the disease is progressive, and occurring in a degenerating organ it hastens the degeneration.

Stress has been laid upon hygienic regulations, diet, exercise, climate, in the treatment of this disease. A salt free diet is repugnant to an aged person and it cannot be carried out. A milk diet can be maintained only for a short time, indeed any restricted diet soon becomes objectionable and the aged person must be watched lest he violate instructions. This is one of the difficulties in treating senile patients. They are willing to take medicines, but are unwilling to submit to restrictions, they will pilfer forbidden articles of food, evade necessary exercise, insist upon going out in inclement weather, etc. Moderate exercise is necessary

for the nephritic patient, unless there is extensive edema. It is impossible to devise a diet which will nourish the individual yet not give work to the kidneys to eliminate the waste. A low protein diet has been recommended in arteriosclerosis, as it prevents excessive decomposition products which may cause autointoxication. This toxic material must be eliminated by the kidneys; such a diet is therefore recommended in nephritis. It may not be out of place here to mention that where fresh meat is used exclusively, as among the pious Jews, arteriosclerosis comes on more slowly, and nephritis is not as prevalent as where cold storage meat is used.² Drugs may be necessary to relieve distressing symptoms. At the risk of offending those who oppose the use of proprietary preparations, I will mention one which I have used in a few cases with apparent benefit. I refer to a substance obtained from kidneys. It has not cured any of my cases, but in some cases the symptoms were relieved, the cast content of the urine was diminished, and edema was retarded. I mentioned one case in which during an acute exacerbation with suppression of urine very large doses of sodium theobromine salicylate were used with benefit. But these as well as other drugs are only of temporary utility. They soon cease to be effective, except in very large or toxic doses; the edema will extend to the abdomen in spite of frequent punctures of the legs, and while the trocar may temporarily relieve anasarca, complete suppression of urine with uremia or else cardiac exhaustion will carry off the aged patient.

In conclusion, senile contracted kidney with slightly diminished output of urine, of rather high specific gravity and a trace of albumin without casts, is a physiological condition. It requires no treatment, and efforts to increase the output may cause a mild irritation and inflammation followed by degeneration of the glomeruli.

Chronic interstitial nephritis is a pathological degeneration superimposed upon a normal degeneration, and by extension it will involve the glomeruli, producing a diffused nephritis.

Parenchymatous nephritis is always secondary, either to an acute nephritis or, by extension, to an interstitial nephritis. By extension it will become diffused, involving the whole organ.

Acute nephritis may be primary, following the ingestion of poisons or renal stimulants, or it may be secondary, the irritation arising from bacteria or products of autointoxication or metabolism. If mild, it will pass into parenchymatous nephritis; if severe, it is speedily fatal. All pathological degenerations hasten normal degenerations and are therefore incurable.

103 WEST EIGHTY-EIGHTH STREET.

Vaccine Therapy of Pertussis.—Ward Bryant Hoag (*American Medicine*, April, 1916) gives 250 million bacteria the first injection and doubles this dose every second day until two billion are given at every injection. This dose is continued every second day or three times a week until the treatment is suspended.

²May not this have some bearing upon the frequency of diabetes in this class?

COLONIC STASIS.*

BY GEORGE H. EVANS, M. D.,
San Francisco.

While the conditions of the abdomen and colon productive of stasis have engaged the attention of anatomists for many years, it is only with the modern development of Röntgen technic that we have arrived at a position where these malformations and pathological conditions can be demonstrated with such a degree of accuracy that a reasonable hope has arisen for a logical plan of treatment which will result in permanent relief for a large number of these sufferers.

Modern literature abounds in historical and experimental contributions; the influence of adhesions, membranes, kinks, visceroptosis, and bacterial infection, as causative factors, has been the subject of discussion at almost every large convention for the last few years; surgical versus medical treatment has been thoroughly presented by the advocates of each. The fact that as yet no unanimity of opinion as to treatment exists, is because the results attained with any form of treatment have not been sufficiently successful to demonstrate a practical plan of procedure. The principal reasons are the following: First, insufficient importance is attached to the necessity of thoroughly studying the true pathological condition in each case. Röntgenology has brought us much help in this direction, but because of poor technic and superficial interpretation, it frequently proves a broken reed on which to rest our pathological study and therapeutic effort. Second, the significance of mechanical obstruction, whether due to membranous adhesions from whatever cause, kinks, megacæcum, cæcum mobile, or extreme degrees of ptosis, has not been given its proper interpretation. Third, the relation of cause and effect between ptosis and stasis has been erroneously interpreted. That extreme degrees of ptosis are not incompatible with normal physiological function of the colon, must, I think, be admitted by all who have studied large numbers of serial röntgenographs of the bowel. On the other hand, stasis, with its resultant pathology, through bacterial and toxin activity, is probably a frequent cause of ptosis. The recent interesting experiments of Murphy and Brooks (1) have clearly shown the presence, in the content of the obstructed bowels of dogs, of a toxin, the result of bacterial growth, which when absorbed in sufficient amounts, produces definite symptoms, pathological lesions, and death. Of the pathological lesions produced by such bacterial action, chronic colitis and pericolic adhesions are the most important and frequent. That pericolic membranes can be produced by stasis through the agency of bacteria has been abundantly proved; in fact, bacteria pass from the intestinal canal to the peritoneal cavity with comparative ease (2), Eastman (3) emphasized this fact at the American Medical Association meeting in 1914, and called attention to the presence of delicate, vascular membranes about the cecum in nearly all cases of chronic appendicitis with stasis.

Admitting then, the existence of a causative factor for many pericolic adhesions in bacterial

*Read at the sixteenth annual meeting of the American Therapeutic Society, held in San Francisco, Cal., June 21 and 22, 1916.

action incident upon a preexisting stasis, our therapeutic effort must be directed along somewhat different lines than heretofore. Such adhesions are merely a part of the vicious circle starting from a more remote cause, and treatment, in order to be permanent in its results, must be undertaken with a more thorough comprehension of those underlying conditions which were originally responsible for the anatomical abnormalities which have been so prevalently considered the starting point. It is obviously useless to expect results from the separation of peritoneal bands, the direct result of bacterial action attendant upon a preexisting stasis, and at the same time ignore the factors upon which this stasis originally depended. It would appear that the truth of this statement is emphasized in the light of the frequent failures which follow the attempt to deal with such conditions by surgical treatment alone. I do not wish to be understood as unqualifiedly condemning the surgical treatment of all conditions on which stasis depends. Dense adhesions, the result of peritonitis, frequently constitute the cause of a stasis which can be permanently relieved only by removal of such obstruction. A chronic appendicitis with dense inflammatory adhesions fixing the cecum to contiguous structures and thus producing stasis, can be relieved only by appendectomy and dissection of all nearby structures. I wish, however, to deprecate the tendency, so prevalent in certain quarters, of seeing only the mechanical obstruction, which while intensifying the pathological condition, is frequently the effect rather than the cause.

The increased conservatism recently evinced by surgeons of large experience in this work has been indeed significant. Coffey, of Portland, in a valuable communication to the California Academy of Medicine in 1915, as yet unpublished, called special attention to the relatively small proportion of these cases that are truly amenable to the surgeon's knife, and with equal candor emphasized the success attainable by patient and thoughtful study of the individual case and an intelligent application of dietetic, hygienic, mechanical, and medicinal agencies on the part of the internist.

This growing conservatism is all the more evident when we consider the results of the application of the more formidable surgical procedures of Lane. Short circuiting the bowel, by means of an ileocolostomy or ileosigmoidostomy, sometimes in addition, partial or complete colectomy, has claimed the attention of surgeons since 1909. The spectacular results reported by Lane have induced many surgeons in this country to adopt these procedures in conditions of colonic stasis. The results, however, have not been uniformly such as to justify the general application of such heroic measures. Subsequent Röntgen examinations have repeatedly demonstrated that the terminal ileum after ileocolostomy, frequently took on the character and function of a cecum, and became much dilated and impacted. Reverse peristalsis, or backing up of intestinal contents into the blind gut left where colectomy is not done, has also often proved a cause of impaction and consequent absorption, producing a condition far worse than before operation.

Leaving aside the consideration of the function of the colon, which Lane and his followers seem to ignore, the results following these operative procedures and the attendant dangers necessarily place them *en dernier ressort* rather than a routine procedure. Mayo has well said that the number of persons whose condition warrants the risk is comparatively small, and with candor deplures "the widespread adoption, by the medical profession, of surgical measures for this or allied conditions, while in the experimental stage, with little evidence to show that the supposed cures are permanent."

Indeed, those who implicitly follow the teaching of Sir Arbuthnot Lane in the treatment of this condition may well pause and reflect on the significant statement recently made by him (4): "Doubtless at no distant time, many of the toxic conditions that arise in consequence of stasis may be met by means other than operation. If colectomy has done no more good than to point the way to the physician it has more than fulfilled expectations."

In what manner then, can we meet these conditions by therapeutic measures, that may be expected to give satisfactory results in a considerable proportion of the cases?

That the cecum, ascending and transverse colons, have function, both digestive and absorptive, is, I think, admitted generally today by physiologists. Were man a solely carnivorous animal, this important organ could be dispensed with, and indeed he would be better off without it, for without doubt, poisonous substances are developed by the decomposition of unassimilated animal food in an organ which largely possesses the power of handling vegetable food and fluids. The evolution of man, however, has resulted in an omnivorous animal, and probably the best evidence of the necessity of a colon is seen in postoperative cases where Röntgen examination has shown the adaptability of nature to meet the requirements of the individual, by creating out of the terminal ileum an organ which is essentially a cecum.

It will be at once obvious that the first requirement in the handling of these patients must be dietetic. A diet rich in vegetable food, particularly the coarser vegetables with a large cellulose content, is here the first consideration. Preparations made from bran, while of negligible nutritive value, yet go to make up bulk in intestinal content, and are thus of service. Agaragar, which has the physical property of absorbing and retaining moisture, will aid in preventing the impaction of feces where stasis is present. This can be incorporated into the ingredients of various food stuffs.

Exercise, both general and applied to the abdominal muscles, is probably next in importance to the dietetic treatment. I wish to emphasize the necessity of special training on the part of those to whom is intrusted the important work of carrying out the technic of the mechanical treatment of stasis. This treatment can be carried on satisfactorily only in institutions where specially trained assistants can be obtained. Failures almost invariably follow the attempt to procure results by placing such patients in the hands of the average masseur. This is probably the chief reason why so many of these suffer-

ers, by disappointment and desperation, fall into the surgical class, when a more enlightened and thorough technic in dietetic and mechanical therapy would have resulted in cure. I do not wish to place myself open to the charge of creating another specialty in this age and time when specialism in medicine is fast reducing the family doctor to a position of "medical broker," but I maintain that it is not just to this large class of sufferers to drive them to the operating table, when an intelligent treatment carried out by those who have rendered themselves competent, by thoughtful application to the mechanical principles underlying such treatment, will in the majority of instances avoid surgical measures.

Drugs do not occupy an important place in the treatment of chronic stasis, except in cases where the condition is dependent upon a spastic condition of some portion of the colon where antispasmodics, of which atropine is probably the most useful, have their place.

We owe much to Lane for having brought to the attention of the profession the value of the use of petroleum oil. Its virtue is due to the fact that it is practically nonabsorbable and given when the stomach is empty, serves as a lubricant to the intestinal tract, preventing fecal impaction. It renders its best service when given in sufficiently large dose early in the morning and on retiring. For the same purpose oil enemata at bedtime are of service in some cases.

Carthartics, save at the very beginning of treatment and to meet occasional conditions which demand prompt clearing of the intestinal contents, should be completely eliminated from our therapeutic régime.

Abdominal corsets and belts, or adhesive supports to the abdominal wall, have value in increasing intraabdominal pressure and thus improving the circulation and relieving congestion in the abdominal viscera. Further than this, these devices are of questionable utility, and can no longer seriously be regarded as a means of directly relieving and replacing ptosed viscera.

The bacteriochemistry of the intestinal tract remains a chapter of romance; and yet it is to an elucidation of the conditions caused by the intestinal flora that we must bend our endeavor, if we are to attain a satisfactory specific therapy of the underlying causes of many cases of intestinal stasis.

Leaving out of consideration the question of bacterial cause of many pericolic adhesions, the significance of the rôle played by *Bacillus adherens* described by Bassler (5), and other bacteria in the causation of these membranes, the fact is abundantly attested by the brilliant experiments of Murphy and Brooks referred to earlier in this paper, and many others, of the importance of the part played by bacterial infection in the etiology of intestinal stasis.

Much has been claimed by some investigators from the use of autogenous vaccines, but it has seemed to me that there has been little theoretical basis for the assumption of great therapeutic success in this direction until a better technic can be

devised. Vaccines made from colon bacilli as usually obtained from the stools possess little virtue because such bacteria are usually of very low virulence, in fact, are frequently merely saprophytic.

On the other hand, there is much to be expected from a more thorough study of the flora of the intestinal tract and from the use of autogenous vaccines prepared from the intestinal discharge obtained from the proximal portion of the colon after a complete cleansing out of the distal part.

The case reports will serve to illustrate a few of the conditions contributing to stasis, which I have endeavored to describe in the foregoing paper.

CASE I. J. W., pharmacist, aged fifty years, was very ill of typhoid when nine years of age. Had two attacks of diphtheria. Had several attacks of tonsillitis, the last one five years ago. Appendectomy twelve years ago. Hysterectomy ten years ago. Had been much troubled with mucous colitis for many years, and for seven years had not had a bowel movement without the assistance of cathartics. For more than two years she had been anemic, somewhat dyspneic, and weak, without headaches or dizziness. Two weeks before coming to me she had a sudden, severe pain in the right upper quadrant, which came on about two hours after eating, without nausea, vomiting, or jaundice. It lasted about an hour and was relieved with heroine. Gallstone colic was diagnosed. Examination revealed a patient of anemic appearance. Skin much pigmented on hands, face, and back. There was a flat, unhealthy looking right tonsil and considerable pharyngitis, with a large amount of lingual lymphatic tissue. The chest was negative. Blood pressure 150. There was some tenderness over the right upper quadrant of abdomen and the cecum.

Stool examination showed a well digested, brown, liquid stool, with large amount of mucus, about equal in parts of mucus and fecal matter. Microscopically many yeast cells, fatty acid crystals, some fat globules, few starch granules, but no muscle fibres. Reaction strongly acid. Occult blood absent. No parasitic ova were found. X ray plates showed a slightly ptosed stomach, somewhat to the right, but otherwise normal. There was marked ptosis of the cecum, which under the screen was seen to be freely movable. It was seen in the twenty-four hour plate very much distended, approaching the proportions of a megacecum. Most of the bismuth was in the ascending colon and cecum. There were distinct nodular bismuth shadows in the transverse colon, suggestive of a spastic condition there. In forty-eight hours the cecum was still much distended, but considerable bismuth had passed into the descending colon. The relative position of the flexures, showing the ptosis of the hepatic flexure was well shown. Following the twenty-four hour plate, the patient took cathartics, which was interesting in view of the distended cecum. In seventy-two hours the cecum yet contained bismuth, and not until ninety-six hours was the bismuth entirely in the rectum.

Treatment: Dietetic, exercise, colonic massage, abdominal exercises, petroleum oil. No cathartics were allowed. Improvement practically immediate. Bowels moved regularly unaided since treatment was instituted. This was early in April. Improvement was continuous.

CASE II. Mrs. E. G. B., aged fifty-two years; housewife; for fourteen years had had attacks of dizziness accompanied by headaches. She had complained of stomach trouble for many years, particularly of gas, which appeared some hours after eating. She was not markedly constipated, though she had been in the habit of taking cathartics frequently. She had had some chronic articular trouble in the phalangeal joints of her fingers.

Examination showed a well nourished woman, slightly obese. Pulmonary and circulatory systems showed nothing abnormal. There was some thickening of the terminal phalangeal joints. Abdomen prominent with flaccid wall; some tenderness in the epigastrium. Liver and spleen not palpable. Careful examination of eyes and ears showed nothing to account for dizziness. Stool well digested and normal in appearance.

X ray plates showed the stomach, pylorus, and duodenum normal. Stomach empty in six hours and colon high and

hypertonic with bismuth as far as the splenic flexure. Marked spasticity of the colon, which was well seen in the twenty-four hour plate, particularly in the transverse and descending colon. The forty-eight hour plate showed a degree of colonic stasis, the cecum not having entirely emptied itself. At seventy-two hours the bismuth was pretty well in the rectum; no evidences of bands or adhesions.

We had probably here to deal with a spastic colon with stasis. Sodium iodide, an occasional calomel purge, and petroleum oil much improved this patient's symptoms.

CASE III. Miss N. A., aged twenty-five years. Her father died suddenly in an attack of angina pectoris. In June, 1909, she had an attack of neuritis in left shoulder and arm, accompanied with tachycardia, faintness, and dizziness. This was followed by succeeding attacks, less severe. She had had considerable digestive disturbance with constipation, frequent nausea, and vomiting.

Examination: Very tall, weighing 140 pounds. She had a rather frightened expression, exceedingly nervous, with marked vasomotor flushing over chest and neck. There was a diffuse precordial pulsation. Heart slightly enlarged, the first sound loud and booming at the apex. Pulse rapid. No eye symptoms of hyperthyroidism, no tremor, no struma. Abdomen showed general enteroptosis. Blood, urine, and feces negative.

Early in 1914 she entered St. Luke's Hospital, where she was put through a regime of rest and forced feeding. She left in two months without material benefit. During her stay she had several severe attacks of indigestion, due undoubtedly to attempts at forced feeding.

X ray plates at this time showed marked general ptosis, with cecal stasis lasting beyond seventy-two hours. An abdominal corset was fitted, and petroleum oil and oil enemata ordered.

In January, 1915, her symptoms not having improved, another series of plates were made. The stomach was tremendously ptoed with the pylorus on a level with the iliac crests in the median line. In six hours the stomach was empty and the meal was largely in the cecum, which was correspondingly ptoed and dilated and lying deeply in the pelvis on the left side. In twenty-four hours the cecum had largely emptied itself and the contents had reached the rectum, which was seen in an atonic condition. The significant features were the marked visceroptosis, the atonic condition of the stomach, cecum, and rectum, and the spasticity of the colon; no evidence of adhesive bands. This case illustrated the futility of attempting to remedy a marked visceroptosis by means of abdominal support. There was considerable improvement of the general condition by the use of atropine.

CASE IV. Miss D. H., aged thirty-nine years, presented herself with marked stigmata of mental disturbance. She was the sole attendant upon her mother, who recently died of a lingering illness. For some time she had been sleepless and decidedly melancholic, obsessed with the idea that she was in some way responsible for her mother's death, although she was in fact a most devoted nurse. Digestion good, appetite fair, bowels somewhat sluggish, though not markedly constipated. In the last month she had lost about ten pounds in weight. Abdomen rather prominent, with resistance on palpation along the course of the cecum and ascending colon.

X ray plates showed the stomach slightly ptoed, emptying on time. There was some ileal stasis. Cecum low down in the pelvis, though free. A spastic condition of the second portion of the transverse colon was well seen. That this was a spastic colon rather than due to an adhesive band was evidenced by the fact that there was no distention of the proximal portion of the transverse colon, as probably would be if constriction of any duration had existed, and further that the position of the transverse colon was not relatively distorted. There was, of course, a general ptosis. Cecal stasis existed beyond forty-eight hours.

Several months of institutional treatment were required to restore this patient. Her mental condition completely cleared.

CASE V. Mrs. P. M. D., aged thirty-five years, had a laparotomy five years ago, since which time she had had intermittent pain in the right lumbar region and on pressure over the eleventh and twelfth right intercostal nerve roots. She had obstinate constipation.

Examination showed considerable tenderness over the cecum and ascending colon. X ray plates and screen exam-

ination showed the stomach somewhat low and atonic, empty in six hours, and the bismuth well into the cecum and ascending colon. In the twenty-four hour plate a kink was seen in the transverse colon, also seen in the forty-eight hour plate, and a subsequent one taken after a bismuth enema. This kink was thought to be a peritoneal band, probably a result of the laparotomy five years ago. Surgical treatment was advised. Last October, she had a mild attack of appendicitis, which subsided by rest in bed and starvation. About three months later this patient complained of pain low in the right lower quadrant, and a mass was felt there which on pelvic examination seemed to be a large tube. It was very tender.

Operation by Doctor Barbat. There were numerous adhesions of the ileum to the anterior abdominal wall. The transverse colon was bound to the left cornu of the uterus by dense inflammatory adhesions. These were so firm that it was necessary to sever them with the knife. They were probably due to raw surfaces left at the time of the removal of the left tube at the previous operation. A large unilocular cyst was resected from the right ovary. The appendix was dissected loose from a mass of adhesions and removed.

This case was interesting as illustrative of a condition in which the x ray gave positive evidence of the cause and location of the obstruction and indicated the necessity of surgical treatment. Improvement in her condition was almost immediate. Petroleum oil was used for a time. When last seen, April 29th, she had discontinued the oil, her constipation had disappeared, and she felt perfectly well.

CASE VI. Mrs. M. L., aged fifty-six years; lived in Los Angeles. Had suffered with digestive disturbances for many years. Appendectomy and nephroproxy were done about fifteen years ago. She complained of gas, nausea, burning sensation in stomach, headache, and backache. Her attacks came on intermittently; during the intervals she was comparatively free. For the last year she complained of considerable pain in region of liver. Formerly weighing 142 pounds, she was now down to ninety-seven pounds. Rather emaciated in appearance, with a sallow skin and a suspicion of cachexia. Abdomen symmetrical, with the flaccid abdominal walls of visceroptosis; liver low and right kidney ptoed. Tenderness on pressure over the right side of abdomen. She had taken cathartics regularly for years.

Screen examination showed a vertical ptoed stomach, emptying rapidly with cap well outlined. Plate showed the stomach below iliac crests. In six hours stomach was empty and bismuth was well in the cecum which lay on the pelvic floor, somewhat to the left. The twenty-four hour plate revealed the ptosis of the colon. The hepatic flexure was low and the bismuth had not advanced beyond the middle of the transverse colon, where it was apparently obstructed by a kink. In forty-eight hours some bismuth had reached the rectum, but there was still much stasis in cecum, ascending and transverse colon, which persisted even after seventy-two hours. The kink in the transverse colon was probably caused by a dense peritoneal band, as was demonstrated to be the case in the preceding one.

Surgical relief was advised. The futility of palliative or medicinal measures was obvious; likewise the uselessness of corsets or other abdominal supports.

CASE VII. Mrs. H. W. S., aged fifty-one years, was referred because of a symptomatology suggestive of myocardial weakness. She had frequent attacks of bronchitis, with a hard, distressing cough, accompanied by some cyanosis and dyspnea; obese, and had had digestive distress and constipation for years. Her heart was considerably enlarged; the left border was twelve cm. from the median line. The sounds were pure and a faint, systolic, basal murmur was heard. Pulse 88, systolic blood pressure 140. There was some congestion at the bases of both lungs.

Rest, diet, digitalis, and strychnine improved her general condition considerably, and she was lost sight of for seven months, when she returned complaining of periodical attacks of pain during the past six weeks, suggestive of gallstones. She entered my service at St. Luke's Hospital for further observation.

Screen examination showed the stomach displaced and held to the right, without defects in outline. Several indistinct shadows were seen in the region of the gallbladder, one very definitely calcified. There was stasis in the ascending colon beyond forty-eight hours.

Diagnosis: Gallstones; perigastric adhesions; stasis in

ascending colon, possibly the result of the participation of the colon in the region of the hepatic flexure in the adhesions. Operation advised.

REFERENCES.

1. MURPHY and BROOKS: *Archives Internal Medicine*, xv, 392, 1915.
2. J. G. ADAMI: *British Medical Journal*, Jan. 24, 1914.
3. J. R. EASTMAN: *Journal A. M. A.*, lxi, 441, 1914.
4. W. A. LANE: *Operative Treatment of Chronic Intestinal Stasis*, p. 83.
5. A. BASSLER: *Medical Record*, 1888, 427, 1914.

233 POST STREET.

CLINICAL NOTES FROM THE FIRST SURGICAL DIVISION OF SEA VIEW HOSPITAL.

By ALEXANDER NICOLL, M.D., F.A.C.S.,
New York,

Professor of Clinical Surgery, Fordham University, School of Medicine Visiting Surgeon, Sea View and Fordham Hospitals;

AND MICHAEL J. HORAN, M.D.,
New York,

Assistant Visiting Surgeon, Sea View Hospital; Clinical Assistant in Surgery, Polyclinic Hospital.

The following cases, selected from the first surgical division at Sea View, are presented in the hope that they may prove of interest and because they represent in some small degree the variety of the surgical problems with which we have to contend. As organized at present, the surgical work at this institution is limited in no small measure by the separation of the work into that which is generally surgical, the gynecological, the orthopedic, the genitourinary, and the specialties of the eye, ear, nose, and throat. The surgical service, therefore, excludes all cases which may properly be considered in these latter classes. With this restriction, however, the work is varied, and interesting, and presents difficulties which tax the surgeon with no small burden. As distinguished from the service of an emergency hospital or one with an acute service, there is the added factor at this institution of the element of tuberculosis, which in itself must be considered primarily, and which frequently makes it impossible, or highly dangerous, to hold out to the surgically ill the relief that the condition calls for. It brings even more forcibly to the attention of the surgeon the fact that we must treat the patient and not the disease.

It is because of this added factor of surgical risk that the organization of a surgical staff, especially of a resident staff, should be carried to the limit of perfection, and that this organization be such that the patient is kept closely under observation for the period of immediate recovery from the operation itself. Without such organization and control it is impossible to achieve results that should be well within the reach of the chief of staff, and to which these doubly unfortunate people are entitled. Surely these sad victims of tuberculosis, denied their ounce of prevention by unfair social and economic conditions frequently not of their own making, should receive the full pound of cure.

In the early days of Sea View we were not infrequently brought in contact with cases which were improperly referred to this institution; cases which were not tuberculous in nature, but which were presumed to be so for one reason or another. The question of diagnosis is frequently most difficult,

and there is at this writing a marked improvement in this respect as reflected by the various services at Sea View. The following is a case in point and seems to indicate that common conditions are still overlooked by the man whose whole attention is riveted upon a special line of work.

CASE I. Woman, aged thirty-four years, married, sick for six weeks with the following history: Taken sick suddenly with chill and high fever, followed in a day or two by cough and the expectoration of discolored sputum. She was critically ill for ten days and then improved for several days. Two weeks from the onset of her illness, she began to go down hill rapidly, her fever returned, pains in the chest were severe, and she sank quickly into a generally septic condition, with repeated chills, profuse sweating, and continued cough. There was great loss of flesh and strength, and the patient was confined to bed, rapidly growing worse. She was admitted to Sea View Hospital and to the service of Doctor Horowitz. A needle was put into the chest and a purulent fluid was obtained, under tension. She was moribund. Referred to the first surgical division, she was immediately given light anesthesia, a rib was resected, and the pleural cavity opened. The amount of pus evacuated was so great that it was almost impossible to conceive that a single chest cavity could have contained it. The lung was nowhere to be felt. Considerable time was taken in emptying the chest cavity to prevent the immediate collapse of the patient on the operating table, but in spite of this she succumbed to sepsis a few hours later.

This patient came to the department with a ready-made layman's diagnosis of "galloping consumption." Such is, unquestionably, the history of numerous cases of this fanciful condition. At no time was any record obtained of tubercle bacilli in the sputum. The correct diagnosis of this case is writ in letters so large that he who runs may read.

A large portion of the surgery at Sea View may be properly looked upon as the treatment of complications. The question as to whether the case under discussion is "medical" or "surgical," is frequently a nice one, and the exercise of good judgment is nowhere more needed than here. Often a patient with infected lungs is suffering from a complication, tuberculous or not, which is so distressing that all his bodily energies are exhausted in the combat with his complication, and he is left weak and open to the "drive" of the tuberculous infection. It is especially in this class of case that properly applied surgery works for the best interest of the patient.

CASE II. Charles H., aged eleven years, admitted with beginning involvement of the right apex. Critically ill and bedridden. Temperature 102° F., pulse thin and feeble. Face, hands, and legs edematous. Abdomen distended, but without demonstrable fluid. Urinary findings negative as regards disease of the kidneys. Suffering principally from a diseased condition of the rectum.

Examination: Bulging about the anus; several sinuses encompassing the entire circumference of the anus. Thin, milky pus leaked from the sinuses and from the anal canal. Impossible to insert finger into rectum because of the exquisite sensitiveness of the anal canal.

Operation: Chloroform anesthesia. The finger was pushed into the rectum through what should have been the anal canal, but which was, in effect, a highly inflamed sinus, tightly constricted, the walls of which were attempting to heal together. Considerable force was required to gain entrance to the rectum proper, and when this was finally accomplished there gushed from the lower bowel at least a pint of milky pus. Inside the internal sphincter were several openings which led to a pus cavity which practically surrounded the entire anal canal, and extended up to the tuberosities on each side. The external openings also led into this cavity, the perirectal and perianal abscess having numerous external and internal outlets. The lower

three inches of the rectum and the anal canal were practically suspended in a pool of pus. The sphincter ani was gently but thoroughly stretched, the rectum was washed clean, and a curvilinear incision was made through the skin, uniting the several external openings. The abscess cavity was lightly packed, and a "whistle" was placed in the anal canal.

Postoperative course: The patient's bowels were not permitted to move for six days, and then a cathartic was given, the action of which was facilitated and made painless by the timely use of an enema containing five ounces of glycerin to the pint of soapuds, given through the whistle. The rectum was found to be clean, drainage had been perfect, and the patient at the end of a week had a large but fairly clean abscess cavity draining through a single external opening, and was free from pain. The general condition of this little chap was so markedly improved that it was difficult to believe that it was the same child. The edema of face, hands, and legs had disappeared, his temperature was normal, and he was no longer "sick."

This patient has gone on to a complete recovery from his rectal condition, and has gained so markedly in weight and strength, as well as in general growth, that it is reasonable to believe that he will eventually free himself entirely of his tuberculous infection, if indeed he has not already done so, no evidence of it being discoverable at the present time. It is just another evidence of the old surgical truth—all the children need is a chance.

Nontuberculous surgical affections often add their bit of weight to the scale against the patient with tuberculous infection, as in the following case. It is such a self evident truth that it scarcely needs the telling, but at the risk of being trite let me say that what makes a well man sick makes a sick man sicker. Frequently the tuberculous patient has only just a little more than he or she can bear and the surgeon, at the proper time, may be able to reach out with the timely aid and give the sick man the needed "hand up to health."

CASE III. Miss M., aged twenty-eight years, admitted with involvement of the right apex. Had had several attacks of biliary colic, the intervals being filled with the usual irregular gastric distress. She was suffering generally from the absorption attendant upon a chronic cholecystitis. Extremely nervous of temperament, her attention was constantly fixed upon her painful abdominal condition and she lived in dread of a colic.

Operation: Under general anesthesia we removed a thickened gallbladder filled with stones. The operation was easy and her recovery was uneventful.

Postoperative course: The patient improved so rapidly that she was discharged cured of her tuberculous lesion and was in such generally vigorous health that she was able to enter upon a course of training for the career of trained nurse.

Because of the character of the institution the subject of tuberculosis of the lymph nodes naturally takes a high place in the surgical conditions met with. We constantly meet with patients who have been operated on for this condition and who show recurrences. Our service at Sea View has led us to believe most implicitly that the proper treatment of this rather common condition is the complete removal of the offending chains. I do not feel that I can do justice to this subject in a paper of this sort, and hope to have the opportunity, at a future time, to present a full report of the cases operated in at Sea View; suffice it to say, at this time, that the results seen here do not reflect credit upon half way measures in this particular form of tuberculous infection. The majority of the cases operated in by us had already been operated in before they came

to Sea View, and not infrequently the pathological condition met with at our examination has been so marked that we are at a loss to understand just what was done at the first operation. The following case presents some of the difficulties we have to face in operating for this condition.

CASE IV. H., aged twenty-five years, was referred to the first surgical division suffering from a general enlargement of the cervical nodes; all chains of nodes on both sides of the neck were involved. On the left side of the neck operation had been done, with the incomplete removal of the node chain of the upper anterior portion of the neck. There was a general involvement of the anterior and posterior superficial and deep chains, and a discharging sinus was located at the level of the hyoid bone, the lower end of the scar of the first operation. On the right side of the neck four operations had been done. At the last operation an effort had been made, after curetting the diseased areas, to sterilize the side of the neck by the injection of alcohol and carbolic acid into the tissues adjacent to the sinuses. It is not possible for me, with a limited facility in the use of words, to give any proper picture of the right side of this patient's neck. Suffice it to say, that to the man who appreciates the artistic features of a rugged, bleak, scarred, jagged landscape, this man's neck was a treat. Numerous sinuses, freely intercommunicating, riddled the neck from the mastoid process to the clavicle and in front of the clavicle, near the sternal articulation, was a boggy, fluctuating mass, about to break through the skin of the upper chest. The tissues of the right side of the neck were cartilaginous in hardness, and scars, healed, half healed, and bearing towering granulations, roamed apparently at will from midline in front to midline behind. The function of the neck muscles was largely abolished.

Treatment: The less forbidding task was undertaken first, and a clean dissection of the left side of the neck was done under general anesthesia. All nodes, deep and superficial, anterior and posterior chains, were removed; submaxillary, submental, suboccipital nodes were excised. Drainage of temporary character was obtained by means of a stab wound just above the spine of the scapula. The discharging sinus was carefully and completely dissected out and the incision was sutured with horsehair.

Postoperative course: The temporary drainage was removed in forty-eight hours and primary union was obtained. Recovery was uneventful. One month later, at the earnest request of the patient, the right side of the neck was operated on; the cosmetic result to be obtained here added considerably to the surgical problem, and taxed plastic maneuvers to the limit.

Operation: Owing to the site of already existing scars and sinuses, a U shaped incision was decided upon as offering the best hope of covering in the field of operation at the conclusion of the dissection. Accordingly such an incision was made with the convexity upward, the summit of the curve being just below the mastoid process, and the arms of the U were carried to the sternoclavicular articulation in front, and to a point just posterior to the acromioclavicular articulation behind. This flap was turned down without any effort being made to carry with it any of the subcutaneous structures because of the widespread disease. The tissues were found to be of cartilaginous hardness, and anatomical landmarks were completely obliterated. The sternomastoid, hardly distinguishable from other structures, was divided at its midpoint and was found to be riddled with sinuses leading up from the diseased tissues beneath it. It was removed from origin to insertion. The jugular vein was so firmly imbedded in the diseased mass that it was tied off at the clavicular level, turned up with the mass, and ligated at the base of the skull, being removed with the rest of the infected tissues. It was then possible to work back away from the vagus and carotid, and to cut from the surface of the deep neck muscles, the infected glands and fascia. At the lower portion of the field of operation the phrenic nerve was carefully freed from the mass. At no time was it possible to see anything which even remotely resembled the spinal accessory nerve, which undoubtedly was removed with the sternomastoid muscle. The infected tissue was handled *en masse*, and at the posterior portion of the field of operation dissection was carried out to the spine of the scapula. The entire side of

the neck was absolutely freed of infected tissue in an area bounded by the mastoid process above, the midline of the neck in front, the clavicle below—infected tissue being taken as well from behind the clavicle—the point of the shoulder externally, and the spine of the scapula to its inner end behind. The boggy mass in front of the clavicle was then opened from above and its interior wiped out with pure carbolic acid. The skin flap was then replaced and sutured to the edges of the denuded area, which edges were formed by healthy skin, all sinuses and infected skin having been sacrificed immediately after the making of the primary incision. The skin flap was under tension, which was later relieved in large measure by dressing the patient with the head drawn well over toward the affected side. Temporary drainage was provided for by a stab wound at the site of the boggy mass already spoken of, and the patient was returned to the ward in good condition.

Postoperative course: The temporary drain was removed at the end of forty-eight hours and primary union was secured, except at the points of the flap where the tension was too great, and at these points clean granulations soon filled the defects, and clean delayed union was obtained.

At the present time the patient's neck is entirely free from tuberculous disease and the skin is soft and pliable over the deep muscles. It seemed to me to be extraordinary, considering the complete removal of the sternomastoid and the spinal accessory nerve, that this patient has practically normal ability to turn his head from side to side, shrug his shoulders, etc., functions which we are accustomed to look upon as largely dependent upon the existence of sternomastoid and spinal accessory. It appears to us that by far the most important thing about this case is the fact that it has been possible entirely to eradicate this cervical focus of specific disease, and the fact that a clean, widespread dissection of the diseased structures is *the* means to the end.

To revert to a previous remark, let me cite a case to show that the surgeon can aid in the recovery of the tuberculous patient by the correction of a condition which is distinctly associated with surgical tuberculosis, and which is not at the same time itself tuberculous. The old idea no longer clings. I believe that it is better for the patient with tuberculosis to suffer the distress or even discomfort of a discharging sinus. The superstition that the healing of a tuberculous sinus results in lighting up the general process is known to be superstition and nothing more.

CASE VI. J. P., female, aged thirty-five years, was admitted to Sea View suffering from involvement of both lungs at the apices, and with a discharging abdominal sinus. She gave this history: Up to four months before admission she had been well but delicate. At that time she was taken suddenly ill with appendicitis, was hurried to a hospital, and operation was done, the appendix removed, and the peritoneal cavity drained. Following this operation, drainage did not cease, and a month later she was reoperated on for the discharging sinus. At the second laparotomy it was discovered that she was suffering from tuberculous peritonitis. The second operation failed to accomplish healing of the sinus, and she was referred to Sea View as a sufferer from tuberculosis. Operation for the healing of the discharging sinus was offered and accepted.

Operation: The abdomen was opened in the median line after packing the sinus. The old scar was excised and the sinus approached from the free peritoneal cavity. It was traced downward toward the pelvis, and at the lower end of the suppurating tract we found a bit of tissue the size of the tip of the index finger. This small portion of tissue was closely adherent to the sigmoid colon and was evidently the remains of the tip of the appendix which had been incompletely removed at the first operation. The little tab of tissue was removed, the entire tract dissected out, and the abdomen closed in the usual manner. During the course of the operation the markedly tuberculous char-

acter of the peritoneum was observed, this condition being still in the stage of discrete tubercles scattered widely over the surface of the peritoneum, the most markedly involved portion being the small intestine.

Postoperative course: The patient made a good recovery. Some infection of the abdominal wall ensued, but rapidly cleared up and the patient was freed from the annoyance, discomfort, and pain of a discharging abdominal sinus, and left free to devote all her bodily energies to the control of her tuberculous infection. She has improved markedly in every way.

This case might well lead us to question whether or not the original acute infection of the appendix was not in itself an acute manifestation of tuberculous disease. The following is one of the numerous cases which would strengthen our belief that tuberculous infections within the peritoneal cavity may be associated with symptoms of a most acute nature.

CASE VII. Miss N., aged twenty-two years, single, was admitted to the first surgical division at Sea View Hospital with the following history: Three months before admission she was taken to Fordham Hospital, on my service there. She was suffering from a diffuse peritonitis of two days' standing and acute onset. She was seen by my assistant, in my absence, and operated on immediately. At operation the abdominal cavity was found full of pus with the focus of most intense inflammation in the pelvis. It was evident that the peritoneal infection was the result of tubal disease, and it seemed best to the operator to merely drain the pelvis both above the symphysis and through the posterior cul-de-sac. This was done and the patient sent back to the ward in very poor condition. She rallied, however, and for the next two weeks had a temperature between 102° and 103° F., with a pulse ranging between 110 and 120. She was rapidly going down hill when I saw her first and I felt that a freer drainage from below might help her, although the discharge from both abdominal tube and vagina was very free. Accordingly she was anesthetized, the colpotomy wound was enlarged, and tubes were inserted behind the uterus. This procedure did not help her, and at the end of two weeks a mass appeared over the ascending colon. This was very tender. I then thought that it would be wise to open the general peritoneal cavity and locate and drain all pus collections that might be encountered. This I did, approaching the mass over the ascending colon from the general peritoneal cavity. The opening of the abdomen at once disclosed a tuberculous peritonitis. The drainage above and below the pelvic brim was made continuous, and the mass over the ascending colon, easily recognized now as a perforating tuberculous ulcer of the colon, was opened into the patient's flank through a stab wound, the opening instrument being guided by the hand still within the peritoneal cavity. The peritoneal cavity was then sutured and the patient returned to the ward in good condition. The institution of perfect drainage immediately caused a marked improvement in the patient's general condition and she enjoyed an afebrile postoperative course. She was referred to Sea View from my division at Fordham in the hope that the change of air and surroundings would help her. Her condition after admission steadily improved.

119 WEST EIGHTY-EIGHTH STREET.

Gonorrheal Folliculitis.—This condition is the common cause of chronic persistent discharge and has heretofore responded poorly to all modes of treatment. Edgar G. Ballenger and Omar F. Elder (*Journal A. M. A.*, May 27, 1916) have obtained the most satisfactory results in subacute and chronic cases by direct destruction of the follicles through d'Arsonval bipolar electric cauterization. The technic is simple and is described in detail in their paper. No ill effects, other than occasional temporary increase in discharge, have been noted.

ADENOCARCINOMA OF THE COLON.

By SAMUEL ROSS CROTHERS, M. D.,

Chester, Pa.,

Staff Surgeon, Chester Hospital.

AND ROBERT KILDUFFE, JR., A. M., M. D.

Chester, Pa.,

Director, Pathological Laboratory, Chester Hospital.

CASE. C. C., fifty-six years of age; policeman, admitted to the Chester Hospital, January 28, 1915; chief complaint, abdominal pain and constipation.

Past history. Measles in childhood; pleuritis when a young man, confining him to bed from three to four weeks; another slight attack of pleuritis, ten years ago, and gonorrhea once when a young man, cured after three to four months of treatment by a physician. Denied luetic infection, of which no evidence could be found. About ten years ago, was treated and eventually operated upon for hemorrhoids. No other illness.

Family history. Father, a shoemaker, died at the age of sixty-six years from an intestinal growth, the exact nature of which the patient did not know, but which, he said, was pronounced a "growing cancer" by the attending physician. Mother died at fifty years of age of "lung trouble." Had five brothers, of whom three were living, two dying in the patient's childhood of causes unknown; and four sisters, two of whom died of causes unknown.

Social history and habits. Smoked and chewed tobacco, though not to excess; extremely moderate user of alcohol. Had always been a rapid eater and did not chew his food thoroughly. Married when twenty-seven years of age, his wife dying at forty years of age of tuberculosis. He had two sons and one daughter, all of whom were living and well. No history of miscarriages.

The patient's first employment was as a weaver and loom fixer, which position he held for ten years, working on an average ten hours a day. In his work there was always more or less intermittent pressure against his abdomen by the bar of the loom. For the last twenty-three years, with the exception of two periods of one and three years, the patient had been a member of the police force, and although on active service had never received any injury of moment until November, 1915. His best weight two years ago, was 150 pounds.

History of present illness. For the last ten to fifteen years he had been more or less constantly troubled with constipation and indigestion. Always a rapid eater, never chewing his food well, he had suffered, after eating, from a sensation of weight and discomfort, burning pain, and obstinate constipation, so that he had never had a bowel movement without taking a purgative, generally licorice powder. He had been intermittently under a physician's care all this time, in the intervening periods treating himself. There had been no marked loss of weight during this time, though it had varied within slight limits, and although not always feeling strictly able, he had never lost a day's work until his admission to the hospital. Four or five years ago, after a gastric analysis, a diagnosis of hyperchlorhydria was made, and under appropriate treatment, the patient was symptomatically well for over a year, when the old symptoms returned, became gradually worse, and the treatment was no longer efficacious. He had never had any coffee-ground vomit, and in the last year the pain had had no relation to eating and was not relieved by the ingestion of food. Four months ago, while making an arrest, he received a violent blow in the abdomen when, he said, he "felt something give way." Shortly after this, within a few days, he passed a dark, tarry looking stool, to his knowledge, was the only one he ever had. He did not, at the time of the injury nor subsequently, vomit blood. Following this injury, however, his abdominal pain became constant and more severe, so that he ate little, found little relief from treatment, and slept little, even after taking veronal and similar drugs in moderate amounts. Shortly after he received the blow, he began to notice a "lump" in his abdomen, at first in the left lower quadrant, from whence he could see it pass slowly to a corresponding position in the right side, the movement being accompanied by severe gripping pains. Eventually this lump remained in the right lower abdominal quadrant without changing materially in size. The abdominal pain became more and

more severe and the constipation more and more marked, until eventually the pain was always present, night and day; he began to lose weight and strength and found it impossible to obtain much sleep even with the aid of drugs. After a stool was obtained there would be some relief of the pain, but this was never entire and always temporary. About this time he began to practise gastric lavage with saline solution each morning, which gave him some slight transient relief.

Status præsens. The patient was a tall, thin, gaunt, and somewhat haggard white man, weighing 130 pounds, and looking much older than his age. The face had an anxious and harassed expression and presented a distinct picture of loss of weight, and in color was cachectic. Examination of the chest was negative, except for the prominence of the bony framework due to loss of weight. The abdomen was conspicuously concave, except in the right lower abdominal quadrant, where there was a distinctly perceptible rounded prominence. On examination this mass was firm, irregularly rounded, and freely movable, not being attached to either the skin or the surrounding structures as far as could be made out. It was not markedly tender and could be pushed well over into the left side. There was no marked prominence of the abdominal veins. The liver was somewhat enlarged, but not tender to palpation. No enlargement of the spleen.

No gastric or pancreatic masses or tenderness could be definitely made out. Urinalysis, except for a specific gravity of 1005, was not noteworthy, hemoglobin eighty-five per cent., red cells 4,900,000, white blood 9,400. A differential count was not made. No occult blood was found in the stools. On two occasions test meals were given, but in each instance the stomach was found empty. After the administration of cathartic pills, the patient passed many scybalous masses.

The x ray report after a bismuth meal was: "The greater curvature of the stomach lay one inch below the umbilicus. The right half of the stomach showed a shadow of medium intensity compared with the left cardiac and containing the bismuth meal. At, or near the pylorus, was a nodular, irregular condition of the stomach outline on both curvatures, but especially marked on the lesser curvature."

As there was very little doubt of the presence of an intestinal neoplasm, the patient was operated upon.

OPERATION.

A median incision was made above the umbilicus to permit exploration of the stomach and liver. The stomach, though posed, was apparently normal. The liver was found much enlarged, but of normal contour, color, and consistence, without masses or nodulations. Gallbladder and pancreas were apparently normal to palpation. The incision was then closed without drainage.

A second incision, four inches long, starting about one and one half inch above Poupart's ligament, was now made through the right rectus muscle. On entering the abdominal cavity a marked ptosis of the transverse colon was at once apparent, in which, just beyond the hepatic flexure a large mass, about the size of a large orange, could be felt. This was within the lumen of the bowel, firm and irregularly rounded, and could not be moved within the lumen. The regional mesenteric glands were all enlarged, easily palpable, and very firm. One of these was excised for examination.

In the hope of giving the patient symptomatic relief, it was determined to resect the portion of the bowel containing the growth. The bowel was accordingly freed, the portion containing the tumor mass about five inches resected, and an end to end anastomosis performed by means of the Murphy button. The patient returned in fair condition.

The portion excised, together with the excised

gland were submitted to microscopical examination, a report of which follows:

Specimens consist of a lymph gland removed from the mesentery and a section five inches in length resected from the transverse colon. The gland is very firm and hard. On opening the lumen of the bowel it is seen to be markedly occluded by numerous large papillomatous masses protruding from the mucous membrane, underneath which they apparently lie. While quite firm en masse, individually they are somewhat friable. They are grayish pink in color, do not appear very vascular, and have not, as yet, produced complete obstruction. Microscopic sections, stained with hematoxylin and eosin, present a typical picture of extensive adenocarcinoma and sections of the lymph node showed metastatic adenocarcinomatous cell groups.

The postoperative history was entirely uneventful, the temperature never rising above 100° F., and permanently reaching the normal level on the eighth day. The pulse never rose above 80. Twelve hours after operation, water and grape juice in small amounts were permitted; and the second day, peptonized milk and whiskey were given by bowel. On the third day, broths; on the sixth day, toast, and on the ninth day, soft diet was allowed. Twenty-two days after operation the patient was on full diet, avoiding such foods as were hard to digest, and went home. Six weeks after operation he had gained thirteen pounds, and was anxious to go to work, and at the present time, fourteen months after operation, he is in better health than he has enjoyed for years.

We present this report as a case of symptomatic cure only, and as illustrating what may be obtained in this regard in many cases too often looked upon as inoperable.

415 EAST BROAD STREET.

425 EAST BROAD STREET.

A PLEA FOR MALE NURSES.

By P. SAMUEL STOUT, M. D.,
Philadelphia.

Recently in the city of Philadelphia we have experienced an unusual condition. In the latter part of December, 1915, there was a distinct scarcity of nurses. No nurses were to be had for days at a time. On December 26th, I personally tried, without success, every known means of procuring a nurse. At one agency, the attendant said she had had so many calls she was tired answering the 'phone, and asked me to tell my friends that there were no nurses to be had and please not to call them. This brings out a condition which was perhaps not foreseen a few years ago. There are fewer young women desiring to take up the study of nursing nowadays. The increased requirements and the longer term of service deter a great many young women who otherwise would like to be nurses. Since the women nurses seem to be getting fewer in number, it seems to me the time has come when we must look to the male sex to take up a greater part of the burden of nursing the sick.

Would it not be attractive to a young man to take up a work in which he could reasonably expect at least four dollars a day, and if the board and lodging is considered, it would equal almost five dollars a day, rather than spend his time for perhaps half

that amount in a department store with very little chance of advancement? It seems to me a good plan to advise the young men who are leaving high school (and only high school graduates should be considered, or those having an equivalent education) that if they took training in a hospital and became thoroughly proficient as nurses, their future would practically be assured and their income would be at least twenty-five dollars a week for every week they worked. I have in mind now two men who have been nurses, one for twenty-three years and another for seven, and in that time they have practically never been out of work; both have homes and families and one has an automobile. Marrying has not in any way affected their work. This is not true of the woman. When a woman nurse marries, as a rule her work as a nurse ceases. A man may marry, but he goes right on with his nursing just the same.

Another thing—a young man may be considering taking up medicine, but is not just sure whether he cares to or not; would it not be better for him to take up nursing to find out if he likes to be around the sick, rather than to take up medicine, and after he graduates find it is utterly distasteful? Could we not in some way arrange that the young man taking up nursing might be able to have his last year in the hospital equal his first year in college, so that he would only need one additional year pre-medical training to admit him to medical college? This would not militate against the two years in college requirement of the A. M. A. Should we not in this way secure young men eminently fitted for medicine, better than some rich man's son, who takes up medicine simply because he seems to be unfitted for anything else?

Some one in the future will have to do the hard work in medicine. With the increased requirements of medical colleges, both for entrance and for graduation, the men will become so highly trained and educated that the hard work of medicine will be very distasteful to them. They desire to be specialists the moment they leave the hospital. Some one will have to do the hard work. Would not these men who have been nurses and who understand the hard work be more willing to perform the arduous duties of medicine, rather than the students brought up in luxury, who are not accustomed to hard work, and are further highly specialized by their training? Unless we supply the public with legitimate physicians to do the hard work necessary, they will get into the hands of quacks, who are always present and ready to step in. It seems to me that the best way to meet this demand would be to open the hospitals to the male nurses. They could attend to the male patients and do the orderly work, which would be an improvement over the present condition of hiring anyone who happens to come along for almost nothing, as an orderly. With the two or three years' training as a nurse and one year pre-medical training, they should be prepared to enter medical college. This would also provide a very good way for an ambitious young man to work his way through medical college.

This should be attractive to a great many young men, and would be a great help to the physician

who needs a nurse (often preferably a male nurse) since it has been recently demonstrated in Philadelphia, at least, that the number of female nurses is not sufficient to handle the great amount of work. It would also be a godsend to those who are sick, because about one half of the sick are male patients, and these could be better taken care of by male nurses. From time to time we have patients to whom we hesitate to send a woman nurse. The male nurse must come sooner or later. Male nurses could do the work now done in the operating room by orderlies without any detriment whatever. The man is stronger, he has more endurance, he is better able to handle the patients and lift them, and it is more fitting for him to do most of the work around a male patient than for a woman to do it. And it would put the woman nurse in her own sphere—to nurse the women and children.

The hospitals should open their doors to the young men to study nursing. Steps should be taken by the A. M. A. toward the end that all hospitals receiving State aid should necessarily permit young men to take up nursing.

I was recently called to attend a prominent man whose wife requested a male nurse, on account of some unpleasant experiences she had had with female nurses.

The argument might be brought up that women are ideal nurses, and have always been nurses. A fitting answer to that might be that women have always been cooks and yet the greatest chefs are men.

An educational campaign should be instituted in all the high schools, informing young men of the advantages of taking up this profession, and all the hospitals receiving State aid should be opened to them.

A certain proportion of the young men should be trained for nursing in the army hospitals. In the event of war they would be invaluable, and could be sent to places where it would be impossible to send a female nurse.

The male nurse could be trained as a professional anesthetist.

SUMMARY.

1. Male nurses are necessary because of the increasing scarcity of female nurses.
2. Male nurses are more fitted for the work in the male wards than female nurses.
3. Male nurses could attend to all the orderly's duties about the hospital, and with much more efficiency than the ordinary orderly.
4. Male nurses could carry out all the operating room technic.
5. Male nurses would become more and more proficient since their work would be continued as a life work, and marrying would not terminate their nursing careers as it does with the female nurse.
6. Male nurses could be trained as professional anesthetists.
7. Male nurses would have a good groundwork for the study of medicine.
8. Male nurses would be eminently fitted for any and all work in case of war.

PATHOLOGICAL CONDITIONS IN HEMATURIA AND PYURIA.*

By A. S. SANDERS, M.D.,
New York,

Instructor, Genitourinary Department, Post-Graduate Hospital;
Chief, Genitourinary Department, Mount Sinai Clinic.

Hematuria and pyuria may be visible or only microscopic. The most frequent bacteria found in pyuric conditions are colon bacilli, staphylococci, streptococci, gonococci, pneumococci, and *Bacillus tuberculosis*.

The most common site of pus in the male is the urethra and the organism most frequently encountered is the gonococcus. The entire lower urinary tract may be involved. For purposes of localization, the various irrigation tests such as the Kollmann test, or Jadassohn's "expression urine test," Wolbarst's three glass catheter test, have been found practical and reliable in differentiating anterior urethritis, from posterior urethritis, prostatitis, and cystitis.

To determine if pus is from seminal vesicles, the method of Cabot is employed. The urethra and bladder are flushed with a mild antiseptic solution, so as to remove contamination from these sources. The bladder is then distended with the solution and the prostate is massaged; the solution voided contains the prostatic secretion. The bladder is again filled with saline solution and the seminal vesicles are massaged and the contents voided and examined microscopically.

Common causes of pus in the female are vaginitis, vulvovaginitis, urethritis, and cystitis. An ascending infection to bladder, pelvis, and kidney is not infrequent in the female, while in the male a gonorrheal ascending infection is very rare.

Balanitis in the male.—By retracting the foreskin, the inflamed glans is seen, covered with pus, or if ulcerated, with blood. A chancre or chancroid may be present back of the foreskin. Not infrequently condylomata, herpes, and eczema are found; in the very young, adherent balanitis; in old, neoplastic.

By means of the endoscope and cystoscope, we examine and localize lesions in the anterior and posterior urethra, the verumontanum, the prostatic sinuses, the bladder sphincter.

Causes of vesical hematuria and pyuria. Cystitis is from neighboring parts and to this belong gonorrheal cystitis and cystitis in puerperal women; cystitis due to trauma from calculi and foreign bodies; cystitis due to retention, as in prostatic hypertrophy; stricture, diverticula, paralysis of bladder of central origin, as in tabes and myelitis; tuberculous and neoplastic cystitis.

Gonorrheal cystitis is due to extension from the posterior urethra. In very severe cases pus and some blood are also found in the urine. A more accurate diagnosis can be made by employing one of the irrigation tests and a more complete examination by cystoscopy.

Calculi are best seen with the cystoscope, and the x ray is next in importance, especially in very young children, where the cystoscope is not practical on account of the small lumen of the urethra.

*Read at a meeting of the Williamsburgh Medical Society, Brooklyn, February 13, 1926.

The symptoms are pain, disturbance of micturition, and urinary changes such as *hematuria*. *Hematuria* is very often microscopic. As the calculus soon causes cystitis there is soon found an admixture of pus and blood. Beside the cystoscope and x ray, palpation should be made, and a stone searcher used. Palpation should be made first through rectum, then through vagina and also bimanually. Stones may exist in the bladder a long time without causing symptoms. They are often found during a cystoscopic examination in prostatic hypertrophy, though this condition at the time gives no hint or suggestion of stone.

Foreign bodies are easily detected by cystoscope and x ray. They soon cause cystitis and are often a nidus for formation of calculi.

Tumors of bladder may exist without causing symptoms, or again may give rise to severe urinary disturbances. Tumors of the bladder are benign or malignant. Benign are fibrous papilloma and villous papilloma. Malignant are papillary carcinomas and infiltrating carcinomas.

Sarcomas are not as frequent. They are rarely encountered in the young or in adults between the ages of forty and sixty years. To corroborate the diagnosis, it is usual to submit to the pathologist a section of tumor excised with an operating cystoscope. The most characteristic symptom of tumor of bladder is painless hematuria. It is intermittent, and as the tumor grows and becomes larger, hematuria is a more constant symptom. It comes on suddenly without cause or reason and disappears in the same way. Dysuria and frequency are also present, depending on the site of the growth. If near the bladder neck, it may cause signs of obstruction and even temporary retention. Pyuria is present in vesical tumor when cystitis develops. In suspected vesical growths the cystoscope is the most reliable instrument for diagnosis.

Tuberculosis of bladder is always secondary to kidney tuberculosis and may be secondary to lesions of the genital organs and may be an extension from prostate and seminal vesicles, epididymis, and testicles. The symptoms are urinary urgency, dysuria, and later strangury, hematuria, and pyuria are found associated with one another. An intolerance of the bladder to the mildest and gentlest instrumentation so that the passage of a soft catheter is painful, is suspicious. The discovery of tubercle bacilli establishes a positive diagnosis. Casper believes that in eighty per cent. of cases of vesical tuberculosis, tubercle bacilli are found. If not found, resort should be had to inoculation of guinea pigs. The cystoscope is a more valuable aid in making a diagnosis. The first diagnostic sign may be an appearance of redness or small inflamed area around one ureteral orifice, or when more advanced, distinct ulceration. The bladder itself shows signs of inflammation, ulceration, and tuberculosis in later stages.

Pyuria in urinary retention. In retention due to hypertrophy of prostate, a protruding median or lateral lobe may be seen with the cystoscope, demonstrating the part of the prostate that is responsible for the obstruction. Not all cases of prostatic hypertrophy cause obstruction to the urinary out-

flow, and it is in these cases that a diagnosis is made by rectal palpation. In these cases there are no signs of discomfort and no accompanying cystitis is shown by clear urine and negative cystoscopy. In most cases, however, rectal palpation of prostate, increased length of the urethra, and finding of residual urine is sufficient to make the diagnosis.

Strictures. The existence of strictures is easily proved.

Diverticula, as causes of retention and pyuria, are congenital or acquired, true and false. They may exist and not present subjective or objective signs; their presence may not be even suspected until they are accidentally found by cystoscopy performed for other reasons. Symptoms are present when diverticula are formed in prostatic hypertrophy and dilated bladder; old existing strictures of urethra interfering with normal emptying of bladder. In these cases there is the usual cystitis. Some of the diverticula are large enough to hold about four ounces, and more of urine. Diverticula are also found in tabs and spinal cord lesions.

Tumor of prostate. Carcinoma is almost always primary. It may be metastatic from carcinoma of intestine and stomach. Very rarely carcinoma of prostate is secondary to vesical carcinoma. Sarcomas are not frequent. The symptoms are almost alike in both conditions: painful urination, and later, hematuria and pyuria; pain in rectum and constipation. Rectal palpation will reveal a hard, irregular mass, and that to the experienced touch is almost characteristic. The cystoscope, if its use is advisable, will show the tumor pushing in the bladder wall, and in later stages, breaking through.

Infection by organisms other than gonococci. Infection by these organisms is very frequently hemic or lymph borne, being metastatic from the intestines, middle ear, alveoli, tonsils, acute osteomyelitis, and furuncles. Pediatricists are familiar with bacteriuria following constipation. Rovsing called attention to colon nephritis, colon pyelitis, and colon bacteriuria. In a careful review of the literature on the bacteriology of renal infection, the colon bacillus is accredited with being the offending organism in over ninety per cent. of cases.

The staphylococcus is found in twenty per cent. in normal male urethras. The streptococcus is always secondary, accompanying scarlet fever or tonsillitis, producing acute infective nephritis, or acute hemogenous nephritis which may be unilateral or bilateral.

Kidneys and ureters. When the pus is from pyelitis, the pelvis of the kidney alone is affected. In pyelonephritis, the kidney cortex is also affected. In pyonephrosis the kidney substance is involved and there is a marked dilatation of the organ. In kidney abscess the kidney is one mass of suppuration, but does not involve the pelvis usually. In all of these there is pyuria. In some there are pain and tenderness of the affected kidney, the development of lumbar tumor, and constitutional symptoms. To determine positively the source of pus and to find which kidney is affected, catheterization of the ureters must be resorted to. To determine how the affected kidney compares with the healthy kidney,

the phenolsulphonephthalein test or indigocarmin test should be performed.

Renal calculus. The x ray is of most importance in diagnosis. Catheterization of ureters combined with functional renal tests, such as phenolsulphonephthalein and indigocarmin, enable us to differentiate renal calculus from gallstones, appendicitis, and intestinal obstruction. Pyelography will, according to Pilcher, intensify the color of the stone. X ray pictures should be taken of both sides in every case, because stones may be found in both kidneys yet only one cause symptoms. The majority of cases are characterized by pain, hematuria, pyuria, and a tumor with tenderness over the kidney region.

Ureteral calculus. Catheterization and cystoscopy are most important in diagnosis; x ray plates are not always reliable. If calculus is near the lower end of the ureter, then we observe signs of pouting of ureteral mouths, swelling, and edema. In seventy per cent. of ureteral calculi there is an obstruction on that side. If obstruction is complete, indigocarmin will not show on that side. In from five to fifteen per cent. they do not show shadows. The uric acid variety likely to be overlooked. The x ray catheter should be used. Shadows in line of ureters may be phleboliths, calcareous infiltration of thrombus, calcified lymph glands, concretions of intestine, and gallstones. These shadows, if they are some distance from the pelvic outline, or from the ureteral line, may be considered extrarenal. Wax tipped catheters are employed by Kelly. Pus and blood may come from pathological conditions of the ureters, such as stenosis and stricture, as recently brought out by Hunner, Furniss, and Buerger.

Hypernephroma. In most cases there is hematuria and no evidence of infection in a catheterized specimen examined microscopically. In suspected cases the x ray and pyelography are of most value. Casper advises frequent renal tests. This tumor causes metastasis in liver, flat bones, and sometimes in long bones and so in hematurias of uncertain origin these places should always be examined for a tumor.

Tuberculosis of the kidney. Tuberculosis is always hemic and primary in one kidney in eighty per cent. Out of 192 tuberculous kidneys in Vienna post mortem records, 185 had not been diagnosed and sixty-seven per cent. were one sided. Renal tuberculosis is most common between the ages of twenty and forty years.

Symptoms of renal tuberculosis are not always present and from symptoms it is almost impossible to make a diagnosis. Urinary frequency is early, and later there is dysuria. Dysuria, strangury, and tenesmus may be present without bladder involvement. The urine contains pus and often microscopic blood. The urine may be clear when the ureter is obliterated or obstructed, and so errors may be made if we rely on the appearance of the urine. Catheterization should be done, if possible, and the specimen examined for tubercle bacilli; guinea pigs should be inoculated. Some advise the use of a small provocative injection of tuberculin which drives out tubercle bacilli so that they will be found in the next few days. Pyelography in renal tuberculosis is not essential. A good deal of importance

is attached to the appearance of inflamed and ulcerated ureteral mouth on the corresponding affected side; on the healthy side, it is normal. If cystitis is present, it is secondary. We examine the prostate and seminal vesicles for nodules, irregularities in outline, and areas of softening in later stages.

Big strides will have been made toward an early diagnosis of tuberculosis of the kidney when every physician regards with suspicion catarrh of the bladder in the young, which does not soon respond to ordinary treatment.

REFERENCES.

1. ROVSING: *American Journal of Urology*, 1914.
2. FITZ: *American Journal of Medical Sciences*, 1913.
3. C. POISNER: *Reform klinische Wochenschrift*, 4.
4. E. H. PENWICK: *Practitioner*, January, 1913.
5. H. LILIENTHAL: *American Journal of Surgery*, 1913.
6. A. HJYMAN: *Internist*, 1915.
7. PILCHER: *Manual of Cystoscopy*, 8.
8. WOLBARST: *American Journal of Urology*, 1908.
9. KILBANE: *New York Medical Journal*, 1915.

132 WEST FORTY-FIFTH STREET.

Contemporary Notes.

Making Ourselves Cheap.—There is a story of a young physician in the east side, New York city, who spends much of his time in charitable practice, according to the *Medical Standard* for June, 1916. In fact, he sometimes gives a poor patient enough money to pay for prescriptions. "I'm not getting rich," he explains, "but I simply can't see them suffer for medicines that may put them on their feet again."

Not many days ago the doctor had occasion to visit a woman who occupied one small tenement room with her three children. After making out a prescription he gave her two dollars, telling her to buy the medicine and use the change for needed food. On the following day, as he was about to enter the tenement for a second call, he met the ten year old daughter of the patient.

"How is your mother?" he inquired of the child. "Oh, she's well," was the answer. "She took that two dollars and got a real doctor."

The newspaper tells this incident in the way of a joke, and of course it has a humorous side. But it also has its serious side, or at least let us say a practical side. Every physician knows that the professional advice which he does out for nothing is not taken seriously, is hardly ever followed, and is lightly regarded, while that which he or another doctor charges a stiff fee for is religiously carried out. That is human nature. But it goes farther than that, and for the physician, worse than that. Such gratuitous advice, however kindly and well intentioned, eventually cheapens the doctor himself and discounts his reputation. After a while the man who does not charge for his services cannot charge for them, because no one will pay for them. The world, as well exemplified in the poor family referred to, values us just about as we value ourselves, and if we give away our skill and services indiscriminately with a two dollar premium, we must not be surprised if we find that the two dollars have been used to get a "real doctor." Not that we would discourage charity, but there is such a thing as over doing it.

Dietetics and Alimentation

Foods, Food Preparation, and Metabolism
in Health and Disease

THE TREATMENT OF MIGRAINE.*

By B. K. RACHFORD, M. D.,
Cincinnati.

It is my purpose in this paper to outline a treatment culled from my own experience as well as from the experience of others, which, I believe, if faithfully carried out, will result in the cure of the great majority of the cases of migraine and allied symptom groups.¹

In beginning the treatment of migraine and allied disorders, it is important to search for the chronic reflex and toxic factors that may play a role in producing these symptom groups. Such factors are often found in ocular defects, producing eye strain; in abnormal conditions in the nose and pharynx, such as enlarged and diseased tonsils and adenoids; and in diseases of the teeth, the prostate gland, and the pelvic organs. In recent years I have been much impressed with the necessity of removing enlarged and diseased tonsils and adenoids. This is especially necessary in the treatment of migraine and recurrent asthmatic bronchitis, which latter occurs so commonly in children. In these cases the dietetic and other treatment may fall just short of a complete cure unless the diseased tissue of the adenoid ring is thoroughly removed. It is especially important in the treatment of severe migraine that all pathological conditions which may be a source of chronic toxemia should be carefully sought for and, if possible, removed. In recent years our attention has been especially called to the teeth, accessory sinuses of the nose, and the pelvic organs, including the prostate, as possible sources of such toxemias.

DIETETIC TREATMENT.

The most important bit of dietetic advice that can be given to a migrainous patient is that he should not eat too much. Many of these patients are in the habit of eating much more than their caloric needs require, and as a result unnecessary work is demanded of the digestive and excretory organs. It is also most important that the character of the food taken should be easily within the digestive capacity. In short, the peculiarities of the digestive capacity of the gastrointestinal canal of the patient should be carefully considered both as to quantity and character of food taken.

In addition to this bit of general advice, the idiosyncrasies of the patient should be studied with reference to his reaction (both digestive and metabolic) to various foods. No general rules concerning the elimination of certain foods can be laid down to enable the physician to determine the idiosyncrasies of the patient; for this reason in beginning the

treatment certain foods may be eliminated which subsequent dietetic treatment may show had nothing to do with the production of the migrainous attacks.

In beginning dietetic treatment, therefore, it is wise to exclude all foods which experience has shown may be factors in the production of migraine, and later on when this symptom group has been controlled by treatment certain of these foods may be gradually returned to the diet list. With these ends in view the following foods should be eliminated.

Eggs in every form, even in cooked foods, should be absolutely forbidden. Experience has amply demonstrated the fact that certain cases of migraine may be cured by this one rule of diet.

In 1910, Dr. S. J. Meltzer presented to the Association of American Physicians a paper on Bronchial Asthma as a Phenomenon of Anaphylaxis, in which he advanced the theory that asthma was an anaphylactic phenomenon. In this paper Doctor Meltzer discussed the literature of anaphylaxis in its bearing on the theory.

It is also definitely known that the idiosyncrasy, which makes it possible for eggs to produce migraine, may be either hereditary or acquired, and it has also been definitely shown that this egg idiosyncrasy, after a period of abstinence sufficient to allow the individual to recover the normal physiological tone of his body functions, may disappear to such an extent, that the patient may acquire the power to digest and metabolize eggs without producing any of the symptoms of egg poisoning from which he formerly suffered, provided that he takes eggs in gradually increasing quantities, beginning with a very small amount.

In 1912, Dr. Oscar M. Schloss in the *American Journal of Diseases of Children* studied the subject of egg poisoning as an anaphylactic phenomenon, and called attention to the fact that the patient might be immunized against this poisoning by giving him minute but gradually increasing doses of ovomucoid.

Sweets should, for a time at least, be almost if not quite eliminated from the diet. It is established beyond question that the stopping of an excessive intake of sweets results in the immediate improvement of many patients suffering from migraine.

Shell fish of all kinds are to be excluded. The literature of medicine is full of examples of migraine, asthma, and urticaria being produced by shellfish. In 1899, Dr. Frederick A. Packard, under the title of Urticaria of Mucous Membranes, presented to the American Pediatric Society the then existing clinical evidence of the mutual relations of asthma and urticaria.

Butter fats (cream and butter) should also be eliminated from the diet, and in certain cases it may be necessary for a time to exclude milk absolutely.

Raw fruits and raw vegetables are to be avoided, especially strawberries, oranges, rhubarb, and toma-

*Read, by title, before the Association of American Physicians, Washington, May 11, 1916.

¹In 1914, the writer read a paper on Recurrent Sibilant Bronchitis before the American Pediatric Society, demonstrating by a series of cases how readily this disease yielded to dietetic, hygienic, and medical treatment.

toes, since medical experience teaches that attacks of migraine and allied disorders are not infrequently precipitated by the taking of these foods.

In addition to the foregoing special articles of diet, it is wise also to avoid rich and highly seasoned foods of all kinds, and tea, coffee, and alcohol, if taken at all, should be used in moderation.

The following foods may be allowed: Beef, mutton, fowl, cereals, bread, all cooked vegetables, not already proscribed, cooked fruits, skimmed milk, and thick soups.

This dietetic treatment is to be followed for some weeks or months until the patient has apparently recovered. Then follows a relaxation of the dietetic treatment along lines suggested by conditions presented by the patient, until perhaps at the end of three or four months most of the proscribed foods, excepting eggs, may be given in moderate quantities. Following this, if the patient remains well, eggs may be carefully added to the diet in small quantities.

HYGIENIC TREATMENT.

The patient should live out of doors as much as possible, that is to say, he should have the best air available, night and day, consistent with his occupation. Patients who live in school rooms, factories, and shops during a large portion of the day should have all of the air possible at night. Exercise in the open air is necessary. In prescribing exercise the needs of the patient should be considered.

MEDICAL TREATMENT.

In beginning the treatment it is advisable that the patient's bowels should be kept open with some saline laxative: for this purpose sodium sulphate or phosphate or some preparation of magnesium should be used. Where the constipation is severe magnesium sulphate is advisable. This may be given in one of the mineral waters or in any combination which the physician may devise. In children, milk of magnesia may be used with advantage. In adults and older children I still prefer and continue to use a formula which I originated many years ago for the treatment of migraine.² It is as follows:

R Sodii sulphatis (dry). gr. xxx;
Sodii salicylatis (from wintergreen), gr. x;
Magnesii sulphatis, gr. i;
Lithii benzoatis, gr. v;
Tincture nucis vomice, ℥ij;
Aque distil. q. s. ad. ℥iv.

M. Ft. mist. Sig. Take, half an hour before breakfast, a sufficient quantity to produce at least one bowel movement during the morning.

The prescription is put up in siphons and charged with carbonic acid; long experience has taught me that it is of great value in the prevention of migraine and allied disorders. After a few weeks or months, the saline laxatives may be replaced by cascara, phenolphthalein, or some other palatable laxative, that is, if the constipation continues. In many of these cases I have used the mineral oils with success after the treatment is well under way.

It is of prime importance in all cases to give albedos. The simplest and best preparation of this

kind is perhaps sodium bicarbonate. This may be prescribed in capsules in five or ten grain doses, three times a day, according to the age of the patient, taken with a large goblet of water. The soda should be taken preferably an hour before meals or at bedtime. If the patient prefers, the alkalies may be given in the form of one of the alkaline waters, such as Vichy. It should be remembered that the alkali is an important part of the treatment, not only in the beginning, but for months and even years. The patient should also cultivate the habit of drinking water frequently throughout the twenty-four hours.

323 BROADWAY.

INFANTILE SCURVY.*

Dr. Alfred F. Hess, of New York, read a paper on this subject at a stated meeting of the New York Academy of Medicine, April 20, 1916, in which he said that infantile scurvy had assumed increasing importance since the use of heated milk for babies' food had become so common. For, although pasteurized milk was to be highly recommended, it should be realized that a scorbutic condition developed unless orange juice or other antiscorbutic substance was also taken. This type of scurvy was found to be generally subacute; it took months to develop. In order to prevent a progressively negative balance of vitamins, antiscorbutics should be given much earlier than was the present custom. Orange juice or other corrective food should be added to the dietary at the age of one month.

Infantile scurvy was commonly regarded as a disorder characterized by malnutrition, by typical changes in the structure of the bones, and by hemorrhages in typical sites, occurring most frequently in the gums and beneath the periosteum, due not to a defect of the blood but of the bloodvessels. These hemorrhages were attributable to a disturbance of the vessel walls rather than to a defect of the factors concerned in the normal coagulation of the blood. Hemorrhages into the gums or beneath the periosteum were the classical signs of infantile scurvy. In addition, careful examination frequently revealed involvement of the circulatory system. In some respects scurvy manifested symptoms which were characteristic of some of the other deficiency diseases; for example, the Röntgen ray might show enlargement of the heart, especially of the right ventricle, also found so often in beriberi. The optic disc might show changes, indicating that the nervous system was involved in both of these disorders. Subcutaneous edema constituted a not infrequent symptom of infantile scurvy.

In the clinical symptoms were also anemia and occasional fracture of the long bones, pain, tenderness, and the general symptoms of malaise. Recently the Röntgen ray had added another sign to this category in the characteristic white line of Fraenkel, to be seen frequently at the epiphyseal ends of the long bones in the early stages of the disorder.

A group of infants in the Hebrew Infant Asylum was kept under close observation for many months,

Medical News, October 3, 1916, *Radiation, Diseases of Children*, 1912.

*For discussion of this paper, see *Proceedings of Societies*, p. 1096.

and had been fed the usual milk mixtures. The milk given was grade A, pasteurized, heated to 145° F. for thirty minutes. The object of the investigation was to ascertain whether milk treated in this way underwent any essential change and whether infants could be made to thrive on it even when orange juice was discontinued. It might be remembered that the Commission on Milk Standards, in addition to approving pasteurized milk from a bacteriological standpoint, had stated that heating milk to this degree did not impair its nutritive properties. The speaker's experience, on the contrary, led him to conclude that unless some antiscorbutic substance, such as orange juice, was given, a more or less mild form of scurvy developed, which yielded quickly to simple dietetic treatment—changing to raw milk or once more adding orange juice or the juice of orange peel to the diet. In spite of the fact that the milk was of excellent quality, that the infants received food of high caloric value, and that in many instances cereal was also given, mild scorbutic symptoms developed in almost all cases within from two to three months.

Infantile scurvy had been brought into actual relationship in symptomatology and pathology with some of the other deficiency diseases, more particularly with beriberi. These two diseases were commonly grouped together, merely because they had one factor in common—they could be cured by the addition of a definite food to the diet. Infantile beriberi and infantile scurvy were not, nevertheless, one and the same disease, for the characteristic symptom of infantile scurvy was hemorrhage, whereas that of beriberi was nerve degeneration.

In view of these facts and the clinical similarity between infantile scurvy and beriberi, in their experiments it was decided to substitute for the farina a cereal containing the outer layer of the wheat. To this end middlings were obtained, the middle layer of the wheat grain, which might be compared to the pericarp of the rice. A cereal was prepared, consisting of two parts of middlings and one part of flour, and was given in place of the farina and in the same amounts. The caloric value of this food was the same as that of farina, and it was taken quite as readily by most of the babies. No other change was made in the diet. In some instances improvement was immediate and striking; there was a gain in weight for the first time in many weeks, a brightening in the appearance and in the disposition of the infants, and a recession of the typical scorbutic symptoms. This improvement was maintained for some weeks. The effect, however, could not be compared to the miraculous change brought about when orange juice was given. The addition of middlings, which might be designated wheat pericarp, was not able to restore the infants to their natural vigor, even when it was given daily for a month or more. In some instances, especially when only a small amount of middlings was taken, no effect was observed.

In conclusion, the speaker emphasized the fact that infantile scurvy was readily cured by means of orange juice, even after this substance had been boiled. It was likewise cured by an infusion of orange peel which had been brought to the boiling point. Codliver oil had no effect in preventing its occurrence. Yeast, a sovereign remedy in beriberi,

was found to be of no value as a cure, even in considerable amount. Wheat middlings, especially when gearm, were found to have value as a prophylactic.

Scurvy affected growth, not only as measured by weight, but likewise by length. The latter disturbance emphasized the profound character of the nutritional disorder. Growth might, under certain conditions, progress normally during the development of scurvy which showed that stunting was not to be regarded as an essential characteristic of this disease. When an antiscorbutic was added to the diet, supergrowth was brought about, which might continue until the entire loss had been recompensated.

DIETS IN THE PETER BRIGHAM HOSPITAL, BOSTON.

A writer in the *Canadian Medical Association Journal* for May describes how a dietary system was developed in the Peter Bent Brigham Hospital in Boston. The physician prescribes the number of feedings, the calories, and the amounts of protein, fats, carbohydrates, and salts in grams, and the total fluids when necessary. These prescriptions are filled by the dietitian with food that meets the requirements. A few sample menus only can be cited:

CALORIC, TYPHOID DIET.		
	Amount	Calories
1. Egg	100 g. c.	71.05
2. Butter	50 " "	52.15
3. Lactose	20 " "	141.8
4. Tea	50 " "	40
5. Sugar	50 " "	52
6. Cream	50 c. c.	190.4
7. Coffee	70 c. c.	" "
8. Milk	50 c. c.	141.8
9. Milk preparation	50 c. c.	141.8
10. Lactose	20 " "	141.8
11. Tea	50 " "	40
12. Sugar	50 " "	52
13. Cream	50 c. c.	190.4
14. Coffee	70 c. c.	" "
15. Lemon juice (flavor) ..	25 c. c.	0.8
16. Lactose solution 20 per cent.	175 c. c.	35
17. Sucrose	10 grams	40
18. Cream	100 c. c.	380
19. Milk	100 c. c.	141.8
20. Ice cream	200 c. c.	74.05
21. Tea	50 " "	40
22. Sugar	50 " "	52
23. Cream	50 c. c.	190.4
24. Coffee	70 c. c.	" "
25. Milk	50 c. c.	141.8
26. Lactose	20 " "	141.8
27. Tea	50 " "	40
28. Sugar	50 " "	52
29. Cream	50 c. c.	190.4
30. Coffee	70 c. c.	" "
31. Milk	50 c. c.	141.8
32. Lactose	20 " "	141.8
33. Tea	50 " "	40
34. Sugar	50 " "	52
35. Cream	50 c. c.	190.4
36. Coffee	70 c. c.	" "
37. Milk	50 c. c.	141.8
38. Lactose	20 " "	141.8
39. Tea	50 " "	40
40. Sugar	50 " "	52
41. Cream	50 c. c.	190.4
42. Coffee	70 c. c.	" "
43. Milk	50 c. c.	141.8
44. Lactose	20 " "	141.8
45. Tea	50 " "	40
46. Sugar	50 " "	52
47. Cream	50 c. c.	190.4
48. Coffee	70 c. c.	" "
49. Milk	50 c. c.	141.8
50. Lactose	20 " "	141.8
51. Tea	50 " "	40
52. Sugar	50 " "	52
53. Cream	50 c. c.	190.4
54. Coffee	70 c. c.	" "
55. Milk	50 c. c.	141.8
56. Lactose	20 " "	141.8
57. Tea	50 " "	40
58. Sugar	50 " "	52
59. Cream	50 c. c.	190.4
60. Coffee	70 c. c.	" "
61. Milk	50 c. c.	141.8
62. Lactose	20 " "	141.8
63. Tea	50 " "	40
64. Sugar	50 " "	52
65. Cream	50 c. c.	190.4
66. Coffee	70 c. c.	" "
67. Milk	50 c. c.	141.8
68. Lactose	20 " "	141.8
69. Tea	50 " "	40
70. Sugar	50 " "	52
71. Cream	50 c. c.	190.4
72. Coffee	70 c. c.	" "
73. Milk	50 c. c.	141.8
74. Lactose	20 " "	141.8
75. Tea	50 " "	40
76. Sugar	50 " "	52
77. Cream	50 c. c.	190.4
78. Coffee	70 c. c.	" "
79. Milk	50 c. c.	141.8
80. Lactose	20 " "	141.8
81. Tea	50 " "	40
82. Sugar	50 " "	52
83. Cream	50 c. c.	190.4
84. Coffee	70 c. c.	" "
85. Milk	50 c. c.	141.8
86. Lactose	20 " "	141.8
87. Tea	50 " "	40
88. Sugar	50 " "	52
89. Cream	50 c. c.	190.4
90. Coffee	70 c. c.	" "
91. Milk	50 c. c.	141.8
92. Lactose	20 " "	141.8
93. Tea	50 " "	40
94. Sugar	50 " "	52
95. Cream	50 c. c.	190.4
96. Coffee	70 c. c.	" "
97. Milk	50 c. c.	141.8
98. Lactose	20 " "	141.8
99. Tea	50 " "	40
100. Sugar	50 " "	52

The composition and amounts of various dishes, blanc mange, bread omelet soufflé, scraped beef on toast, scalloped lamb, and creamed chicken, used in the same diet are given.

A sample diet for nephritis is furnished, from which this menu is arranged:

Breakfast, 7.30 a. m.

Apple	50	grams
Farina	150	"
Dates or prunes	100	"
Two eggs in tamale	100	"
Tea	20	"
Butter	5	"
Milk	150	c. c.
Almonds	25	c. c.
Sugar	1	gram
Cream	1	c. c.

Dinner, 12, noon.

Tomato bisque	100	c. c.
Milk	100	c. c.
Tomato juice	200	grams
Broiled steak	200	grams
Scalloped potatoes	100	"
Bread	5	"
Bread and butter	5	"
Cocoa, corn starch pudding	100	c. c.
Milk	1	gram
Sugar	5	"
Cornstarch	5	"
Cocoa	150	c. c.
Tea	20	c. c.
Cream	20	c. c.
Sugar	5	grams

3 p. m.

Grapejuice and water each 90 c. c. and crushed ice

Supper, 5 p. m.

Sliced chicken	100	grams
Spinach	50	"
One hard cooked egg	20	"
Bread	5	"
Butter	5	"
Scalloped macaroni	100	"
Cream	10	"
American cheese	50	"
Milk	25	c. c.
Butter	10	grams
Cream	150	c. c.
Tea	10	c. c.
Sugar	5	grams

A salt poor diet is given in the same way, as is a standard nephritic diet, renal test meals, a diabetic diet, and stomach feeding by tube.

Inanition in Carcinoma.—Arnold H. May, in the *Buffalo Medical Journal* for February, 1916, states that in cases of carcinoma of the stomach, particularly those involving the orifices, the question of nutrition is one of primary importance. Inanition is often the determining cause of the end long before the malignant process. Whereas in carcinoma there exists a marked cachexia, the inanition resulting from inadequate feeding is often overlooked, or considered too late, hence patients pass into exhaustion and collapse. Knowing the fatality of the disease, those attending the sick often consider this mechanical interference with nutrition in no special light, since it simply hastens the end of a miserable existence. Nevertheless, the fact remains that death resulting from inanition is in a sense premature, since in many cases life may be prolonged if measures designed to overcome inanition are employed.

The measures employed to maintain the patient and supply him with adequate heat units are well known to the profession. In malignant disease of the esophagus and cardia before there is complete

stricture, a liquid diet rich in foods of high caloric value is indicated. Here the necessary calories are introduced in milk, cream, eggs finely beaten, butter strained, and highly nutritious broths, oils, and perhaps scraped or chopped meats, artificial albumins; and in fact any liquid or liquifiable, highly nutritious, digestible food is indicated. Not only variety, but adequate amount is essential, the dietary containing at least 2,000 heat units each twenty-four hours. Cohnheim's dietary is as follows:

8 a. m.—Tea with 125 grams of cream.

9 a. m.—Milk (250 grams).

11 a. m.—Flour soup with 125 grams of cream and butter.

1 p. m.—Bouillon with a tablespoonful of flour and one or two yolks of eggs and butter.

4 p. m.—Tea with 125 grams of cream.

6 p. m.—Flour soup or milk.

8 p. m.—Bouillon with rice or flour and butter.

With advancing cardiac stenosis this diet will be found soon to be impossible—foods being regurgitated into the mouth. When this occurs an attempt may be made to dilate the stricture by means of sounds—the employment of hollow sounds being considered. The use of sounds demands caution, since great irritation or even perforation may result. As a rule, however, natural feeding being impossible, an inadequate amount of food reaching the stomach, the physician must decide quickly between gastrostomy, or inanition and subsequent death. The earlier as a rule gastrostomy is determined upon (and no special contraindication existing, e. g., extreme cachexia, etc.) the better will be the chance of prolongation of life. It has often been the custom at this stage to rely upon rectal feeding. An assimilation of predigested food by the colon is possible, as is also the absorption of a large variety of nutrient material. Effective digestion of and food value of solid food per rectum is very small. The colon absorbs fluids; enemata thus increase the fluids of the body. As an adjuvant method of nutrition, or employed over short periods, rectal feeding has a distinct value, but relied upon alone inanition results. Gastrostomy being performed, feeding can proceed through the fistula and per rectum.

In malignant stenosis of the pylorus the first indication is to give sufficient food of a highly nutritious character, in the liquid state, and in small quantities, so as to permit of its expulsion into the duodenum. The stenotic pylorus causes hypertrophy, and later atony of the stomach muscle, so that retention and stagnation occur. The mucous membrane undergoes changes and atrophy, so that hydrochloric acid is absent or diminished, and hence the food undergoes putrefactive and fermentative changes, the small amount reaching the duodenum being diminished in food value or is even toxic. Nutrition quickly suffers under these circumstances. A measure then designed to permit of the passage of food from the stomach to intestines is indicated, and gastroenterostomy is the operation of choice.

If in these cases having considered the mechanical impediment to ingestion of food, inanition is early combated, the life of the patient may be prolonged. No successful remedy having been discovered to combat visceral carcinoma (except early surgery), the physician must content himself with the employment of measures which at most prolong life or palliate symptoms.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal and The Medical News.

A Weekly Review of Medicine.

EDITORS

CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc.D.

CLAUDE L. WHEELER, A.B., M.D.,

Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY,
Publishers,

66 West Broadway, New York.

Subscription Price:

Under Domestic Postage, \$5; Foreign Postage, \$7; Single
copies, fifteen cents.

Remittances should be made by New York Exchange,
post office or express money order, payable to the
A. R. Elliott Publishing Co., or by registered mail, as the
publishers are not responsible for money sent by unregis-
tered mail.

Entered at the Post Office at New York and admitted for transpor-
tation through the mail as second class matter.

Cable Address, Medjour, New York.

NEW YORK, SATURDAY, JUNE 24, 1916.

THE ROLE OF FOMITES IN THE SPREAD OF DISEASE.

It is not so long since that the memorable experiments carried on by the army under the leadership of Walter Reed, working with Carroll, Lazear, and Agramonte, demonstrated that at least in yellow fever the infection was not passed on through the discharges on "infected" clothing, bed linens, dressings, etc., that is, through fomites, but, as they conclusively proved, through the agency of a mosquito, *Stegomyia calopus*. With regard to the agency of fomites, however, these experiments merely proved that the discharges carried therein did not bear infective agencies. Otherwise it hardly disturbed the deep rooted idea that fomites were such important factors in the spread of disease. Recently this subject has received much attention, with the result that in many instances this theory of spread has been rendered entirely untenable. Mere contact with infected fomites is not sufficient; the living organisms thereon must be transmitted to sensitive mucous membranes. In measles, for example, it is now well understood that no amount of contact with the body linens, even if they contain the desquamated material once considered highly infective, will serve to cause a new case. Infection is entirely by the droplet method.

Moreover, it must be remembered that with the few exceptions exemplified by the spore bearing organisms, most of the virulent pathogenic organisms do not have a high degree of vitality outside of the body, and that on exposure to drying or to other adverse conditions, they are destroyed or their virulence is much attenuated. On the other hand, in such diseases as typhoid and cholera, as well as dysentery, the percentage of infections among those handling the patients, the body, bed linens, or the discharges, is not inconsiderable. It is a factor not to be passed over lightly. The infection here, while apparently transmitted through fomites, is merely an ingestion infection, the result of faulty technic in the handling of the materials, so that the organisms are carried directly from fomites of the patient to the digestive tracts of attendants.

It is remarkable, however, that the rapid spread of gonorrhea through the female children's wards of a hospital seems to point almost entirely to the agency of infected linens even when apparently the greatest care is taken with these materials, both in their immediate handling and in their preparation for further use. This condition is rendered inexplicable in view of the fact that the gonococcus is not particularly viable outside of the body.

It had always been maintained that the incidence of tuberculosis was about double the normal among those who handled soiled and sputum soaked clothing and other materials. Robinson and Wilson (*Public Health Bulletin No. 73*), investigating the health of industrial workers, found, however, that laundry workers handling clothing often coming from the sick evidenced no increased amount of tuberculosis. Indeed, because the work of those who originally handled this material was comparatively easy, there was less tuberculosis than among those whose work entailed a greater expenditure of energy.

THE EFFECT OF HEAT AND HUMIDITY UPON THE UPPER AIR PASSAGES.

In an editorial article published July 10, 1915, we discussed the results of the first tests conducted by the New York State Ventilation Commission. We emphasized their importance and encouraged their continuation, particularly along lines which might lead toward scientific determination of what constitutes the good elements in atmospheric influence. These things once determined, the problem of mechanical ventilation would be solved. From the earlier experiments we learned that the amount of oxygen and of carbon dioxide in the air has, within certain wide limits, no appreciable physiological or psychological effect, and that under certain extreme conditions of heat and temperature, 86° F.

and eighty per cent. relative humidity, for example, neither the rate of respiration nor the rates of heat production and of digestion, nor certain other physiological and mental processes were disturbed. A recent study published by the commission dealing with the effects of atmospheric conditions upon the upper air tract, gives a gauge of the sensitiveness of this part of the respiratory canal to variations of heat and moisture.

The results of the series of experiments conducted by Dr. Gerhard H. Cocks, of New York, although still inconclusive in several respects, are interesting and seem to be worth while. The experiments aimed at the establishment of a correlation between atmospheric changes of temperature and humidity and the production of respiratory disease. The numerous clinical observations made by Cocks were supplemented by exact graphic records of moisture deposit through the employment of the Glatzel metallic mirror altered to suit the special requirements of the experiments, which included eight series with human beings under various conditions and changes of temperature and humidity, and one series on dogs whose larynx and trachea were observed while they were subjected to peripheral stimulation by means of heat and cold.

The first series of experiments dealt with the effect of the change that is produced on passing from a normal or low into a high temperature. It was observed that this change is usually followed by an increase in color, moisture, and size of the inferior turbinates and nasal mucosa. A decrease in these characters of the inferior turbinates followed a change from high or normal to low temperature. This phenomenon was observed in a larger number of cases than the converse phenomenon.

The second series of experiments was intended to test the effect of the change from one atmospheric condition to another with an accompanying direct draft on the face of the subject. It was ascertained that only after exposure to high temperature is the effect of drafts distinct; they increased the size of the turbinates and the amount of secretion. Another conclusion was that moist heat produced greater changes than dry heat, and the highest percentage of cases of atrophic rhinitis was found among workers in hot, moist rooms, like steam laundries.

Some of the deductions must temporarily be taken with reserve, as deviations from the typical reactions observed during the experiments were numerous; this warrants, as the report admits, further investigation and corroboration. The least satisfactory results were obtained in the tests of reflex action. There was a lack of uniformity on that point, but a larger number of cases tended to show that

"reflexes from the skin are much less important in producing changes in the nose than is the direct effect of changes of atmospheric conditions acting directly upon the nasal mucosa."

The conclusion drawn from these experiments by Cocks is that the theory which makes bacterial infection the only cause of catarrhal inflammations of the upper air passages must be revised and more of the incidence of infection must be attributed to changes of environment than has hitherto been believed possible. It is highly important that the experiments begun should be continued, and that entirely trustworthy data be established concerning this vitally important subject.

WHAT IS BLINDNESS?

The average practitioner, even the average layman, would be astonished to learn that he cannot define blindness offhand; yet there was once a notable discussion on the point at a meeting of the ophthalmological section of the Royal Society of Medicine (*Proceedings*, January, 1915). Harold Grimsdale, admitting that total blindness was easily defined, offered several definitions of simple blindness with a view of guiding legislation on the subject. Was a child blind who could not read an ordinary textbook? In some trades vision of 6/12 was as good as 6/6, but a watchmaker should not only have 6/6, but the power of accommodation as well; hence few watchmakers remained in the trade after the age of fifty years. Grimsdale submitted a definition of a blind child as one whose corrected vision was less than 6/60, but he thought there should be special schools for those whose vision was not more than 6/24; as to adults, he would accept any one with corrected vision of less than 3/60 as eligible for a pension. Between these limits, however, there was work for specialists in individual cases.

William C. Rockliffe would divide the so called blind of all ages into, 1, blind; 2, partially blind or with defective vision; and include as *blind*, a, those with no perception of light; b, those unable to differentiate; and, c, those able to differentiate, but at a less distance than three feet; as *partially blind*, those able to differentiate beyond three feet, but with less acuity of vision than 6/60.

Angus MacGillivray divided so called blind people into three classes: 1. Totally blind, those who do not possess any perception of light; 2, practically blind, those who possess perception of light, but are unable to take part in any industrial occupation owing to marked impairment of vision; 3, partially blind, those whose vision is such as to preclude them from obtaining employment in an ordinary workshop, but also such as to disqualify them for ad-

mission to an institution for the blind on equal terms with those totally or practically blind. With slight verbal changes these divisions applied also to children.

N. Bishop Harman was opposed to an exact definition of blindness because the clever word jugglers of Parliament would fall foul of it, and would cite cases "well known to themselves," which would have to be excluded from the embrace of this "unconscionable definition." He would have each adult case examined individually by two qualified practitioners personally acquainted with the sufferer. As to children, the present definition of blindness, sanctioned as it was by custom, was sufficient.

F. Richardson Cross cited the practice of census takers in the United States, who entered as "blind" people who could not read a book even with the aid of glasses, although actually they might have some power of sight. The danger of definition was that if the State gave aid to the blind, many people who desired to live easily without work would make a claim for assistance, while the independent, spirited workman would accept any position rather than go to an institution.

W. T. Holmes Spicer hoped that a good definition would be found, one for the benefit of ophthalmological experts, however, and not for lay members of a county council.

The president of the section, Priestley Smith, reminded his colleagues that their opinion had not yet been asked; but he hoped that the authorities would appeal to them rather than to some individual and permit them to send an authorized representative, Mr. Grimsdale, for example, in whom they all had perfect confidence.

We note, therefore, that both in Great Britain and in the United States the word, blind, does not always mean what it seems to mean; a more or less useful eye, with good perception of light, may be classified as blind.

HEALTH BOOKS, OLD AND NEW.

Health books are by no means new, and are hardly more popular now than they have been in previous times. Perhaps the first of them in English was the *Regimen sanitatis Salerni*, a "boke techyng al people to governe them in helthe," translated into the vernacular by T. Paynell and published in London in 1528. In 1534 appeared *The Castell of Helth* (how appropriate these sixteenth century titles!) by Sir Thomas Elyot, Privy Councillor to Wolsey, intimate of Cromwell and More. This was largely a translation into everyday English of the teachings of Galen, and it was looked upon as a double sacrilege that such precious medical lore should appear in any

tongue but Greek or Latin, and that other than a physician should dare present such a work to the public.

Fifty years later appeared the *Haven of Health Made for the Comfort of Students*, by Thomas Cogan, a physician and master of a grammar school. The author acknowledges his indebtedness to Elyot's book, but he shows much originality of his own. There is every reason to believe that these and other books of the kind in the fifteenth and sixteenth centuries had a very wide reading.

Of eighteenth century popular health books *An Essay on Health and Long Life*, by no less a person than Dr. George Cheyne, is most admirable. It ran through eight editions—something undreamed of for twentieth century works of similar character. Moreover, this was the inspiration and foundation of *Primitive Physic*, by John Wesley, student of the body as well as of the Bible, which ran through no fewer than twenty-three editions in his lifetime, and several more thereafter.

As we glance through the pages of these books, centuries old, we become less conceited with our own twentieth century knowledge of hygiene. We have learned a very great deal about sanitation, and the application of that knowledge has had a marked effect on public health. As to personal hygiene, we have learned little of late, because there is little that has not been learned by the experience of each generation. We simply need to put in practice the knowledge we have. A few—perhaps an increasing number in every age—profit by the reading of health books, but the majority go their own pace, preferring to eat, drink, and be indolent, rather than to lengthen or deepen their lives by observing the few and simple laws of health. We should preach the gospel of health, but we need not be discouraged if but few turn from their physical sins.

SINGULAR TEMPERATURE FINDINGS IN PLAGUE.

Dr. Sawanmal Karamchand Hassani, of Jacobabad, India, writes to *Practical Medicine* (Delhi, May, 1916) concerning a curious case of temperature findings. It appears that during the last epidemic of plague in Jacobabad, Sukkur, and Rohri, he was working in Rohri where he had a female patient, twenty-five years of age, suffering from plague, whose morning and evening temperature in the left axilla was 104° F. and in the right axilla only 99°. Careful examination showed the same thing for three days consecutively. The patient was most robust and plethoric. She had the bubo in the left groin. The doctor asked several of his medical brothers, but no one was able to solve the problem to his satisfaction. The patient died on the fourth day.

News Items.

Officers of Sections of the American Medical Association.—At the sixty-seventh annual meeting of the association, held in Detroit during the week of June 12th, the following officers of the different scientific sections were elected:

Section in public health and preventive medicine—Chairman, Dr. Otto P. Geier, of Cincinnati; vice-chairman, Dr. Ernest C. Levy, of Richmond, Va.; secretary, Dr. A. M. Harvey, of Chicago, Ill.; orator, Dr. W. S. Rankin, of Raleigh, N. C.; delegate, Dr. W. C. Rucker, of Washington, D. C.; alternate, Dr. J. N. Hurty, of Indianapolis, Ind.

Section in genitourinary diseases—Chairman, Dr. E. L. Keyes, Jr., of New York City; vice-chairman, Dr. Carl H. Wheeler, of Lexington, Ky.; secretary, Dr. W. F. Braasch, of Rochester, Minn.

Section in stomatology—Chairman, Dr. Arthur D. Black, of Chicago, Ill.; vice-chairman, Dr. Henry Dunning, of New York; secretary, Dr. Eugene S. Talbot, of Chicago, Ill.; delegate, Dr. W. C. Fisher, of New York City; alternate, Dr. R. W. Bunting, of Ann Arbor, Mich.

Section in dermatology—Chairman, Dr. H. R. Varney, of Detroit, Mich.; vice-chairman, Dr. F. E. Simpson, of Chicago, Ill.; secretary, Dr. H. H. Hazen, of Washington, D. C.; delegate, Dr. R. S. Sutton, of Kansas City, Mo.; alternate, Dr. Philip Kilroy, of Springfield, Mass.

Section in diseases of children—Chairman, Dr. J. R. Sedgwick, of Minneapolis, Minn.; vice-chairman, Dr. F. C. Neff, of Kansas City, Mo.; secretary, Dr. F. P. Gengenbach, of Denver, Colo.; delegate, Dr. H. M. McClenahan, of Omaha, Neb.

Section in surgery, general and abdominal—Chairman, Dr. W. D. Haggard, of Nashville, Tenn.; vice-chairman, Dr. A. A. Law, of Minneapolis, Minn.; secretary, Dr. E. H. Poole, of New York City; delegate, Dr. D. D. Lewis, of Chicago, Ill.; alternate, Dr. J. T. Bottomley, of Boston, Mass.

Section in orthopedic surgery—Chairman, Dr. Edwin W. Ryerson, of Chicago, Ill.; vice-chairman, Dr. Robert B. Osgood, of Boston, Mass.; secretary, Dr. Emil S. Geist, of Minneapolis, Minn.; delegate, Dr. John Ridlon, of Chicago, Ill.; alternate, Dr. Leonard Ely, of San Francisco, Cal.

Section in otology, laryngology, and rhinology—Chairman, Dr. Francis P. Emerson, of Boston, Mass.; vice-chairman, Dr. Greenfield Sluder, of St. Louis, Mo.; secretary, Dr. Louis C. Dean, of Iowa City, Ia.

Section in ophthalmology—Chairman, Dr. William Zentmayer, of Philadelphia; vice-chairman, Dr. Cassius D. Westcott, of Chicago, Ill.; secretary, Dr. George S. Derby, of Boston, Mass.; delegate, Dr. F. P. Calhoun, of Atlanta, Ga.

New York City's Death Rate.—Figures compiled by the Department of Health of the City of New York show that the death rate for the first twenty-five weeks of 1916 was considerably lower than that for 1915, the respective rates being 14.92 and 15.21 in a thousand of population. During the week ending June 17th, 1,324 deaths from all causes were reported to the department, corresponding to an annual rate of 12.36 in a thousand of population. There was a reduction in the mortality from acute infectious diseases, but an increase from tuberculosis, heart disease, and Bright's disease.

An Outbreak of Infantile Paralysis in Brooklyn.—The health department announces the discovery of a group of cases of infantile paralysis in Brooklyn. Up to June 17th, twenty-four cases had been reported, fourteen of them in the district lying between Henry Street and Seventh Avenue, Baltic and First Streets. Two cases were reported on June 6th, four on June 8th, seven on June 10th, and four on June 17th; the other cases were reported prior to June 1st. On June 19th one case was reported and on June 20th seven additional cases were reported. It is said that the cases are mild in character and so far have occurred principally in infants and very young children. No alarm is felt by the health department concerning any considerable spread of the disease.

A Merger of Medical Institutions in Michigan Urged.

—At the recent meeting of the American Medical Association, in Detroit, a proposal to merge the Detroit Medical College with the University of Michigan was discussed informally.

Beth David Hospital to Be Enlarged.—Plans are being prepared for the enlargement of this hospital, which is situated at Lexington Avenue and 113th Street, New York. A building fund of \$50,000 is being raised for the erection of a three story structure next door to the institution, which will increase its capacity to about 200 patients.

Immunizing Our Troops.—New York State National Guardsmen, who may be sent to Mexico under the order of President Wilson, will go fortified against typhoid fever, according to Commissioner Hermann M. Biggs, of the State Department of Health. Enough vaccine has been sent out from the department to immunize 4,000 guardsmen and additional quantities are being shipped.

A Merger of Southwestern Medical Journals.—Beginning with the July issue, the publications of the Southwest Medical and Surgical Association and the Arizona State Society will be merged with the *Bulletin* of the El Paso, Texas, County Medical Society, the new journal to be known as *Southwestern Medicine*. Dr. M. B. Wesson, of El Paso, editor of the *Bulletin*, will edit the consolidated journal.

Hospital Fund Assured for American Red Cross Society.—A gift of \$10,000 by Mrs. Willard Straight assures for the American Red Cross Society the four base hospitals of 2,000 beds, representing the work of the local chapter. Of the \$100,000 required, more than \$89,000 has been subscribed. Mr. and Mrs. George Blumenthal gave \$25,000 for the unit that is being organized at Mount Sinai Hospital.

Generous Gift to Mount Sinai Hospital.—Announcement is made of a gift of \$165,000 to Mount Sinai Hospital by the Guggenheim brothers, supplementing their previous gifts of more than \$500,000 to the institution. The purpose of the present donation is to enable the hospital to build a larger pavilion for private patients than was originally planned. The new building will be seven stories in height and will have accommodations for 122 private patients, making it the largest building of its kind in New York.

Personal.—Dr. J. Stuart Rodman, of Philadelphia, has been made permanent secretary of the National Board of Medical Examiners that will hold its first examinations in Washington, D. C., on October 16th.

Dr. Carroll Chase, of Brooklyn, sailed for Paris on June 4th on the French liner *Chicago*. He goes for hospital service under the auspices of the American Relief for France and Her Allies.

Dr. Montgomery E. Leary, of Rochester, N. Y., was reelected president of the New York State Sanitary Officers' Association, at the annual meeting held in Saratoga Springs, June 10th.

Dr. John B. Murphy, of Chicago, has been decorated with the Collar and Cross of the Order of St. Gregory the Great, by Pope Benedict XV.

Salaried City Pathologists Wanted.—The Municipal Civil Service Commission of New York City is endeavoring to secure a number of competent physicians as pathologists. Unusual opportunities are offered a man who is desirous of securing wide experience in the performance of autopsies, the microscopic diagnosis of tissues, bacteriological diagnosis, and clinical pathology. The competition is open to citizens throughout the United States over twenty-one years of age, who hold the degree of M. D. The examination will consist of an experience paper, the presentation of a thesis, and a practical test. Candidates will not be assembled except for the practical demonstration.

Physicians all over the country will recognize the fact that the salary of \$1,500 per annum is made more attractive by the unusual opportunities for practical experience afforded in New York City. The present vacancy is in Kings County Hospital, an institution with an average census of 17,000 patients yearly. Applications for the examination will be received from June 20th to July 5th.

Modern Treatment and Preventive Medicine

A Compendium of Therapeutics and Prophylaxis
Original and Adapted

THE THERAPEUTICS OF A PHARMACOLOGIST.

By A. D. BUSH, M.D.,

Department of Biology, Olivet College.

Twenty-fifth Communication.

ERGOT.

In administering a drug to produce a specific reaction it is well to bear in mind what may be the source of other manifestations concurrently produced. Ergot, for example, is a drug in general use by obstetricians, dependence being placed on its fairly uniform ecobolic activity. That it provokes other definite reactions is a fact frequently ignored or overlooked, the resulting conditions being thereby subject to misinterpretation.

There is some general disturbance of the central nervous system manifested usually after toxic doses only, but the principal action of ergot consists in a stimulation at the myoneural junctions of some of the fibres of the lumbothoracic autonomies, and of similar termini of the hypogastric and some of the fibres of the cervical sympathetic. This widespread stimulation has some surprising results. Because of the stimulating effect on the nerve fibres terminating in the constrictor of the iris, ergot usually produces considerable miosis. The tone of the alimentary tract is reduced and peristalsis is lessened through stimulation of the splanchnic inhibitory fibres to the intestinal musculature; the secretory glands are more or less depressed.

The heart is primarily accelerated by local irritation, then slowed by a similar action on the vagus centre, with an assumed depressant action on the accelerator terminals in the heart muscle. This depressant action on the cardiac sympathetic may for the present be called in question, it being strongly at variance with ergot action observed elsewhere. At first the blood pressure may fall slightly from increased heart action, but soon becomes considerably elevated by direct stimulation of the terminals of the splanchnic vasoconstrictors. This elevation of blood pressure would negate the obstetrician's plans for preventing post partum hemorrhage did not the synchronous stimulation of the hypogastric assist nature in securing sharp contraction of the uterine muscle with a consequent strangling of the uterine sinuses. In some few cases, where hypogastric reaction was feeble or lacking, the heightened blood pressure of ergot has produced alarming hemorrhage. Likewise overdoses, resulting in exhaustion of the hypogastric end plate with uterine relaxation supervening, may result in severe hemorrhages. It is incumbent, therefore, on the operator to keep himself strictly informed concerning the patient's quality and degree of personal reaction to ergot medication.

Unstriated muscle throughout the body is somewhat stimulated indirectly by ergot action on the

nerve terminals, but uterine muscle is ordinarily most responsive of all.

As a preventive of post partum hemorrhage ergot may be employed advantageously at the end of the second stage of labor. The first dose, two c. c. of the fluid extract, will sometimes assist in the expulsion of the placenta. Credé's manipulation is the best further measure for insuring tonic contraction of the uterus. Another two c. c. may be administered if the physician, or the nurse, needs to be absent for some time, but let us be careful not to confound need with inclination. Normal contraction of the uterus is the leading post partum necessity, and should be absolutely insured. If the gentle aid of small doses of ergot seems desirable, well and good; but let us not forget that this aid is but supplementary, and will be accompanied inevitably by other reactions.

Rapid Cure of Adenitis and Acute or Chronic Abscess of the Neck.—H. Chaput, in *Paris médical* for April 22, 1916, states that the treatment of these conditions by filiform drainage is simple and easily carried out under local or no anesthesia, and results in a cure, without any noticeable scarring, in about two weeks. In small, superficial, closed, cold abscesses in which the overlying skin is not inflamed, he passes a large needle completely through the lesion, carries two strands of horsehair through it, knots them to form a loop, passes through two more strands perpendicular to the first two (crucial drainage), and applies a dry zinc peroxide dressing. In large, deep abscesses of the same kind he makes a narrow, stab incision, explores the abscess cavity and its pockets with a probe or fine grooved director, and passes horsehair from the central incision through the two poles and the various pockets of the abscess (radial drainage). Where the skin is inflamed it can be kept from ulcerating by inserting crucial horsehair strands through the abscess from the sound skin; if perforation of the skin does take place it soon closes under a dry zinc peroxide dressing. Several cases of extensive lymphomatous tuberculosis of the lymphatic glands of the neck were cured by removing with a special punch through a stab incision the contents of each node until it was reduced to a shell, and instituting filiform drainage. In cold abscesses recently opened spontaneously, Chaput cures the cavity and passes two or more strands of horsehair through it from the central opening; the procedure, being but slightful painful, requires no anesthesia. In long standing sinuses he dilates the channel, if necessary, with Hegar bougies, removes, on occasion, the contents of the diseased lymph node with the punch, introduces a grooved director to the bottom of the sinus and along it a curved needle threaded with horsehair or silk, and finally pushes the needle through the skin to form a horsehair loop. In re-

tropharyngeal cold abscesses, he inserts a knife in front of the cervical transverse processes somewhat below the middle of the abscess, slips in a grooved director alongside of the knife, pushes it through the abscess and out through the skin of the opposite side, and passes a needle threaded with horse-hair out along the groove in the director, forming a loop. Light treatment with ordinary electric bulbs, used one hour at a time on successive or alternate days, was always combined with the filiform drainage treatment. Tuberculous neck abscesses were thus cured in ten days to two weeks and hard lymph nodes or sinuses in a few weeks. Acute, pyogenic abscesses of the neck were similarly treated, or vertical cylindrical drainage was provided by means of narrow rubber tubing or spirally wound silver wires introduced into the abscess at a dependent point, with resulting complete evacuation in eight to ten days and early disappearance of the remaining local induration, especially where the patient was induced to stay at rest throughout the treatment.

Improved Results in Obstetrics.—J. Walker, in the *American Journal of Obstetrics* for March, 1916, presents a demonstration of the benefits attending a rigid surgical routine in obstetrics, as illustrated in his recent hospital experience. In addition to a careful anamnesis, periodical blood pressure estimations and urine examinations, pelvic measurements of all primiparae, and the customary examinations of the breasts, the height of the uterine fundus, the position and presentation, etc., Walker advises that six weeks before the estimated full term a careful determination be made of the exact relation of the presenting part to the pelvic inlet, as a help in predicting the course of the subsequent labor and deciding on the precautions to be taken. The diagnosis of labor should be made, not by vaginal examination, but by the presence of characteristic labor pains, show, or rupture of membranes. The diagnosis of labor having been made, the patient should not be tubbed, but merely given a shower bath with warm water after the administration of a high soapsud enema and shaving of the pudenda. The parts are then washed with liquid soap, followed by one in 5,000 mercury biniodide solution or one per cent. liquor cresolis compositus. Watching the progress of labor is accomplished, not by vaginal examinations, but by pressing the hand upward above the side of the pubis, a firm, hard resistance being there deeply felt which becomes more marked as the head comes down on the perineum. At this stage rectal examination often supplies information as to the descent of the presenting part as well as the degree of dilatation. Vaginal examinations are avoided unless labor is prolonged or external palpation is insufficiently informative. The nurse should listen carefully to the fetal heart at least every half hour, and if any change in the sounds is noted, should count them every ten to twenty minutes. Many stillbirths, in Walker's experience, were averted by the nurse's calling attention to slowing, acceleration, or irregularity of the fetal heart beat, a rapid forceps delivery saving these children's lives. The nurse is also instructed to place the hand on the uterus and watch the uterine contractions, especially in long, hard labors, and toward the end

of labor, when excessive contractions are most likely to occur. All deliveries should be conducted on a surgical basis, sterile drapings of the patient and the use of sterile gowns and gloves being among the requirements. Pituitrin in one half c. c. doses is used only after complete cervical dilatation and where a proper proportion of head to pelvis exists, and is employed less often in primiparae than multiparae, serious lacerations being thus minimized. As recommended by Tweede, ample time is given for placental separation, provided there is no bleeding or other indication for rapid removal. With these precautions the ratio of stillbirths in the author's series of over 500 cases was reduced to 2.2 per cent., and the morbidity—this consisting in a rise of temperature above 99.3° F. at any two of the three daily readings from the end of the first to the eighth day after delivery—to 7.1 per cent.

Vaccine Treatment of Suppurative Otitis media.

—George M. Coates (*Annals of Otolaryngology, Rhinology and Laryngology*, December, 1915) states that equally good results may be obtained with the autogenous and the commercial products, although preference should be given to the former where obtainable, since their use is undoubtedly more accurate and scientific. In order to secure an uncontaminated culture of the causative organism for an autogenous vaccine, all discharge should be removed from the canal by gentle swabbing or by suction, and the canal and drumhead sterilized with ninety per cent. alcohol, or with the solution of one in 8,000 bichloride solution if thought advisable. Pus from the middle ear is then forced out by tympanic inflation, or aspirated with the otoscope, and a small portion transferred with a platinum loop, or a probe wound with cotton, to an agar slant, which is then sent to the laboratory for incubation. The dose depends upon conditions of age, size and type of organism present. The injection is made beneath the skin, after sterilizing with alcohol or tincture of iodine. The former is preferred, because it does not obscure the subsequent local reaction, which is used as a guide for succeeding doses. As a rule, these are given every three or four days, and the aim is to increase each dose to the reaction point. Immunity thus produced is the best, and does not subject the patient to the so called negative phase—the result of overtreatment or slow immunization. A case that responds favorably shows after the first dose, and occasionally after the second, a local areola around the site of injection, varying in size from two to four inches, appearing in ten to fifteen hours, lasting as long as forty-eight hours, and accompanied by some slight induration and tenderness. A general reaction may manifest itself in a slight rise of temperature, headache and possibly chilly sensations and lassitude for a few hours. In the ear itself, the discharge usually increases at first, becomes thinner, and then may cease altogether. If the dose is correct, secondary injections seldom show any marked reactions. Home made laboratory stock vaccines may be substituted for the autogenous product where available, providing the infecting organism can be determined, and good results are thus obtained, for time is saved in the beginning of the vaccine treatment, and the subsequent administra-

tion of the autogenous product, when thus prepared, is not interfered with. When either one of the foregoing is not available, the commercial mixed vaccine may be used. While theoretically not scientific, it has many cures to its credit, and frequently may be used to advantage. Whichever method is used, it is good practice to give one or two injections of the maximum dose after the ear has become dry, in order to insure permanency. Obstinate cases frequently show a change in the offending organism upon being recultured. The type of infection may change from week to week, necessitating the preparation of a new vaccine. Suppurating ears complicated by the presence of *Bacillus pyocyaneus* are usually considered difficult or impossible to treat satisfactorily with vaccines. Favorable results cannot be expected in the presence of extensive bone necrosis, or of chronic mastoiditis with cholesteatoma, unless these conditions are eliminated by surgical means. Vaccines have been proved to be a valuable adjunct to the mastoid operation.

Treatment of Chronic Urethritis.—T. B. Coulter, in the *Lancet-Clinic* for May 27, 1916, lays stress on accurate investigation of the local conditions present as a prerequisite in successful treatment of this condition. Gonococci, if still found, should be eliminated before treatment for underlying conditions is taken up, and as chronic anterior urethral infections almost always depend on posterior infections for their persistence, treatment is best begun with through and through irrigations of one in 10,000 silver nitrate or one in 6,000 potassium permanganate solutions, to be supplemented with instillation of one to two per cent. silver nitrate solution into the posterior urethra. Many cases are thus promptly and thoroughly cleared up. Among the remainder some, always due to infiltrative catarrh and constant throwing off of pus cells from the urethral walls, are little influenced by treatment; the others, in which symptoms are removed by treatment but return when it is stopped, are associated with an inflammatory catarrh of the glandular sexual organs, especially the prostate. Prostatic involvement, which may be discoverable only by microscopic study of the prostatic secretion, should be met by systematic massage, varying in frequency and severity according to the effects obtained. As a rule, massage may be practised two or three times a week; severe pressure should be avoided, and the seminal vesicles usually included in the first few massage strokes. It should be followed by mild irrigation with potassium permanganate, and supplemented occasionally by dilatation with the Kollmann dilator. Cessation of symptoms from inflammatory prostates can thus be secured. An endoscopic examination of the urethra under four per cent. novocaine or alypin anesthetization should be made as soon as practicable. If the posterior urethra is found edematous or purplish, a single light application of ten to twenty per cent. silver nitrate solution will sometimes be of benefit. If the utricle and ducts are found inflamed, the same measure may be applied, the silver stick being reserved for very chronic cicatricial conditions. Where the utricle is alone inflamed, injection of one per cent. silver nitrate into it with the utricle syringe is of great as-

sistance. Infected follicles may also be treated advantageously through the endoscope. In the catarrhal infiltrative types of urethritis, with scar tissue deposition, inflammatory strictures located far back in the urethra should be dilated, if possible. Strictures anterior to the bulb that cannot be dilated should be cut. Very tight strictures usually yield to dilatation with filiforms and followers, up to twenty to twenty-four French, succeeded by the use of ordinary sounds or the Kollmann dilator. Where premonitory symptoms of epididymitis appear, rest in bed, elevation of the scrotum, and laxatives will often arrest the trouble. If the condition is already well developed, best results are obtained by incision and puncture of the epididymis, or by aspirating the epididymis over the globus minor with a large hypodermic needle. This should be followed by strapping.

Abdominal Pain, Especially When Associated with Abnormal Temperature, an Indication for Caution in the Use of Purgatives.—John Smyth (*New Orleans Medical and Surgical Journal*, June, 1916) emphasizes these points: First, the use of purgatives in obscure abdominal conditions should be avoided; second, they should never be given when abdominal pain is present, until such conditions as appendicitis, ileus, intussusception, and ulcers have been excluded; third, abdominal pain with constipation and fever is so frequently the result of appendicitis that the probability of its presence should never be overlooked; fourth, purgation is not only contraindicated, but is unquestionably dangerous in acute appendicitis, except possibly at its immediate onset, and is directly opposed to modern treatment; fifth, if we realize that the average patient may live for a while without nourishment, even nutrient enemata may be withheld from eighteen to forty-eight hours, all food by mouth should be prohibited, and even water, especially in cases of nausea. Mouth washes should be used freely, saline, glucose, or plain water enema or Murphy drip being given to quench the thirst, ice cap to the abdomen, absolute rest in bed, Fowler position maintained, and purgatives avoided until a definite diagnosis may be made and appropriate treatment be instituted.

Treatment of Eclampsia by the Stroganoff-Zweifel Method.—Hj. Forssner (*Hygiea*, Dec. 4, 1915), being much impressed by the results obtained in eclampsia by Zweifel in his Leipzig clinic, after the latter had suddenly shifted in January, 1911, from active operative methods to the Stroganoff expectant narcotic treatment in 1912, decided to institute the latter as a routine measure in the Stockholm Lying-in Hospital. The method practised after the Stroganoff régime, a modification of a treatment in vogue about twenty years ago, consists in the administration of one quarter grain morphine hypodermically and thirty grains chloral by rectum every three hours, according to indication, namely, the puerperal convulsions. For each internal examination, catheterization, etc., chloroform or ether is given, also when a convulsion threatens. Sometimes the treatment is supplemented by venesection. Hot packs, catharsis, saline solution, hot water bags over

the kidneys are used as adjuvants, and operative delivery is performed only when it promises to be easy or the patient grows worse. The result in a series of fifty-one cases was a mortality rate of 9.8 per cent. compared with fourteen per cent. previously. In eight of the cases forceps were used at the outlet. In only one case was there active operative interference; this consisted of vaginal section in a patient who entered the hospital in a miserable state, this with fatal result. The infant mortality was 31.4 per cent., counting only the visible ones 16.4 per cent. Beside presenting facts as to lowered mortality rate by his own and by others' statistics, notably those of Franz, of the Berlin Charité, whom he cites as treating 200 successive cases with a mortality of nine per cent., while his preceding 550 cases treated actively showed a death rate of seventeen per cent., the author defends the expectant treatment against those who oppose it as being theoretically irrational from an etiological viewpoint. There are two factors in eclampsia, he argues, an endogenous one—whether the toxic element is in the ovum or in one or more parts of the organism—and an exogenous one, depending on external irritant causes, and admittedly the onset of labor is one of the principal external causes, frequently precipitating convulsions. It is these conditions that we must combat as they arise, by whatever means at our disposal, until a clearer knowledge of their etiology will enable us to found thereon a rational causal therapy. Not that operative measures should be banished, but that expectancy with narcosis should have equal recognition therewith, is the hope of the author, and he believes that we have in this treatment a valuable weapon in the therapeutic armamentarium; the more so because it can be used outside of hospitals, when far away from expert operators, or when the environment makes operation impossible.

Treatment of Traumatic Detachment of the Retina and Exudative Choroiditis.—Bonnefon, in *Bulletin de l'Académie de médecine* for May 2, 1916, mentions as causes of failure in the treatment of traumatic retinal detachment: 1. Delaying intervention beyond a few hours after the accident, the retinal cells in the detached portion having already undergone degeneration, and, 2, the fact that only detachments limited to the periphery of the retina are amenable to revulsion and punctures practised, as is customary, by denuding a small section of the sclera in front of the recti muscles. In three cases of extensive detachment Bonnefon obtained good results by carefully ascertaining the posterior limit of the detachment with the ophthalmoscope and exposing the entire corresponding scleral area, even at the expense of cutting through one of the recti muscles. The procedure was precisely the same as in muscular advancement, and the equatorial region, having been made accessible, was then subjected to punctate cauterization by means of a fine galvanocautery at red heat. Behind the equator of the eye one or two deep ignipunctures were practised with a cautery bent at a right angle. Two sutures passing through muscle, aponeurosis, and conjunctiva were placed to restore the separated parts, and the operation was followed by absolute rest in recumbency and the instillation of atropine. The sutures

were taken out on the fifth day and a few subconjunctival injections of saline solution in some instances administered after the eighth day. By this procedure reattachment of a retina detached nearly to the macula lutea, with vision reduced to light perception, was obtained. Vision subsequently improved to 8/10. In contusions of the ocular globe with intraocular effusion Bonnefon likewise advocates revulsion with the cautery, because this favors absorption and accelerates recovery through the avoidance of serious complications such as cicatricial organization of the exudates, either over the retina or in the vitreous body.

Tuberculosis.—The *Buffalo Medical Journal* for June, 1916, publishes the answers received from a number of physicians who are eminent in the study of this disease, to the following questions: "1. Under existing conditions, especially the impossibility of altogether removing foci of infection, do you consider tuberculous infection to depend rather on the virulence of the organisms, or on the susceptibility of the patient? 2. Aside from climatic and hygienic methods, do you advocate medical treatment as having direct action on the disease—disregarding symptomatic treatment for complications and for temporary relief? 3. What is your opinion as to the therapeutic action of germ derivatives?" Although nearly all speak with hesitation they substantially agree in favor of the susceptibility of the patient being the determining factor in the majority of cases. They also agree that there is no medicinal agent, in the ordinary sense of the word, which has any therapeutic value. Several speak very highly of tuberculin, especially in selected cases, others have not found it very beneficial. It is probable that some, but not all cases are greatly benefited, and that no definite rule by which to choose these can as yet be laid down. Some are of the opinion that cases which have been treated successfully with tuberculin are less likely to relapse than others.

Treatment of Causalgia.—R. Leriche, in *Presse médicale* for April 20, 1916, adduces evidence to the effect that the burning pain, or causalgia, at times attending injuries to the extremities, is due to traumatism of the sympathetic nerve structures in the affected parts. In this he has already been sustained by Meige and Bénisty. Recently the author has been struck by certain clinical aspects of causalgia, which gives the impression of a series of vasomotor paroxysms associated with local cyanosis, sweating, and a distinct type of pain. The condition is apparently not due, as formerly thought, to interrupted blood supply, but to a sympathetic neuritis. In two recent cases Leriche had occasion to apply treatment based on this new conception of the condition. In the first case, one of intense causalgia, he excised the entire sympathicocellular sheath surrounding the brachial artery for a distance of about twelve cm. At once the pain was markedly relieved and the vasomotor manifestations ceased; six months later complete recovery had occurred. The second case was that of a corporal who had sustained a bullet wound of the left clavicle with injury to the brachial plexus and complete flaccid paralysis

of the entire upper extremity. At the first operation the fibrous tissue compressing the plexus and vessels was opened up, but no benefit followed. The patient complained later of an intense causalgia, and at a second operation the cellular sheath surrounding the brachial artery was removed. The artery was reduced to a thin cord and did not beat. Nevertheless, the hand, previously cold, became warmer, pain was relieved, and later movements of the forearm began to return.

Dany's "102" Preparation in the Treatment of Syphilis.—Dalimier and Lévy-Franckel, at a recent meeting of the Académie des sciences, Paris (*Presse médicale*, March 30, 1916), reported successful results with this preparation in malignant and grave forms of syphilis, including phagedenic or gangrenous chancre, ulcerative secondary syphilides of the penis and thighs refractory to gray oil, tertiary rupia covering the thorax and refractory to gray oil and salvarsan, syphilitic myelitis, aortic dilatation, etc. From doses one half as large as those of salvarsan, more powerful antisiphilic effects were obtained. The drug acts with particular rapidity, is very stable, and excites little or no reaction. In five out of eight cases of psoriasis complete disappearance of the lesions was obtained.

X Ray Treatment of Uterine Myomata.—Arthur Stein (*Med. Record*, June 3, 1916) emphasizes the fact that this treatment is not universally accepted as progress. It must be tentative and followed by operation if necessary. Klein maintains that operation is necessary or justified in suspected malignant change in myomata or myomata with malignant degeneration of the uterine mucosa, in necrotic or gangrenous myomata, in submucous tumors with profuse hemorrhage, in polypoid myomata, and in cases of doubtful diagnosis with suspicion of other more malign tumor. From careful study of the reports of many investigators it would seem that the indications for x ray treatment of uterine fibroid are limited, including patients who have reached the climacteric, and those suffering from diabetes, obesity, advanced arteriosclerosis, or hemophilia where surgical interference involves danger to life.

Renal Function Tests.—Donald F. Cameron (*Journal A. M. A.*, June 3, 1916) asserts that the agreement between phenolsulphonophthalein and blood urea tests is as a rule striking. Not infrequently a low phenolsulphonophthalein excretion is associated with a normal or only moderately increased blood urea concentration. These tests are of value in selecting the most opportune time for operations so far as renal function is concerned. After an operation under general anesthesia there is usually an increase in blood urea concentration. It is most marked after operations on the renal tract and especially on patients who already have diminished renal function. This increase is apparently slightly more marked following operations under gas-oxygen-ether anesthesia than following similar operations under ether. Blood urea determinations are of great value in the diagnosis and prognosis of uremic states. Frequently blood urea concentration can be determined when other renal function tests

are difficult or impossible. In the cases investigated definite symptoms of uremia in uncomplicated cases appeared when the blood urea concentration reached 180 to 200. A definite group of patients have a low phenolsulphonophthalein excretion, but a normal or approximately normal blood urea concentration. Many members of this group withstand a general anesthetic without any complications due to renal insufficiency.

Abortive Treatment of Syphilis.—Joseph J. Bansbach (*Journal A. M. A.*, June 3, 1916) excises the chancre whenever possible. When excision is not possible the following combination is used:

Calomel,	10 parts;
Zinc sulphate,	10 parts;
Chlorine water,	50 parts.

It has no effect on the healthy tissue. It is applied on a pledget of cotton and covered with the prepure or a piece of oiled silk and left in place for twenty-four hours. In another twenty-four or thirty-six hours the chancre can be lifted out of its bed, leaving a healthy ulcer, which heals in a short time.

Ringworm in Children.—E. L. Oliver (*Boston Medical and Surgical Journal*, May 25, 1916) holds that the older methods of treating ringworm of the scalp, which is a highly contagious disease, are inefficient and recommends highly the use of the x rays through the Coolidge tube. The objection to this form of treatment, that it may produce permanent baldness, he asserts is done away with by the introduction of this tube, with which the amount of rays absorbed can be measured with great accuracy.

Casualty Dressings.—A. Don (*British Med. Jour.*, May 6, 1916) subjected a number of antiseptics to practical trial in casualty practice in the present war. Wright's hypertonic saline yielded variable results—good in selected cases when used properly; harmful when improperly used. Its employment demanded more attention than any other method; and its application could not be left to dressers. With living tissues the saline caused much pain. When applied after the separation of the dead tissues it tended strongly to the production of edematous, unhealthy granulations and to the absorption of the infecting organisms with the development of deep abscesses. Hypochlorous acid in solution was found to be a good routine antiseptic, but to some skins it was very irritating. When applied dry in the form of eupad it was often remarkable as a deodorant, but commonly caused much pain. Iodine was similar to hypochlorous acid in effectiveness and in the production of pain. Pure phenol acted only on the surface and showed a tendency to diminish secretions, but in a dilution of one to sixty it seemed to be a fairly satisfactory emergency dressing. For obviously clean wounds dry sterile gauze or the double cyanide gauze was found to be the most satisfactory dressing. Practically the only value of hydrogen peroxide was found to be its ability to clean cavities. It was evident that nearly any of the methods tried would give good results, although for the best results selection was necessary.

Proceedings of Societies.

AMERICAN MEDICAL ASSOCIATION.

Sixty-seventh Annual Meeting, Held at Detroit, Mich., June 12 to 16, 1916.

(Concluded from page 1100.)

HOUSE OF DELEGATES.

June 15, 1916.

The house was called to order by Dr. Rupert Blue, president. The reading of the minutes of Tuesday's session opened the meeting.

Dr. F. C. WARNSHUIS, of Grand Rapids, Mich., asked the privilege of the floor. He said the Wayne County Medical Society and the profession of Detroit had labored long and earnestly to provide for the comfort and pleasure of the association here meeting. It was with sorrow and regret to them that an incident had occurred to mar their work. In the noon edition of one of the papers appeared the announcement that Dr. Charles H. Mayo would be elected president of the American Medical Association. He then read a letter from the city editor of the paper in question to the effect that the news had been gathered by a reporter in the course of his routine duties and did not emanate from a member of the association.

After the committee on credentials had presented a supplementary report and the roll call had been called by States, the house proceeded to the election of officers. (See JOURNAL for June 17th, p. 1106.)

The Committee on Transportation and Place of Session reported that four cities had asked for the next meeting of the association, namely, Chicago, Columbus, New York, and Atlantic City. The invitation to the first two had come from the commercial bodies only while the invitations from the last two were from the profession. The committee therefore referred the matter back to the house, with the recommendation that only New York and Atlantic City be considered.

The result of the ballot was as follows: There were 109 votes cast, of which Atlantic City received forty and New York sixty-nine. New York was, therefore, declared the next place of meeting.

Following the reading of some resolutions and supplementary reports, the house adjourned.

SECTION IN PRACTICE OF MEDICINE.

June 14, 1916.

Lesions of the Nervous System Following Intravenous Injection of Bacteria.—Dr. EDWARD C. ROSENOW, of Rochester, Minn., remarked that cultures from foci in the tonsils and pyorrheal pockets, when injected into animals, produced nervous lesions such as myositis in the muscles of the neck, multiple sclerosis, and other lesions. On recovering the bacteria from lesions thus produced, they were found to be identical with those originally found in foci such as the tonsils etc. They should not expect too certain results after removal of foci of infection found in tonsil and pyorrheal pockets, for very minute foci were found on mucous membrane—pulp of dead teeth, etc., and might continue to produce the same symptoms. Many of these foci could not heal from purely mechanical reasons.

Dr. FRANK BILLINGS, of Chicago, said that many organisms normally living within them or on mucous membrane might take on pathogenic qualities and following this an acquired tropism.

Conditions of disease formerly looked upon as nonin-

fectious were now looked upon as infectious and due to focal infection.

Doctor ROSENOW said that the elective localization of bacteria was probably due to such mechanical factors as metabolism, oxygen pressure, and degrees of tolerance. Increasing virulence of streptococci in passing through animals was shown by the fact that they would first produce endocarditis, next bronchopneumonia, ulcer of the stomach, appendicitis, septicemia, and death.

SECTION IN PHARMACOLOGY AND THERAPEUTICS.

June 15, 1916.

The Rational Handling of Narcotic Addicts.—Dr. E. S. BISHOP, of New York, brought out some new and important considerations. He believed that when a narcotic drug was taken into the body, the body reacted by producing a toxic substance to neutralize the drug. He outlined the experiments which proved to him his conclusions. The inhibition of function of the individual, he said, caused the clinical symptoms. He showed that work, fear, and worry had a very great bearing on the individual's tolerance for narcotic drugs. He further went on to show that an individual that required smaller doses for producing an effect would do better mental work and that those requiring large and frequent doses showed lack of cerebral activity and function. He showed that in an individual who did not obtain enough of the drug to produce a drug balance, had a marked inhibition of body function. In taking up the many means of treatment for these addicted individuals, he did not believe in some or any of the drastic measures which were in vogue by people who advertised to cure this drug habit. He believed that a physician must have special training for treating these conditions. He asserted that there was no drug or special remedy that was specific for the cure of the individual addicted to the drug habit. That in treating an addicted individual his relation to family and society were of paramount importance. That to scientifically cure or help such a patient, doses of such narcotic drugs must be estimated where they produced a drug balance, manifested by a good circulatory tone, good function of his bowels and other organs of elimination. This, as he proved, depended entirely upon the patient's physical condition; no withdrawal of the drug should be attempted until this was evident. When his body tolerance had been obtained and he was functioning as a normal individual, he should be taught to retain this functional balance by allowing him to give himself an allotted amount of the drug to retain this condition, and by gradually reducing the amount his body reaction to the toxic substances would be reduced and a normal individuality would eventually be produced.

Salicylate Albuminuria.—Dr. PAUL J. HANZLIK, of Cleveland, said that the statements as to albuminuria after salicylates were contradictory. The present investigation was planned to settle definitely whether salicylates caused albuminuria and if this was of febrile origin. Twelve patients were studied, seven having rheumatic fever and five nonrheumatic. The albuminuria was determined qualitatively and quantitatively. Studies of phenolsulphophthalein excretion were also made on some of the nonprotein nitrogen of the blood on the majority. Full therapeutic doses of sodium salicylate were used. The same changes were found in rheumatic and normal individuals. All cases presented albumin, apparently leucocytes and granular casts. The albuminuria reached its maximum at "toxicity" and then gradually disappeared. The phenolsulphophthalein excretion and nonprotein nitrogen showed no important changes at any time. The water excretion was usually diminished at "toxicity," presumably by the sweating. Dogs, with corresponding doses, also showed prompt and severe albuminuria, together with white and red blood cells in the urine. Salicylates produced renal changes leading to albuminuria; this was not of febrile origin.

SECTION IN OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

June 14, 1916.

Colonic Infections: Some Seldom Described Non-specific Types.—Dr. J. M. LYNCH and Dr. W. L. McFARLAND, of New York, described a condition of the colon which was often wrongly diagnosed as tuberculosis.

The onset was sudden, with temperature rising rapidly to 104° to 105° F., severe diarrhea, early appearance of blood, mucus, and pus, with an overpowering stench. There was rapid emaciation and extreme prostration. The digestive disturbances were slight. The mucosa had a "fish spawn" appearance and bled easily. The condition was always acute to begin with, but might become chronic. The bacteriology was apparently that of the normal bacterial flora of the bowel. It was important to recognize the condition early, as a favorable prognosis depended upon prompt treatment. The etiology was unknown, but the occurrence of a segmental type suggested a possible vasomotor origin. The treatment consisted of irrigations of potassium permanganate, one in 5,000, or peroxide of hydrogen, one dram to one pint of water. Ileostomy gave wonderfully prompt relief.

Congenital Inflammations, Deformities, and Defunctionalization of Caudal Ileum and Colon.—Dr. J. R. EASTMAN, of Indianapolis, stated that many cases of habitual constipation were due to congenital and inflammatory bands, which drew the sigmoid into a sharp angulation near the left internal abdominal ring, and he advised the systematic inspection of the site of this deformity and the division of congenital folds and inflammatory strictures. In addition to habitual constipation, would often be found associated certain morbid nervous and mental states, including melancholia, neurasthenia, and hysteria, which were promptly relieved by the operation and correction of the deformity.

Anterior Parietal Implantation of the Colon for Ptosis.—Dr. CHARLES A. L. REED, of Cincinnati, stated that the older operation of pexis of the colon, which was generally omentopexis, were ordinarily failures because they failed to hold for a sufficient length of time to enable the replaced large intestine to regain its functional power. The present operation was devised to obviate this objection. It consisted of a thorough exploration of the lower abdomen and the breaking up of adhesions; a careful implantation of the omental margin of the colon affected by utilizing the base of the omentum itself for implantation into the structures lying beneath the peritoneum of the anterior abdominal wall, bringing the colon into an approximately normal position, thus favoring subsequent restoration of its functional power. Where there was associated ptosis of the liver—which was not unusual—the smooth surface was vigorously rubbed with gauze until a marked hyperemia occurred and was replaced in its normal position. Adhesions would form, holding it in place. The operation was to be done before there was destruction of the intestine by prolonged purgation, or of the stomach by the repeated passing of the stomach tube. Careful observation of cases which had been operated in, showed that there was a rapid gain in weight, constipation was permanently relieved, and headaches, melancholia, and neuralgia disappeared.

The Prevention of Obstruction of the Passage of Gas Following Operations on the Colon.—Dr. ALBERT H. OCHSNER, of Chicago, stated that aside from direct interference with the circulation of the colon due to injury to the vessels or to tension, there was no source of danger to the patient so great as that which came from obstruction to the passage of gas following operations on the colon. Various methods could be employed to prevent this obstruction, either by supplying drainage proximally to the seat of operation, or by providing drainage directly through the portion of the colon in which the seat of the operation was situated. In the former, ileostomy was performed, and the stump of the ileum was brought into the upper portion of the wound, a rubber tube inserted and held by a few sutures. If necessary, irrigation could be done through this tube. In the latter case, where anastomosis of the ileum with the sigmoid was made, the tube could be inserted into the rectum and passed directly through the fistulous opening.

Radical Operation for the Cure of Cancer of the Second Half of the Large Intestine.—Dr. WILLIAM J. MAYO, of Rochester, Minn. (paper read by his brother) stated that the chances for recovery of the patient in operations for cancer of the second half of the large intestine were greater than in any other part of the body, except the lip and fundus of the uterus. In a large series of cases observed, five years after operation, there were fifty-two per cent. of cures. In another series observed three years

after operation there were 67.5 per cent. of cures. Even in cases where the small intestine was involved and three or four resections were necessary, with end to end anastomoses, the prognosis was favorable, and the patient should have the chance. Where the uterus was involved, the uterus, with cervix, tubes, and ovaries, was removed *en masse* with the resected portion of the large intestine. Where possible, end to end anastomosis was made, but otherwise colostomy was proper.

Posture in Obstetrics.—Dr. JAMES W. MARKOE, of New York, described the uses of the obstetric chair, especially in the first stages of labor. In his hospital practice he used a chair of his own design; the back and foot stirrups were adjustable, allowing the patient, whether tall or short, to be put in the desired posture. The idea was to have the patient in as near a squatting posture as possible, with thighs flexed and body slightly forward, thus creating hydrostatic pressure of the liquor amnii upon the os, and shortening the first stage of labor, usually, by several hours. As it was not practical to carry this chair into the private homes, the following would serve the purpose: Use an ordinary rocking chair; place books under rockers to prevent tipping entirely backward, but allowing seat to assume an angle of about 45° with the floor; place plenty of pillows in chair so that patient may be perfectly comfortable; put patient in chair with feet on an ordinary dining room chair; she will be able to arrange the pillows herself so that she is comfortable, and at the same time assume nearly a squatting posture. Instruct patient to "hold breath and bear down." This was especially valuable in old primiparæ, as it helped to dilate the rigid pelvic floor.

Chloroform in the First Stages of Labor.—Dr. ISADORE L. HILL, of New York, after making experiments on dogs and guinea-pigs, stated that while there was some change in liver cells, the regeneration was rapid and complete. These experiments were made as nearly as possible in a manner to correspond with the administration of chloroform to a woman in labor. However considering the weight of a human being compared to that of a guinea-pig, and the actual amount of chloroform being about the same, it was doubtful if liver changes ever took place at all in the use of chloroform in labor. In cases where the pains in the first stages of labor were great or unbearable, the use of chloroform, properly administered, and in small amounts, not only acted as an analgesic, but as a hypnotic as well. The patient dreaded the next pain and welcomed anything which she believed was going to lessen it, thus enhancing the value of chloroform in these cases.

Obstetric Surgery, a Modern Science: Its Scope and Limitations.—Dr. EDWARD P. DAVIS, of Philadelphia, stated that abdominal Cæsarean section was the safest operation of any for a living child; that the operation should never be performed in cases of eclampsia, and that diagnosis should be made from clinical study of the case, by the obstetric surgeon, and not by the gynecologist or general surgeon.

Middle-class Midwifery in Renaissance.—Dr. JOSEPH B. DE LEE, of Chicago, stated that owing to too much interference with the natural processes of Nature, frequency of permanent injury as a result of labor was becoming greater instead of less; infections, instead of decreasing, were increasing; lacerations were the rule, not the exception; and fetal mortality was not diminishing as it should. Some of the abuses were: 1. Hurrying of dilatation (manual and instrumental), causing lacerations, infections, and consequent morbidity and mortality; 2. anesthetics; 3. twilight sleep; 4. early bearing down; 5. too many vaginal examinations; 6. too frequent use of forceps; 7. abuse of pituitrin; 8. too frequent Cæsarean section. Nature produces fewer lacerations and the least harm to child. Slow spontaneous delivery should be encouraged. Examination should be made by rectum instead of vagina. The obstetrician should interfere with natural processes of Nature only to prevent undue suffering and to save life of mother or child. He held that pituitrin was bad for the child and was the cause of lacerations, and that he now gave it in but three minim doses, and then only in special cases where there was real scientific indication for its use and where the head was engaged and there was full dilatation.

Umbilical Hernia and Lipectomy.—Dr. WALTER LATHROP, of Hazleton, Pa., called attention to the value of combining the radical cure of umbilical hernia with the excision

of fat, and reported many cases of such operations, with very satisfactory results. The average amount of fat removed was about five and one half pounds, but sometimes as much as twenty pounds. Careful hemostasis must be attended to, and drainage provided at both ends of the incision. The patient must have absolute rest in bed from eighteen to twenty-five days after the operation, receive alkalies to prevent acidosis, have a diet of milk and water with lemon juice, after which, when the wound was completely healed, exercise and restricted diet would complete the cure.

Sheet Rubber Superior to Gauze Sponges in Abdominal Operations.—Dr. JOHN W. KEEFE, of Providence, R. I., stated that he had discontinued the use of gauze sponges in abdominal operations. Instead, he used sheet rubber of about the consistence of a rubber bandage. An entire roll, which was eight inches wide by about eighteen feet long, was at hand in all abdominal operations. The advantages over the gauze sponges were: 1. No danger of leaving sponge in abdomen. 2. Less irritating. 3. Lessened shock by preventing loss of carbon dioxide from blood. 4. Fewer adhesions. 5. Easily sterilized. 6. Lasting. 7. Could use as little or as much as needed. The disadvantages were none.

One Hundred Consecutive Cases of Fibromyomata uteri Subjected to Operation.—Dr. STEPHEN E. TRACY, of Philadelphia, stated that in 100 consecutive cases of fibromyomata uteri subjected to operation, with subsequent pathological examination of the specimen, all but nineteen showed degeneration changes or were of malignant nature.

Operative Treatment of Fibromyomatous Uterine Tumors.—Dr. JOHN B. DEEVER, of Philadelphia, stated that the operative treatment for fibromyomata was the most satisfactory of all surgery. In a recent series of 750 operations, the last hundred gave 100 per cent. of recoveries, while the mortality for the entire series was only 1.73 per cent. Rapid and uneventful recovery was the rule in ninety-five per cent. of the cases, in spite of a considerable number of degenerating fibroids and of preoperative pelvic, abdominal, and other complications. The author, while admitting that possibly in some cases, the growth was retarded, deprecated the present endeavor to treat uterine fibromyomata with the Röntgen ray or radium, contending that surgery alone, preferably supravaginal hysterectomy, was the most advantageous procedure in the interest of the patients.

SECTION IN SURGERY.

June 14, 1916.

Immediate Effects of Splenectomy in Pernicious Anemia.—Dr. ROGER L. LEE, of Boston, said that these were: 1. An increase in the leucocyte count from 10,000 to 35,000, which subsided in a few days; 2, an increase in blood platelets, with change in morphology. Thrombosis sometimes occurred some way related, it was thought, to the increase in platelets, as thrombosis rarely occurred in pernicious anemia without splenectomy; 3, a crisis which lasted from two to ten days; 4, abnormal production of red cells and reticulated red cells, varying from zero to twenty per cent. These effects all indicated a stimulation of bone marrow. The most trustworthy of all the signs was the heavily reticulated red cell, especially with reticulation in the centre; this was significant of erythrocytic elements of the marrow. Stimulation of the bone marrow occurred apparently without cause in pernicious anemia; it could be brought about by transfusion and also by splenectomy.

Late Results of Splenectomy in Pernicious Anemia.—Dr. E. D. KROMBHAAR, of Philadelphia, cited 153 cases; thirty were fatal within six weeks, a mortality of twenty per cent.; more recent operations showed a mortality as low as six per cent. Of the remaining, two thirds showed distinct improvement; twenty-three cases showed no improvement, and several actual harm. In twenty-four of the cases traced for one year, eleven remained improved, six relapsed, and seven ended fatally. Of the eleven, in two years' time seven remained improved, four relapsed, and one ended fatally. The best results were obtained in patients in the third, fourth, and fifth decades, when the disease had not existed long, when the spleen was enlarged, and urobilin was present with an icteroid appearance.

Splenectomy in Chronic Anemia.—Dr. JOHN L. MILLER, of Chicago, said that splenic anemia was not a disease entity in itself, but a group of conditions characterized

by enlarged spleen and progressive anemia, which would develop, if allowed to progress, into what was known as Banti's disease. It was hereditary in about fifty per cent. of cases; it might be due to syphilis, or to thrombosis of the splenic vein. Icterus appeared late in the disease; there were no changes in the fragility of the red blood cells. Splenectomy was advisable in all stages, even when ascites had set in. Hemolytic icterus was primarily a disease of the spleen; the icterus and anemia appeared later, with increased resistance of red blood cells. Hemolytic crises occurred when the hemoglobin might be reduced from eighty-five to forty per cent. Jaundice was present. There was no bile in the urine, but an increase of urobilin in the stools. The disturbed resistance of the red blood corpuscle was not the primary cause of the anemia, because after splenectomy the patient could enjoy normal health while resistance still existed.

Splenectomy for Hemolytic Jaundice.—Dr. CHARLES H. PECK, of New York, said that hemolytic jaundice was of obscure origin. The primary causes lay evidently in the spleen. Urobilin and the enlarged spleen were testimonies of the hemolysis. It might be either inherited or acquired. A case of congenital hemolytic icterus was given in detail. A young woman who gave the history of always having been jaundiced came from a large family, but gave no other history of the condition; at times the jaundice would deepen. There was, however, no evidence of slow pulse, purpura, or any other symptoms that accompanied catarrhal jaundice. She gave a history of two exploratory operations for cholecystitis, both negative. Her blood count was normal; there were twenty per cent. of reticulated cells. The resistance of the red cells was from twenty to seventy per cent. Splenectomy was done, and the jaundice was gone within a week. The resistance of the red cells returned to normal within three years, and the patient had been entirely well since the operation.

Indications for Splenectomy in Pernicious Anemia; Technic of Operation.—Dr. DONALD C. BALFOUR, of Rochester, Minn., remarked that indications for operations were, 1, in patients with definitely enlarged spleen; 2, those who showed marked icteroid discoloration; 3, when the disease had lasted only a short time. It was contraindicated in the acute stage, also in the chronic stage when cord changes had taken place. In the technic, a left Battle incision was used. In freeing the spleen, bleeding was sometimes profuse. As soon as it is freed they should put in hot abdominal packs and allow them to remain as long as possible. The gastrosplenic omentum might be short, and great care must be taken not to injure the stomach. The pancreas sometimes came into the field and should be carefully avoided. The pedicle included the artery and vein; it was usually easy to tie them; when the spleen was greatly enlarged, however, the pedicle was sometimes fan shaped and it was well to tie the lateral veins first. In all cases of pernicious anemia, splenectomy should be seriously considered.

Pernicious Anemia Treated by Splenectomy and Often Repeated Transfusions.—Dr. ROY D. McCLEURE, of Baltimore, said that, while splenectomy certainly showed a marked stimulation to the bone marrow, it could not be repeated; this was not true of transfusions. Their failure to get better results in transfusions lay in the fact that they did not repeat sufficiently often. They should consider a transfusion to resemble an inunction of mercury in syphilis. Great care must be taken in selecting the donor. In a series of ninety-four cases treated by splenectomy and persistent transfusion, fifty-three showed improvement, thirty-four no improvement, and seven harmful results.

Doctor SMITHIES, of Chicago, remarked that splenectomy was only a portion of the treatment. He suggested multiple blood transfusions to give the patient protective antibodies and build him up. He advocated removal of all foci of infection, teeth, tonsils, gallbladder, etc. Then the patient was better able to stand splenectomy.

Doctor THAYER, of Baltimore, averred that splenectomy was only another arm with which to fight pernicious anemia, and as some patients lived for years without operation, it seemed a serious matter to expose the patient to the extra danger of so serious an operation.

Some Technical Features of Spinal Surgery.—Dr. C. A. ELSBERG, of New York, gave the following method of approach in spinal operations. Incision made over spinal processes through skin and muscles. Cut muscles free from

spinal processes with knife blade kept close to bone. Complete removal of the processes by cutting through the laminae, exposing the dura from one to two cm. There was no danger of interfering with the function of the spinal column by removal of these processes. It was well to bite off tips of processes on the vertebrae above and below, as these extended so far that they gave trouble after operation. The dura was raised by two sutures and opened with a grooved director. Absolutely no blood was allowed to enter the spinal canal, therefore they would have a dry field before opening the dura. To examine the front of the cord or posterior surface of the body of the vertebra, traction could be made on the dura before opening. The tumor might be situated under the nerve roots; if so it was inadvisable to pull it out, and preferable to cut the nerve roots and thus expose it. No drainage was used in closing, but care was taken to leave a little serum as possible in the tissue. The following conditions should be recognized by the surgeon: Normal cord was creamy white; in children it was yellow; in old age, again, it was white. In compression, the cord was normal in color; the vessels were black and enlarged; they must look for a tumor higher up. In myelomyelitis, the cord was pink and the vessels were enlarged. In multiple sclerosis the cord might be normal or smaller, pale white in color, and with small vessels. It was interesting that large tumors usually did less damage than small, owing largely to the fact that the small tumors were usually of the hard variety. In 150 cases he reported only five deaths, aside from ten cases of acute softening, which were doomed.

Surgery of the Brachial Plexus.—Dr. ARTHUR A. LAW, of Minneapolis, remarked that injury to the plexus came especially through forcible evulsion of the arm, not by pinching between clavicle and rib, as was formerly supposed. When the force was applied with the arm above the head, the lower cord was usually torn. Injury due to cervical rib had been well developed, but he emphasized the importance of fascia bands which suspended, as in a hammock, the eight cervical and first dorsal nerves, giving rise to symptoms, but showing nothing to the x ray; these symptoms were relieved by cutting the bands. The ability of the nonmedullated neuroaxones to span the gap in severed nerves, provided that the central neuron was intact, relieved the hopelessness of the situation. This growth was assisted by fascia tubes. Anastomosis had been tried on dogs and with such success that within five months the side operated upon could not be distinguished from the other, so perfect was the reeducation of the cortical brain centres. A man with the musculospiral severed was operated upon three months after an accident; the musculospiral was anastomosed with the median, with the result that man had use of all the muscles except that he could not flex his first finger and thumb, owing probably to injury to the median during the operation.

Free Transplantations of the Omentum Subcutaneous.—Dr. CARL B. DAVIS, of Chicago, observed that free omentum transplants were used to check free hemorrhage from the liver, spleen, and other abdominal viscera; the danger was adhesion, but this could be avoided by turning under all the free edges. It had a decided hemostatic action, and the tissue extract was being used to produce coagulation. Omentum transplants were used also to prevent adhesion and could therefore be used to cover up a suspicious stitch which might cause adhesion or bleeding.

Dr. D. A. MANN, of Minneapolis, cited an interesting and instructive case. A woman with a large ovarian cyst with extensive adhesions; the cyst was removed; the patient recovered, but returned with the uterus retroplaced. A second operation showed that the uterus and broad ligaments were adherent to the rectum, and when adhesions were broken up this organ was raw; to prevent adhesions forming again, he removed the omentum close to the transverse colon and put it between the uterus and rectum. Another ovarian cyst developed, the next year, and upon opening the abdomen, the uterus was found free from adhesions, the omentum still in place, devoid of fat, and about three times the thickness of the peritoneum.

Operative Treatment for Threatened Gangrene.—Dr. JOHN SHELTON HORSLEY, of Richmond, Va., said threatened gangrene of the lower extremities was due to general or local diminution of the bloodvessels. There were four varieties: 1. Arteriosclerosis; 2, intermittent claudication superimposed on an arteriosclerosis; 3, Raynaud's disease;

4, thromboangiitis obliterans. This latter was not an endarteritis; there was, however, occlusion by a thrombus owing to some toxin. There was, first, a throwing down of a red clot, infiltration of small round cells, pus cells, and leucocytes. Angioblasts formed giant cells resembling small tubercles. These organized and obliterated the lumen; later, canalization took place. It usually occurred in young Jews between twenty and forty years of age, coming from Poland and thereabouts. Treatment was constitutional and local: Hot application, ligation of the femoral; arteriovenous anastomosis was not satisfactory. Amputation should be conservative.

Doctor LA PLACE, of Philadelphia, advised them not to sew the stump, as gangrene would occur in the sutured tissue; but they should bathe the open end with ordinary blood serum daily. It could be kept on ice at one degree above freezing.

Stab Wounds of the Chest Involving the Diaphragm, with Diaphragmatic Hernia.—Dr. CHARLES C. GREEN, of Houston, Texas, considered the term, hernia, a misnomer, as a hernia had a sac; this was more properly an evisceration. It occurred more frequently on the left side than on the right, owing to the protection of the liver on the right side. Although the viscera were drawn into the thoracic cavity with considerable force, and it was difficult to withdraw them from below, they were quite easily replaced from above, either by resection of a rib or through an intercostal incision, usually enlarging the initial wound. It was the duty of the physician to diagnose the condition, because of the high mortality in cases treated improperly. The question arose, how far they were justified in going to arrive at a diagnosis. An exploratory thoracotomy with a long intercostal incision did not increase the danger, and allowed proper treatment as the indications might demand.

SECTION IN LARYNGOLOGY AND OTOTOLOGY.

The Evolution of the Frontal Sinus Operation, with Special Reference to the External Operation.—Dr. JOSEPH C. BECK, of Chicago, remarked that the indications for external operation were where suppurative continued after an intranasal operation had been performed; where continuous suppurative had formed a fistula. The most valuable diagnosis was made by roentgenography, which should be resorted to in all cases of sinusitis. A second method of diagnosis was by the microscope. As to the comparative merits of the various external operations, the Killian operation was one in which an osteoplastic flap was made, using the supraorbital ridge as a guide. The modified Killian was making an opening about the size of a dime through the inner canthus, entering the sinus by removing the vertical plate of the ethmoid and floor, by taking away the intranasal crest, in this manner issuing into the nostril with free drainage.

Anatomy of the Frontal Sinuses.—Dr. LEE M. HURD, of New York, observed that on each side of the median line were two frontal eminences, between which were the remains of, or the obliterated frontal suture, leaving a slight linear depression, which above the root of the nose terminated in a rounded, projecting nasal eminence. Extending from this on each side were two curved, rounded, superciliary ridges, situated behind which, between the two tables of the skull, lay the frontal sinuses. There were two in number, varying in size according to the age of the patient. The frontonasal duct was only an imaginary object. There were various types of inflammation, affecting the frontal sinuses, the most serious of which was the persistent chronic sinusitis. The indications for intranasal operations were all cases of suppurative; pressure of the root of the nose; watery discharge from the nose. The after-treatment of frontal sinusitis was packing the sinus with bismuth paste and douching with aqueous solutions of silver nitrate and sodium chloride.

Ethmoid Empyema: Acute and Chronic.—Dr. GEORGE F. CORR, of Buffalo, said that in acute cases the severity depended on the condition of the patient as to resistance and virulence of the infecting organism. Patients in acute cases apparently recovered with or without treatment. Patients with chronic disease were very difficult to help, often with most radical treatment. The cases giving by far the most trouble, however, were the quiescent or latent variety. Chronic cases were most common in children. When pus was confined, pain was most severe, owing to pressure. Diagnosis was made by pain in the forehead, over the eyes,

or at the root of the nose, but often pain radiated down the side of the head to the shoulder. Late ethmoiditis was diagnosed at the time when the nerves were most sensitive. They would have at first a watery discharge, then mucopus and then pus. The examination of the discharge in nearly all cases showed the presence of pneumococci, streptococci, the influenza bacillus, etc. Chronic empyema was usually or mostly bilateral.

Surgery of the Ethmoid.—Dr. G. E. SHAMBAUGH, of Chicago, recalled the fact that the ethmoid was anatomically the key to the other nasal sinuses, and clinically ethmoiditis was very frequently associated with disease of the neighboring sinuses. Operations on the ethmoid included those undertaken primarily to supply better drainage for infected frontal and maxillary sinuses, and operations undertaken to relieve pathological conditions in the ethmoid itself. The resection of the middle turbinate might also be required in cases in which, because of anatomical conditions, a slight congestion caused interference with the ventilation of the maxillary and frontal sinuses, as well as the anterior ethmoid cells. The resection of the middle turbinate often sufficed to relieve the symptoms in the early stages of hypertrophic ethmoiditis. Complete exenteration of the ethmoid labyrinth was undertaken in cases of advanced hypertrophic ethmoiditis and in cases of diffuse suppurative ethmoiditis. Indications for operation were pressure at the root of the nose; blocking up of the nose; and sneezing.

Surgical Treatment of Chronic Suppuration of the Maxillary Sinus.—Dr. WILLIAM E. SAUER, of St. Louis, observed that the trend had been to abandon all operations which left a permanent communication with the oral cavity. Thorough inspection of the cavity and its drainage through the nose were necessary to secure permanent results. Either a modified Denker or a modified Canfield operation met these requirements at a minimum of sacrifice of nasal function. The importance of dealing with other diseased sinuses and with diseased conditions of the teeth and maxillary bones was emphasized. The importance of the Röntgen ray in determining these conditions could not be made impressive enough.

Sphenoid Sinus.—Dr. HANAN H. LOEB, of St. Louis, remarked that the size of the sphenoid sinus varied in different cases. The delicate structures lying around the sphenoid sinus or in close touch with it were the cavernous sinus, the carotid artery, and the optic nerve. Usually infection of the sphenoid sinus was thought to be due to syphilis, but most generally it arose from suppuration in the other sinuses. The x ray machine was of no use in diagnosing sphenoid sinus infections, inasmuch as the plate could not be placed in a suitable spot, so as to get the clear shadows of the sphenoid sinus.

Röntgenography of the Sphenoid and Ethmoid Cells by the Oblique Method.—Dr. SAMUEL IGLAUER, of Cincinnati, said that anteroposterior röntgenography of the ethmoid and ethmoid cells was only partially satisfactory, because of the difficulty in distinguishing the anterior from the posterior group of cells. Bitemporal pictures were even more uncertain because of overlapping. Oblique röntgenographs, according to the method of Rhese, had not been adopted in this country. This method was of great value because the sphenoids and ethmoids were projected onto one plate with but partial overlapping. The anterior and posterior cells were readily dissociated. The only difficulty arose from the oblique projection, which could be interpreted after practice in reading the plates. An anteroposterior plate plus oblique plates gave an almost certain diagnosis in all the necessary cavities.

Chronic Middle Ear Suppuration.—Dr. GEORGE W. MACKENZIE, of Philadelphia, said that successfully to prevent chronic middle ear suppuration, it was necessary to treat successfully the antecedent condition, that was, acute middle ear suppuration. It was important that they consider the diagnosis of the acute condition from every possible angle, etiological and pathological. The diagnosis must consider every factor in the case. They should ask themselves the question, Why did a particular case of acute suppurative otitis not clear up promptly while the majority of them did? If the acute case could be ascertained and removed, the case would not go into the chronic form.

Nonoperative Treatment of Otitis media.—Dr. NORVAL H. PIERCE, of Chicago, averred that proper treatment de-

pended on the site of the area of the middle ear involved, the stratum occupied by the inflammatory disease, the character of the pathological process, and the general condition of the patient. First they should find out whether the discharge was caused by a pus organism, streptococcus, pneumococcus, etc. Discharges might continue for years. As a rule, they were chronic and therefore continuous. Treatment of these conditions was best accomplished by irrigating with a soft rubber catheter filled with a weak solution of silver nitrate. The condition might be a catarrh or an inflammation of the tube affecting only the soft tissues or the covering of the bone. Hypertrophy was caused by imperfect drainage and poor ventilation.

Vaccine Therapy: Its Possibilities and Limitations.—Dr. DAVID J. DAVIS, of Chicago, cited the principles of immunity involved in the use of vaccines. Infection and resistance was a part of the more general problem of adaptation. Infections were classified on this basis. The use of vaccines was still in the experimental stage. The possibilities were good for the prophylactic use of vaccines in many cases of infection, especially those of the respiratory tract. The curative value of vaccines was a matter of doubt, the best results being obtained from the treatment of the acute infection. Tuberculin had no curative value, but established an immunity against an infection of tuberculosis. Standardized vaccines should not be used. Vaccines could be used safely as a preventive measure, but not as a curative measure.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 20, 1916.

The President, Dr. WALTER B. JAMES, in the Chair.

(Concluded from page 1149.)

Infantile Scurvy.—An abstract of this paper, by Dr. Alfred Hess, appears under Dietetics and Alimentation, page 1230.

Dr. L. EMMETT HOLT had no doubt that scurvy was on the increase in this city, judging by hospital and dispensary experience, since pasteurized milk had become so generally approved. Pasteurized milk had many advantages, but boards of health which were extending its vogue seemed to ignore some of the unfavorable consequences of its exclusive use. There were advocates of pasteurized milk who asserted that if scurvy resulted from its use, the reason was to be ascribed to an incorrect formula, an improper combination of fat, sugar, and protein; but the fact remained, nevertheless, that babies fed exclusively on pasteurized milk every now and then acquired scurvy. The exact reason for this was not known at present, but there were grounds for the belief that it was due to the effect of the pasteurizing process on the proteins in the milk.

The truth of Doctor Hess's contention, that it was necessary to add other elements to the diet of pasteurized milk for infants, was not yet as widely appreciated as it should be. The usual addition of cereals to pasteurized milk in no way prevented the development of scurvy; there seemed to be little doubt that combinations of starchy foods with preparations of maltose rather increased the liability. Orange juice might prevent the development of this danger; but the question was how large an amount was required. In one case scurvy had developed, though the child had received one ounce of orange juice a day for over one month. One half to one ounce daily should be sufficient for an average child. A law which made the pasteurization of all milk compulsory would be a calamity. The clinician should not be deprived of the privilege of using raw milk when he preferred to do so, provided that such milk was known to be produced under safe conditions.

It was probable that many cases of scurvy were overlooked at the present time. Ten or fifteen years ago very few advanced cases came to the hospital for treatment, but within the past few months the speaker had two cases so advanced that epiphyseal separation had taken place at shoulders, knees, wrists, and ankles. While he fully appreciated the advantages of pasteurized milk, its disadvantages should not be forgotten, and infants who were reared upon it should have some antiscorbutic added to their food.

Dr. WARREN COLEMAN wished to take up only one point. The papers of Doctor Funk and Doctor Hess opened up a wide field for speculation and investigation, but one of the most interesting phases of the vitamin problem for the clinician was the question whether the diets used in the treatment of any of the commoner diseases were deficient in these important substances. There was no well known disease of adults occurring in this latitude, which was recognized to be due to the lack or insufficiency of vitamins. Yet it was not impossible that ill defined types of disorders, now thought to be disturbances of function, or some of the symptoms of well established diseases, might have this origin.

This contention seemed justified by observations in typhoid fever cases. For example, the very course of the disease had been altered by giving patients all the food they required instead of only part of it. Diarrhea should no longer be considered a symptom of typhoid, except perhaps in the prodromal stage; it was the result of an improperly arranged diet and disappeared when the diet was properly arranged. Delirium and the typhoid state were not essential symptoms of the disease. Delirium might occur, but when it did it was due either merely to the fact that temperature was elevated beyond a certain height for a particular individual, or to the elevated temperature plus partial starvation.

If in such a well known disease as typhoid fever such prominent symptoms could once have been considered essential symptoms of the disease, only to have been removed by proper diet, it brought up the question of other diseases, and if some of their symptoms might not be due to deficiencies in diet. Attention should be directed to this point, however, that the so called bland diets of the textbooks ordinarily consisted of foods with a high vitamin content, viz., milk and eggs and meat extracts (unless they had been heated too high).

Dr. ABRAHAM JACOBI said that though what he knew about vitamins he could say in a few minutes, there was considerable that he knew about the diet of infants. It was an undisputed fact that scurvy was very frequent nowadays when so many babies were being artificially fed. Forty or fifty years ago it was very rare. The manufacturers of artificial food seemed to have also manufactured scurvy in infants.

There were two points he wanted to touch upon: One was that scurvy was apparently produced by oversterilization of milk. Pasteurized milk would not cure or even prevent scurvy. Pasteurized milk with a cereal would do better and would sometimes prevent or cure scurvy, but not every cereal would do this, only cereal in the raw state. When milk was fed with a fine white farina they did the baby no good. If there was no husk left in it, there was no advantage to the baby. It would do better than milk alone, but raw barley or oatmeal were the most efficacious materials to add to the milk.

The second point was this: Breast fed babies rarely had scurvy and the reason was probably because the milk from day to day, from morning to evening, was never the same; it had the advantage of being changed frequently. As long as a baby was fed uniformly on the same food, eventually it would not be digested; they would get scurvy. If artificial food was used, raw cereal with the milk would protect the baby from scurvy. At five or six months the baby was safe from scurvy because the iron in its blood (contained in the liver) had been consumed by that time.

Book Reviews.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

Breathe and Be Well. By WILLIAM LEE HOWARD, M.D., Author of *Sex Problems in Worry and Work*, etc. New York: Edward J. Clode, 1916. Pp. vi-150. (Price, \$1.)

This book tells of the morning fresh air cocktail and the nightcap, and how to breathe them in; the little things that prevent proper breathing; snoring, its causes and cures; breathing for beauty; breathing and eating; why breathing

through the skin is necessary for health; making the body young; and gives some simple and novel breathing exercises. The handbook is verily an inspiration to right living. Its breeziness exhales an atmosphere of wholesomeness. Its Anglosaxon common sense is directed to laymen and laywomen, yet fits the doctor's needs as comfortably as though erudite with polysyllabic verbiage. It may be read appropriately in a hammock on the verandah, or during siesta in camp, but deserves to be read by everyone everywhere. Many a wizened mind could be freshened to sane interests, and many a disheartened toiler refreshed by taking to heart its friendly hints and putting them into daily practice.

Metabolic function is primarily an oxidative process; in our relation with patients too often we may forget this truism, but this booklet reminds us with virile force and interest of the body's greatest need—the free exchange of oxygen in the tissue cell—and adroitly yet clearly impresses on us how we may avoid the penalties of narrow living. It is a book to buy, read, mark, inwardly digest—and loan to those good friends who are most trying to patience and temper.

Surgery in War. By ALFRED J. HULL, F. R. C. S., Major, Royal Army Medical Corps; Surgeon, British Expeditionary Force; Late Lecturer on Surgical Pathology, Royal Army Medical College, Millbank, etc. With a Preface by Sir ALFRED KEOGH, K. C. B., M. D., Hon Physician to H. M. The King; Director-General Army Medical Service. With 26 Plates and 55 Text Figures. Philadelphia: P. Blakiston's Son & Co., 1916. Pp. xv-390.

In a long and widely extended war, as is the present war, in which many of the conditions of fighting are novel and the means of destruction more varied and terrific in their effects than in any past conflicts, many lessons are to be learned from the surgical standpoint. Especially is this the case with regard to the antiseptic treatment of wounds. In this work by Alfred J. Hull published recently, many of the outstanding features of the war from the surgeon's outlook are discussed by authorities on the various subjects dealt with. The preface is by Sir Alfred Keogh, director general, British Army Medical Service. In order of sequence the contents are as follows: The bacteriology of wounds in war; the general condition of the wounded; treatment of wounds; treatment of wounds by saline solutions; the removal of foreign bodies; compound fractures; gangrene; the treatment of gunshot wounds of the head; injuries of the spine; injuries of bloodvessels; hemorrhage; gunshot wounds of the joints; wounds of the abdomen; gunshot wounds of the chest; treatment of gunshot wounds of the peripheral nerves. These matters all receive due consideration by men who have gained their knowledge in the best of all schools, that of actual experience. The many antiseptic methods which have had a trial, some of which have failed, some of which have not come up to expectations, and the few which have come out of the test in a satisfactory manner, are reviewed in detail. Of particular interest is the chapter on the treatment of wounds by saline solutions, and although we should hardly go so far as the author in declaring that Sir A. Wright's work on the bacteriological side and recent surgical developments have revolutionized our methods of treating sepsis, yet it certainly is true that treatment by hypertonic salt solutions in many instances seems to have established its efficacy. It may be pointed out, however, that while the saline irrigation method of Wright and the hypochlorous method of Carrel have met with a considerable degree of success, in order to carry out these methods properly, great attention to detail must be observed, which imposes much work upon the personnel. Also with respect to these modes of combating septic conditions, there is much diversity of opinion. It is noted in this work that the antitoxin treatment of tetanus is the only treatment concerning the employment of which there has been anything approaching general agreement among army surgeons at the front. Most favorable results have been obtained. Although very little that is absolutely definite has been established with regard to the treatment of wounds which was not known previously, and while it may be allowed that the last word has not been said on any one point, yet this résumé of current practice and experience at the front possesses much value to English speaking army surgeons everywhere. The book is well got up and illustrated and may be recommended with confidence to the attention of the American medical profession.

Interclinical Notes.

Dr. James Frederick Rogers, a frequent editorial contributor to the NEW YORK MEDICAL JOURNAL, writes on the psychology of nursing for the June *Nurse*. Dr. Anne E. Perkins continues her useful series on nursing in mental disease. Physical Training at Home is the subject of an article by Leonhard Felix Fuld, LL.M., Ph.D. A capital paper by Maud D. Brooks is on books suitable for both nurses and patients. There are dozens of useful hints, stories of actual experiences, some fiction, instruction as to diet, etc. In fact, we should have to reproduce the entire table of contents to do justice to this June offering. We have already run the risk of being accused of heresy by stating that the practitioner might learn a thing or two by looking through this excellent magazine.

* * *

The *Century* for June has another of Max Beerbohm's weird and novel short stories, A. V. Laidr, the hero of which is an astonishingly gifted liar. The Leatherwood God, by W. D. Howells, is continued. Academic Freedom is a thoughtful essay by Vida D. Scudder; My Street, by Ernest Poole, is also an essay, one of a *genre* almost forgotten. Both sides of the political situation are treated impartially in The Next President, by Robert R. McCormick, and Can Wilson Win? by George Creel. On the Trail of the Dullard, by H. Addington Bruce, will be new to many laymen, and will refresh the minds of many doctors on the problem of the backward child. Our Next Step, by Frank Buffington Vrooman, is too full of epigrams to quote; it discusses our lack of preparedness and postulates the United States as smitten with infantile paralysis. The pictures are beautiful.

Official News.

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers in the United States Public Health Service for the seven days ending June 14, 1916:

Bogges, John S., Surgeon. Granted twenty-five days' leave of absence from July 10, 1916. **Brooks, S. D.**, Senior Surgeon. Bureau telegram dated May 26, 1916, granting one month's leave of absence, amended to read one month's leave of absence from June 5, 1916. **Burkhalter, John T.**, Surgeon. Bureau letter dated May 5, 1916, granting one month's leave of absence from June 6, 1916, revoked. **Frank, L. C.**, Sanitary Engineer. Directed to proceed to Buffalo, Cleveland, Detroit, Chicago, and other points along the Great Lakes to supervise the installation and operation of an experimental steam disinfection apparatus on a lake vessel. **Irwin, Fairfax**, Senior Surgeon. Relieved from further duty in selection of physicians to furnish medical relief to members of the Coast Guard, and directed to rejoin station at Philadelphia. **Kearny, R. A.**, Passed Assistant Surgeon. Granted ten days' leave of absence on account of sickness, from May 22, 1916; also directed to visit Life Saving Stations on the Coast from Boston to Canadian border to arrange for the medical treatment of officers and enlisted men. **Le Prince, J. A. A.**, Sanitary Engineer. Directed to proceed to necessary points in the States north of the Ohio River for the purpose of making malarial surveys. **Magruder, G. M.**, Surgeon. Granted nine days' leave of absence from June 28, 1916. **Sayers, R. R.**, Assistant Surgeon. Relieved at the Marine Hospital, Stapleton, N. Y., and directed to report to the executive officer in charge of studies of rural sanitation at St. Louis, Mo. **Stimson, A. M.**, Surgeon. Granted one month's leave of absence from July 1, 1916. **Warner, H. J.**, Passed Assistant Surgeon. Granted ten days' leave of absence en route to Ellis Island, N. Y. **Wayson, N. E.**, Assistant Surgeon. Directed to proceed to Alexandria, Va., for diagnosis of suspected case of smallpox. **Wilbert, M. L.**, Technical Assistant. Authorized to attend a conference of the Committee on Useful Drugs of the Council of Pharmacy and Chemistry of the American Medical Association at Chicago, Ill., June 9-10, 1916.

United States Army Intelligence:

Official list of changes in the stations and duties of officers serving in the Medical Corps of the United States Army for the week ending June 17, 1916:

Beach, George C., First Lieutenant, Medical Reserve Corps. Ordered to active duty in the service of the United States, and will report to the commanding officer at Fort Monroe, Va., for duty. **Bierbower, Henry C.**, First Lieutenant, Medical Reserve Corps. Directed to proceed to Fort D. A. Russell, Wyoming, and report to the commanding officer of that post for duty. **Howell, Walter O.**, First Lieutenant, Medical Reserve Corps. Ordered to active duty at the Presidio of San Francisco, Cal. **Richard, Charles**, Colonel, Medical Corps. Relieved from duty at the Medical Supply Depot, New York City, effective June 30, 1916, and will turn over all property for which he is responsible to Major Frederick M. Hartsock, Medical Corps. **Ruffner, Ernest L.**, Major, Medical Corps. Granted fifteen days' leave of absence, effective on or about June 16, 1916. **Worthington, George B.**, First Lieutenant, Medical Reserve Corps. Relieved from duty in the Southern Department and will proceed to his home; by direction of the President is honorably discharged from the service of the United States, effective upon the expiration of leave.

Births, Marriages, and Deaths.

Married.

Kroh—Kenley.—In DuBois, Pa., on Tuesday, June 6th, Dr. Laird F. Kroh, of Rural Valley, Pa., and Miss Myrtle Pauline Kenley. **Lawley—Burgess.**—In Somerville, Mass., on Monday, June 12th, Dr. Brace Irving Lawley, of Arlington, Mass., and Miss Rubena Adaline Burgess. **Lenzner—Brooks.**—In Providence, R. I., on Thursday, June 1st, Dr. Simon G. Lenzner and Miss Janet Brooks. **Mayer—Lamb.**—In St. Petersburg, Fla., on Saturday, June 3rd, Dr. Harry Welday Mayer, of Brooklyn, N. Y., and Miss Elizabeth G. Lamb. **Veal—Allen.**—In Hope Valley, R. I., on Saturday, June 3rd, Dr. William Veal and Miss Ruth Allen. **Walsh-Slatery.**—In Providence, R. I., on Saturday, June 3rd, Dr. John G. Walsh and Miss Elizabeth M. Slattery. **Willis—Mooney.**—In Freehold, N. J., on Saturday, June 3rd, Dr. Benedict P. Willis, of Rutherford, and Miss M. Caroline Mooney.

Died.

Beck.—In Buffalo, N. Y., on Friday, June 2nd, Dr. William F. Beck, aged sixty years. **Charlton.**—In Palmyra, Neb., on Monday, June 5th, Dr. W. A. Charlton, aged thirty-three years. **Conrad.**—In Cleveland, Ohio, on Wednesday, June 7th, Dr. J. A. Conrad, aged seventy years. **Coulter.**—In Oil City, Pa., on Sunday, June 11th, Dr. Clarence W. Coulter, aged fifty-nine years. **Foster.**—In New Carlisle, Ind., on Sunday, June 4th, Dr. Frank Foster, aged forty-six years. **Gray.**—In Jersey City, N. J., on Sunday, June 11th, Dr. Frank D. Gray, aged fifty-nine years. **Greely.**—In Mount Carroll, Ill., on Monday, June 5th, Dr. Dunstan N. Greely, aged eighty-two years. **Harrington.**—In Providence, R. I., on Tuesday, June 6th, Dr. Francis M. Harrington, aged forty-six years. **Hutcheson.**—In Rockville Centre, L. I., on Wednesday, June 14th, Dr. Robert W. Hutcheson, aged eighty years. **Long.**—In New Brunswick, N. J., on Sunday, June 11th, Dr. Samuel Long, aged sixty-six years. **Sage.**—In Middletown, Conn., on Wednesday, June 7th, Dr. Frederick H. Sage, aged fifty-five years. **Tobyne.**—In New York, on Tuesday, June 13th, Dr. Charles Tobyne, aged forty-eight years. **Ulrich.**—In San Jose, Cal., on Wednesday, May 31st, Dr. Edward J. Ulrich, aged sixty-three years. **Verpoorten.**—In Council Bluffs, Iowa, on Friday, June 2nd, Dr. M. H. Verpoorten, aged sixty-eight years. **Ware.**—In Chicago, Ill., on Friday, June 2nd, Dr. Lyman Ware, aged seventy-five years. **Wilson.**—In Detroit, Mich., on Thursday, June 1st, Dr. Walter J. Wilson, aged sixty-eight years. **Worster.**—In New York, on Wednesday, June 7th, Dr. Willard P. Worster, aged seventy-four years.

INDEX TO VOLUME CIII.

	PAGE.
ABDERRHADEEN reaction in tubes and general paresis.....	136
in tuberculosis.....	667
theory of.....	3
Abdominal crises , common.....	296
Abdominal cure, caution in use of purgatives in.....	1239
disease, acute.....	857
operations, drainage in.....	371
of brain with meningitis syndrome.....	1244
in.....	789
Abrahams, Robert. Diet in chronic heart disease.....	107
Abscess , amebic, of liver, emetine in.....	469
gangrenous, of lung.....	284
ischiorrectal, from fish bone.....	784
of liver.....	43
postoperative complication of appendicitis.....	266
of bulb.....	1237
periurethral, in a woman.....	522
subphrenic, postoperative complication of appendicitis.....	297
Abscesses , mastoid, aborting inflammation leading to.....	725
metastatic, following tonsillitis.....	725
postpharyngeal and tonsillar, evacuation of.....	166
Absorption a factor in drug therapeutics.....	734
ABSTRACTS AND REVIEWS:	
Allen, F. M. Investigative and scientific phases of the diabetic question.....	314
Christian, Henry A. Some phases of the nephritis problem.....	554
Knopf, S. Adolphus. Tuberculous infection.....	122
Longcope, Warfield T. The susceptibility of man to foreign proteins.....	457
Martin, Edward. Syphilis in general.....	499
Sabin, Florence R. Method of growth of lymphatic system.....	25
Van Slyke, Donald D. The physiological role of the aminoacids in physiology and pathology.....	219
Vaughan, Victor C. Poisonous proteins, 1895, 1902, 1903.....	916
Welch, William H. Medical education in the United States.....	890
Acetanilid , therapeutics of.....	130
Acetonemia , treatment of.....	996
Acidosis , relation to contagious diseases.....	87
Acetphenetin , therapeutics of.....	130
Achondroplasia , theories of.....	378
Aconitine , recurrence rheumatic irritations.....	518
Acupuncture as a therapeutic procedure.....	749
best method of vaccination against smallpox.....	739
Addison's disease of syphilitic origin.....	181
Adenitis , rapid cure of.....	1237
tuberculous, tonsil portal of entry in.....	43
Adenocarcinoma of colon.....	1224
Adenomyoma of rectovaginal septum.....	1190
of round ligament.....	188
Adrenaline and novocaine, preparation of.....	22
for local anesthesia.....	133
eye test in diagnosis of cardiac affections.....	903
Adrenals , gastric ulcer following removal of.....	474
Adynamic conditions , treatment of.....	998
Aerophagia , treatment of.....	88
Age , old, in relation to cell overgrowth and cancer.....	475
Aged , neglect of.....	22
nephritis in.....	1214
Agglutination , factors influencing, in blood transfusion.....	1141
in relation to dysentery.....	998
tests in diagnosis of enteric fever.....	905
in inoculated persons.....	952
Agglutinins , inoculation, influence of febrile conditions on.....	425
Aid , first.....	1149
Air , fresh, in respiratory diseases.....	180, 330
value of.....	652
heating sterilization of wound by.....	84
open, in treatment of pneumonia and anemia.....	180

	PAGE.
Air passages , foreign body in, causing hoarse cough.....	759
sickness, syndrome of.....	759
Albumin , phosphatic, influence of, on growth and development of bones.....	1201
in growth and development of bones.....	1201
in use of.....	1146
Albuminuria , copious, in diagnosis of meningeal hemorrhage.....	232
faked.....	228
in primary syphilis.....	175
salicylate.....	1242
Alcohol in relation to mental disease.....	949
introduction of law prohibiting sale of.....	316
methyly, damage to eyes in passing from.....	903
not an antidote to phenol.....	990
mental deficiency due to.....	1175
Alimentary tract , x ray findings in.....	426
Allen, Frederick M. Investigative and scientific phases of the diabetic question.....	314
The Rush lecture on diabetes.....	248
Allen , treatment of diabetes.....	159, 419, 519, 1050
Allport, Frank. Silver salts in ophthalmia neonatorum.....	717
Almanac , family, a new useful.....	463
Alopecia , complete syphilitic.....	903
treatment of.....	86
Ameba , dysenteric, rat a carrier of.....	89
Amebiasis , college of lions of respire tract.....	469
dysentery, treatment of.....	288
American Association of Surgeons, prospects of.....	74
Red Cross in Vienna.....	301
Aminoacids in physiology and pathology.....	219
Amniotic fluid , pulsy alternans from use of.....	49
Anal ulcerations, treatment of.....	35
Analgesia , hysterical.....	951
in obstetrics.....	660
Anaphylactic condition of long of syphilis.....	733
Anders, Howard S. Treatment of constipation in sedentary men.....	459
Anders, James M. The treatment of carcinoma of the scapula.....	865
Anemia , chronic, splenectomy in.....	759
in splenomegaly.....	1051
injections of blood in.....	180
open air treatment of.....	180
pernicious, blood transfusion in.....	174
of pregnancy, autointoxication in.....	1244
treated by splenectomy.....	503, 1244
Anesthesia , caudal in genitourinary surgery.....	764
chloroform, tendon reflexes in.....	409
gas-oxygen, new apparatus for.....	352
hysterical.....	951
in gynecological operations.....	756
in nose and throat operations.....	513
in obstetrics.....	660, 756
local.....	233
in obstetrics.....	994
preparation of novocaine and adrenaline for.....	181
nitrous oxide , administration of.....	662
in use of.....	181
nitrous oxide-oxygen , in obstetrics.....	858
paravertebral.....	116
spinal.....	857
study of.....	112
Anesthetics , local.....	278
Aneurysm , circoid, treatment of, with boiling water.....	326
Aneurysm in boy.....	184
Aneurysms of descending thoracic aorta.....	1144
Angina pectoris , therapeutics of.....	898
Anlim injuries of the eye.....	995
Anthrax , infection, source of.....	538
Anticoagulants in blood transfusion.....	565
Antineurotic serum in cerebrospinal poisoning.....	118
in joint manifestations of gonorrhea.....	1024
Antimony , metallic, in kala azar.....	709
Antiseptic , brilliant green.....	911
magnesium hypochlorite as.....	854
Anthrax , action of, on leucocytes in pus for wounds, standard method of testing.....	1043
studies in.....	429

	PAGE.
Antitoxin , diphtheria, in erysipelas.....	38
intraneural injections of, in tetanus.....	519
tetanus, prophylactic use of.....	1142
Antityphoid and antiparatyphoid vaccination.....	210
vaccination in insane.....	730
paratyphoid fever in relation to.....	562
vaccinations, observations on a series of.....	423
Antiviscerals , action, acute.....	418
Anus , genitourinary symptoms from diseases of.....	226
Arteria angusta	1695
descending thoracic aneurysms of.....	1144
Aortic insufficiency , Hill's sign in.....	58
Aortitis , syphilitic, pathological study of.....	474
Apoplexy , serous, lumbar puncture in.....	568
treatment of.....	1140
Apparatus for intravenous administration of salvarsan.....	1127
for treatment of accessory sinus infections.....	213
new, for administration of gas-oxygen anesthesia.....	352
Appearances , keeping up.....	814
Appendicitis , emetic, ineffective.....	927
Appendicitis , acute.....	241
and typhoid fever, differential diagnosis of.....	375
complicated by pericystitis.....	329
disposal of point.....	1147
epidemic of, caused by streptococci found in milk.....	1173
leucocyte count in.....	197
medical treatment of.....	124
pathogenesis of hematuria in.....	412
postoperative complications of.....	203
salpingitis secondary to.....	282
suppurative, treatment of.....	285
Appendix , cysts of.....	282
pseudomucous cysts of.....	282
Applegate, John Chew. The management of breech presentations.....	683
Army , United States, medical officers needed.....	701
Arnoldsmith, Hubert. Lye stricture of the esophagus.....	1068
Tracheo-oesophageal syphilis.....	1211
Arsenic , therapeutics of.....	1197
Arsenobenzol , American.....	37
in toxicology.....	635
Arterial hypertension associated with syphilis.....	1102
Arteries , degeneration of.....	857
large, infection in wound of.....	76
Arteriosclerosis	1039
causes of.....	1201
diet in.....	455
food idiosyncrasies in relation to.....	738
kidney disease in relation to.....	76
of uterine vessels.....	43
radium in.....	280
Arthritis , continuous electric light treatment.....	1044
deformans, treatment of.....	372
dysenteric, emetine in.....	950
gonorrheal, serum treatment of.....	1024
hematoma, radical treatment of.....	326
sequel of throat infection.....	1188
suppurative, of knee.....	901
tuberculous.....	329
Ascaris , subcutaneous, dermic fistula in.....	284
treatment of.....	384
Ashley, Dexter D. Shoes, physiological and therapeutic.....	337
Association , American, of internal physicians.....	1191
Asthma , autogenous vaccines in.....	92
bronchial, anaphylactic symptom.....	732
cure in treatment of.....	1203
hypophyseal extract in.....	81
treatment of.....	1078
Astragalus , decapitation of, for equine deformities.....	490
Asylums , incense prevention of fire in.....	590
Ataxia , cerebrocerebellar.....	440
Atony of limbs, graphic representation of.....	614
Atria , congenital, of duodenum.....	1203
Atropine , glaucoma from.....	1075
mydriatic activity of.....	422
pulsus alternans from use of.....	41
Auditing , system of.....	609
Auricular , flutter, medicinal and hygienic treatment of.....	937
Auscultation in vascular injuries.....	1000
auscultation, system of.....	609
vaccines in bronchitis and asthma.....	92
in staphylococci septicemia.....	805
treatment with.....	856

	PAGE.		PAGE.		PAGE.
Autooxidation, acid, treatment of.....	901	Blood collection of, by venepuncture.....	985	Davison, Charles. Autoplastic Bone Sur-	
in pernicious anemia of pregnancy.....	174	diseases, chronic, splenectomy in.....	1244	gery.....	910
Autolysin, action of, on mouse tumors.....	180	in relation to intestinal putrefaction.....	101	Dock, Lavinia. Textbook of Materia	
formula and method of preparation of.....	360	emulsified, effect of, on typhoid bacillus.....	446	Medica, for Nurses.....	574
working formula.....	367	findings in epilepsy.....	1096	Donaldson, Henry H. The Rat.....	431
Autosterility in poultry.....	86	fresh, from convalescents in treatment of		Duppy, George M. The Stretcher	
Autosurgery in cancer.....	997	scarlet fever.....	737	Bearer.....	286
in skin diseases.....	1249	in stools and gastric contents in carcinoma		Edwards, Arthur R. A Textbook of the	
Aviation sickness.....	308	of stomach.....	807	Principles and Practice of Medicine.....	527
		infection, proof of, in gas gangrene.....	904	Eppinger, Hans, and Hess, Leo. Vagotonia.	
BABCOCK, Robert H. Therapeutics of		injections of, in anemia and infections		A Clinical Study in Vegetative	
a angina pectoris.....	898	in children.....	1051	Neurology.....	46
Babcock, W. Wayne. Surgery of the heart.....	119	lethargy in insanity.....	1060	Eugenics and Social Welfare Bulletin	
male, in war time.....	380	new strain for.....	809	No. V. Eleven Medical Tests Stand-	
subnormal institutional, reduction of mor-		of nephritis, creatinin in.....	90	ardized.....	190
tality among.....	381	pressure, action of radium on.....	1043	Fantini, Bernard. Cancer Manual.....	1006
Bacilli, differential test for virulence of.....	142	clinical, of estimation of.....	702	Fauntleroy, A. M. Report of Medico-	
tubercle, stain for.....	217	diastolic, importance of.....	42	Industrial Aspects of European War.....	1006
typhoid, animal charcoal in isolation of.....	327	findings, practical application of.....	760	Fischer, Louis. The Health Care of the	
Bacillus clepticus.....	1146	high, alcoholism a cause of.....	183	Growing Child.....	46
of malignant cancer, soluble toxin from.....	41	instruments for registering.....	855	Fisher, Irving. How to Live.....	238
artificial culture of.....	41	readings, comparative.....	859	Fox, Herbert. Elementary Bacteriology	
Bacillus paratyphus B, food poisoning.....	234	respiratory, in pregnancy.....	491	and Protozoology.....	862
tubercle, device for protection against.....	1074	ptosis test of teachers' vitality.....	82	Gardner, H. Bellamy. A Manual of Sur-	
typhosis infection, stock vaccine in.....	998	sugar, influence of muscular work on.....	663	gical Anesthesia.....	1103
Back, painful.....	1146	total and plasma volumes, determination		Ghon, Anthony. Primary Lung Focus of	
trench, treatment of.....	518	of.....	90	Tuberculosis in Children.....	574
Bacache, chronic, in pregnancy.....	948	transfusion, anticoagulants in.....	505	Glaister, John, and Logan, David Dale.	
role of anteposed uterus in.....	1190	direct, sodium citrate.....	1185	Gas Poisoning in D. Mining and Other	
Bacteria associated with abnormal lymph		group tests and reactions in.....	1185	Industries.....	479
glands.....	1097	in infants, mothers as donors in.....	505	Goldsmith, Peter H. A. Brief Bibliog-	
lesions of nervous system, following in.....	1242	in shock.....	1053	raphy of Books in English, Spanish,	
Bacterial cultures, old, therapeutic injection		methods of testing.....	1244	and Portuguese, Relating to the Latin	
of.....	372	repeated, in pernicious anemia.....	1096	American Republics.....	911
Bacteria in treatment of typhoid fever.....	407	results from.....	996	Gould, George M., and Scott, R. J. E.	
Baez, Walter G. Surprises for the diag-		sodium citrate method of.....	1094	The Practitioner's Medical Injuries.....	814
nostician revealed by the pathologist.....	931	value of, in civilizing and atrophic infants.....	376	Groves, W. H. Sunshot Injuries.....	334
Balance, metabolic.....	989	volume, determination of.....	90	Bones.....	
Baldwin, Edward R. Therapy as related		whole, injections of, in purpura.....	132	Hall, Herbert J. The Work of Our	
to the immunology of tuberculosis.....	532	Bloodvessels, condition of, in tuberculosis.....	138	Hands.....	46
Ballet, Professor Gilbert, death of.....	940	diseases of, in the medical profession.....	1144	Hayden, James J. Cerebrospinal fever.....	766
Barker, Creighton. Heavy liquid petrole-		in the United States.....	97	Hazen, Henry H. Diseases of the Skin.....	190
um in treatment of leprosy.....	1197	injuries to, in wounds of extremities.....	1203	Hermes, William B. Medical and Veteri-	
Barker, Lewellyn F. Syphilis and internal		Blue, Rupert. Some of the larger prob-		narvian Entomology.....	382
medicine.....	385	lems of the medical profession.....	1153	Hertzel, Arthur D. Surgical Operation	
A Value of lumbar puncture in frac-		Bodies, foreign, in bladder.....	1153	with Local Anesthesia.....	862
ture of skull.....	390	in bronchus.....	258	Hill, Lewis Webb. Starvation (Allen)	
Barr, D. D. A kind word.....	957	in chest.....	1053	Treatment of Diabetes.....	766
Barr, D. D. A kind word.....	957	in chest, Thomas J. Cerebrospinal fever.....	993	Howard, William Lee. Breathe and be	
Therapeutic resources of Saratoga Springs.....	1193	removal of, by esophagoscopy and		well.....	1247
Bassler, Anthony. Duodenal ulcer.....	582	tracheobronchoscopy.....	859	Hull, Alfred J. Surgery in war.....	1247
Bath, oven, as eliminant.....	418	loose, in knee joint.....	1147	Hutchinson, Robert, Sherren, Robert	
Baths, carbon dioxide action of.....	913	Body, foreign, in air passages, how to		Crabtree, Warren. An Index of	
at Mount Clemens, therapeutics		cough, in children.....	808	Treatment.....	679
Nauheim, in cardiovascular diseases.....	917	Boggs, Russell H. Treatment of tubercul-		Jessner, S. Diagnose and Therapie der	
Battlefield casualties of the future.....	321	ous adenitis by röntgen rays.....	1016	Gonorrhoe beim Manne.....	1205
Can errors in diagnosis and indi-		Bolles, Charles F. Advice to young phy-		Jones, Robert. Injuries to Joints.....	286
cation be minimized by a cooperative		sician.....	861	Juettner, Otto. A Treatise on Medical	
method?.....	871	Bone grafting for spinal conditions.....	665	Practice.....	1102
method of preparation, and what may		in Böttcher's disease.....	882	Kelson, William H. Diseases of the	
be expected from its use.....	360	grafts, fate of.....	330	Throat, Nose, and Ear.....	574
Belladonna, therapeutics of.....	276	relatively, in air passages.....	399	Krause, Karl. Beiträge zur pathologi-	
Benedict, A. L. Medicine of the future.....	635	inferior maxillary, fractures of.....	88	sehen Anatomie der Hirnsyphilis	
The war of the future system.....	824	transplants in infected wounds.....	997	und zur Klinik der Heilungsstörungen	
Bennigan, new remedy for wounds.....	516	Bones, influence of phosphatic albumin on		bei syphilitischen Hirnerkrankungen.....	1754
Bentley, David J., Jr., and Rosenberger,		growth.....	1201	Krause, R., and Busson, B. Die Chola-	
Kandle C. A report of seven cases of		tuberculosis of.....	1205	era asiatica und die Cholera nostras.....	94
gangrenas.....	100	Bonime, Ellis. Immune response in pul-		Krause, Rudolf. A Textbook of His-	
treatment of.....	986	monary tuberculosis.....	939	tology.....	918
prevention of.....	970	Tuberculin in surgical tuberculosis.....	726	Landa, Max. Die Nebenwirkungen.....	74
prophylaxis and treatment of.....	859	BOOK REVIEWS:		Le Dentu, A., et Delbet, Pierre. Mala-	
Charles. Presenile gangrene-thrombo-		Abel, Rudolf. Bacteriologische Tasch-		des des organes génitaux de l'homme.	
sclerosis.....	1073	Aschenburg, Gurschmann, et al. Text-		XXIII.....	910
Bierhoff, Frederic. The abortive treatment		book on Nervous Diseases.....	574	Lejars, Félix. Urgent Surgery.....	958
of gonorrhea.....	381	Barton, Wilfred M. Manual of Vital		Le Prince, Joseph A. Mosquito Control	
The prompt cure of gonorrhea.....	381	Function Testing Methods and Their		in Panama.....	622
Bige, Henri. Manual of Therapeutics.....	108	Application.....	906	Lowenburg, Harry. Practical Treatise	
Bile, clinical and pathological studies of.....	108	Beattie, J. Martin. Post Mortem Meth-		on Infant Feeding and Allied Topics.....	862
pneumonia, causation and treatment of.....	852	ods.....	1084	MacDonald, D. M. Practical Prescribing	
Bilharziosis, thymobenzene in.....	84	Berry, Gordon L. Trachoma.....	670	and Treatment in Diseases of Infants	
Bishop, Louis Faugères. Diet in arterio-		Bing, Robert. Textbook of Nervous		and Children.....	335
sclerosis.....	455	Diseases.....	958	McMurray, J. Playfair. Development of	
Medicinal and hygienic treatment of au-		Bornsen, Paul. Radium in the Light of		the Human Body.....	334
ricular flutter.....	937	Recent Discoveries.....	141	Mathews, Albert P. Physiological Chem-	
Bourgeois, in gonorrhoeal infection and		Brady, Edward H. and Lee, Rob-		istry.....	382
exacerbation.....	100	ert. Textbook of Nervous Diseases.....	141	Medical Record Visiting List for 1916.....	382
Bourgeois, in gonorrhoeal infection and		Bridge, Helen Lillian. A Manual of		Memorias do Instituto Oswaldo Cruz.....	810
exacerbation.....	100	Psychical Neurology.....	181	Mental Tests Standardized.....	194
Bourgeois, in gonorrhoeal infection and		Broca, A. Précis de médecine opera-		Metcalf, Leonard, and Eddy, Harrison	
exacerbation.....	100	tive.....	1181	I. American Surgery.....	470
Bourgeois, in gonorrhoeal infection and		Burr, Charles W. Textbook on Nervous		Metheny, D. Gregg. Potter's Compend	
exacerbation.....	100	Diseases.....	1181	of Human Anatomy.....	431
Bourgeois, in gonorrhoeal infection and		Carey, Henry W. An Introduction to		Mitchell, Edwin Valentine. Hospitals	
exacerbation.....	100	the Study of Nervous Diseases.....	1008	and the Law.....	479
Bourgeois, in gonorrhoeal infection and		Carlson, Hilda Elizabeth. The Obstet-		Morison, Rutherford, and Richardson,	
exacerbation.....	100	rical Case Book.....	911	W. G. Abdominal Injuries.....	94
Bourgeois, in gonorrhoeal infection and		Chapin, Henry Dwight and Pisk, Gol-		Murphy, J. Keogh. Wounds of the	
exacerbation.....	100	dberg. R. Diseases of Infants and Chil-		Human in War.....	434
Bourgeois, in gonorrhoeal infection and		dren.....	112	Nordmann, O. Practicum der Chirurgie	
exacerbation.....	100	Child, James S. Speaking of Operations.....	286	Nuttall, George H. F. Ties. A Mono-	
Bourgeois, in gonorrhoeal infection and		Graphy of the Iodoidea.....	671	graph of the Iodoidea.....	671
exacerbation.....	100	Dana, Charles L. Textbook of Nervous		Disease of the Brain.....	286
Bourgeois, in gonorrhoeal infection and		Diseases.....	626	Palacios, G. Delgado. Chime patho-	
exacerbation.....	100	Davis, Carl Henry. Painless Childbirth,		logique tropicale de la région atlantique.....	383
Bourgeois, in gonorrhoeal infection and		Pain, and Nitrous-Oxide Oxygen		Pekham, Charles Fennec. The Intest-	
exacerbation.....	100	Analgesia.....	623	inal Infections.....	1206
Bourgeois, in gonorrhoeal infection and				Peter, Luther C. The Principles and	
exacerbation.....	100			Practice of Perimetry.....	1006

PAGE.		PAGE.		PAGE.	
Peterson, A. Melville. Manual of Embryology.....	95	Brickner, Samuel M., an appreciation of.....	988	Carcinoma of stomach, blood in stools and gastric contents in.....	807
Plimmer, R. H. A. Practical Organic and Biochemistry.....	94	Bright's disease, choice of climate in.....	995	Percy "cold iron" for.....	1048
Poore, D'Arcy. Wounds in War.....	334	Brittain, Robert. Streptococcal infections.....	728	uterine rays in treatment of.....	280
Pusey, William Allen. Syphilis as a Modern Problem.....	47	Broadhead, George L. Episiotomy.....	631	Cardiac cases management of, from out patient department standpoint.....	261
Ramsay, Andrew Maitland, and others. Injuries of Eyes, Nose, Throat, and Ears.....	283	positions.....	631	insufficiency, diet in.....	450
Rawling, L. Bathe. Surgery of the Head.....	334	Brooman, C. J. Treatment of psoriasis.....	861	muscles in treatment of.....	135
Reed, R. L. Rating to the Registrar of Births, Marriages, and Deaths in the Province of Ontario for the Year ending December 31, 1914.....	100	Bromides in epilepsy.....	132	outline, relation of percussion dullness to.....	664
Ridgway, Francis W. Fulfillment and Symbolism in Fairy Tales.....	47	Bronchial gland tuberculosis.....	1051	syphilis, treatment of.....	805
Rockefeller, John D., Jr. The Colorado Rockefeller Plan.....	526	Bronchitis from standpoint of bronchoscopic.....	257	Casparian, treatment of.....	279
Ross, Paul Bernard. Notes on Military Orthopedics.....	567	surgical treatment of.....	447	Cardiovascular diseases, Nauehm bath in.....	806
Royster, Lawrence T. A Handbook of Infant Feeding.....	958	Bronchitis, autogenous vaccines in treatment of.....	92	Cardiovascular-renal disease, food idiosyncrasies in relation to.....	738
Sachs, Edward A. The Endocrine Organs.....	814	chronic, remedy for.....	92	Carpal tunnel, arrest of development of.....	1049
Schereschewsky, J. W. Studies in Vocational Diseases.....	218	dry, remedy for.....	180	Carrier of disease, dog as.....	221
Schuler, Francis. Survey of Public Health Statistics, Ithaca, N. Y.....	718	phrenological.....	109	Carriers, diphtheria.....	599
Scott, J. Alfred. Transactions of Royal Academy of Medicine in Ireland.....	94	recurrent, treatment of.....	131	control of.....	599
Seaton, H. S. A. Studies in Biology and Physiology.....	94	Bronchopneumonia, method of obtaining bacterial culture in.....	1006	kaolin in.....	806
Squire, J. Edward. Medical Hints for the Use of Medical Officers Temporarily Employed with Troops.....	238	streptococci in.....	140	treatment of.....	230, 662, 853
Stephenson, Thomas. Incompatibility in Prescriptions and How to Avoid It.....	120	Bronchoscopy in bronchiectasis.....	257	Karrington, J. Otis. Treatment of rickets.....	699
Stearns, Heinrich. Theory and Practice of Bleeding.....	567	Brown, Samuel Horton. Remote effects of anastomosis, palsy of peripheral branches of facial and trifacial nerves.....	106	Castellan's tetravaccine and pentavaccine.....	698
Sweetser, Arthur. Roadside Glimpses of the Great War.....	671	Brown-Séquard's epilepsy.....	567	Casualties, battlefield.....	221
Taylor, Albert. Ophthalmologic and medicine practice.....	710	Burns, conservative treatment of.....	1092	Cataract, arrest of, in early stage.....	661
Thomson, Alexis. Manual of Surgery.....	623	powder, differentiation of, from spots due to.....	1092	experimental.....	567
Toland, Edward D. The Aftermath of War.....	623	pus, differentiation of, from spots due to.....	1092	treatment of conjunctivitis, in.....	567
Transactions of American Association of Genitourinary Surgeons.....	814	Bush, A. D. Therapeutics of a pharmacist.....	1092	incipient senile, prognosis of.....	184
Transactions of American Climatological and Climatological Association.....	814	Calculus in fossa navicularis.....	809	Catgut, preparation of.....	319
Transactions of the American Otological Society.....	814	Calcium compounds in treatment of.....	370	Catheter test, five glass.....	928
Transactions of American Pediatric Society.....	623	Caffeine, therapeutics of.....	370	Caustic, high frequency, for hemorrhoids and rectal bleeding.....	1202
Transactions of American Medical Association.....	623	Calcium compounds in treatment of.....	370	Cecum, in left.....	752
Transactions of Royal Academy of Medicine in Ireland.....	94	Calcium compounds in treatment of.....	370	Cel overgrowth, old age in relation to.....	475
Trudeau, Edward Livingston. An Autobiography.....	430	Calcium compounds in treatment of.....	370	Cells, Angelo, a memorial of.....	334
Underhill, Frank P. The Physiology of the Amino Acids.....	862	Calcium compounds in treatment of.....	370	Cells, living tissue, protection of pathologic.....	1147
Walsh, James J. Makers of Modern Medicine.....	431	Calcium compounds in treatment of.....	370	Cerebral hemorrhage, symptoms of.....	903
Webster, Ralph W. Diagnostic Methods.....	958	Calcium compounds in treatment of.....	370	injury, laughter after.....	1088
Wilbert, Martin T. Digest of Comments on the Pharmacopoeia of the United States and on the National Formulary.....	104	Calcium compounds in treatment of.....	370	syphilis.....	850
Wood-Allen, Mary. Marvels of Our Bodily Dwelling.....	862	Calcium compounds in treatment of.....	370	Cerebrocerebellar ataxia.....	998
Yellow Fever Commission Reports.....	862	Calcium compounds in treatment of.....	370	Cerebrospinal fever.....	376
Bookman, Milton R. Common abdominal crises.....	290	Calcium compounds in treatment of.....	370	epidemic.....	425
Botulism, treatment of.....	852	Calcium compounds in treatment of.....	370	urea.....	615
Bourne, was tipped, value of, in ureteric calculus.....	713	Calcium compounds in treatment of.....	370	fluid, in neurosyphilis.....	281
Downman, John G. Prospects of the American College of Surgeons.....	724	Calcium compounds in treatment of.....	370	drainage of, in nervous syphilis.....	281
Bradford, Charles S., Jr. Prevention of beriberi.....	670	Calcium compounds in treatment of.....	370	refractometry of, in diagnosis of meningitis.....	128
Brady, William. Cold and colds.....	381	Calcium compounds in treatment of.....	370	meninges, dorsal puncture in.....	907
Improper questions from the Industrial Commission.....	126	Calcium compounds in treatment of.....	370	epidemic, efficacy of antimeningococcal serum in.....	135
Brain, abscess of, with meningitic syndrome.....	88	Calcium compounds in treatment of.....	370	serum in.....	1145
impaction in treatment of.....	1044	Calcium compounds in treatment of.....	370	wounds by.....	1145
lipoid as a therapeutic.....	547	Calcium compounds in treatment of.....	370	phosphorus in.....	375
metastatic carcinoma of, with unusual eye symptoms.....	417	Calcium compounds in treatment of.....	370	reactions and results in treatment of.....	373
substance of living parietes, experimental syphilis produced by.....	305	Calcium compounds in treatment of.....	370	Cervical vertebra, application of diathermy.....	1199
tumor, diagnosis of.....	474	Calcium compounds in treatment of.....	370	Cervix, amputation of.....	695
visual disturbances in gunshot wounds of.....	327	Calcium compounds in treatment of.....	370	early tuberculosis of.....	188
Bray, Aaron. Gastrointestinal symptoms and eye strain.....	210	Calcium compounds in treatment of.....	370	lacerations of.....	693
Breast, cancer of.....	985	Calcium compounds in treatment of.....	370	school in relation to.....	813
statistics regarding.....	474	Calcium compounds in treatment of.....	370	Chance, soft, new treatment of.....	703
carcinoma of, with unusual eye strain.....	327	Calcium compounds in treatment of.....	370	Charcot, overgrowth, government support of.....	1208
peroperative treatment of.....	36	Calcium compounds in treatment of.....	370	Clinical research, government support of.....	1208
feeding, practical instructions regarding.....	108	Calcium compounds in treatment of.....	370	Chemotherapeutic studies.....	37
Breathing and speech records, diagnostic value of.....	138	Calcium compounds in treatment of.....	370	Chemotherapy in syphilis.....	410
Breese presentation, management of.....	683	Calcium compounds in treatment of.....	370	Cheney, William Fitch. Treatment of muscular diseases.....	1012

Disinfection, formaldehyde, new method of.	Page 1124
Dislocation, external, of knee.	1124
Diverticula, vesical, complications of.	224
Doctoring, better, for less money.	702
Dord, Dinsah Dalabhai. Orthopedic Orientalals and their freedom from pyorrhea alveolaris.	765
Dorsal puncture in cerebrospinal meningitis.	610
Downey, Jesse W. Treatment of ophthalmia neonatorum.	312
Downs, A. Sherman. The value of the "S" sign.	471
Doyle, Stanley B. Berberis.	670
Drainage in abdominal operations.	321
Drugs, paraffin.	472
wick.	472
Dressing, surgical, chlorine water as.	38
physes of.	612
Dressing, casualty.	248
for wounds.	1012
paraffin.	472
addition, treatment of.	3
addicts, rational handling of.	1242
Treatment of, in Chicago.	1133
habit, aid for victims of.	28
injury, about pituitary factor in.	754
victims, aid for.	28
Drugs, prescribing of, in an attractive form.	701
use and abuse of.	87
Dry foot, introduction of.	316
Dryfoos, Arthur D. Elements of psychanalysis.	594
Duchenne, glands.	1175
and atypical growth.	542
in insanity.	274
Duel, Arthur B. Orientation and equilibrium.	577
Duchenne tube, treatment of.	1143
ulcer from standpoint of internist.	137
surgical and medical treatment of.	582
Duchenne, congenital atresia of.	1203
lesions, of, diagnosis of.	1000
Dust in disease.	1000
street, danger to health from.	30
Dysentery, dysentery.	444
Syndrome, dysentery.	444
Dysenteric arthritis, emetine in.	905
diarrhea, flagellate protozoa in.	905
Dysenteries other than amebic.	1144
Dysentery, amebic.	943
amebic, chapparo amarus in.	36
cure of.	1047
in France.	1047
carrier of.	773
treatment of.	658
bacillary, sensitized Shiga and Flexner vaccines in.	420
heill, poor type of.	423
diagnosis.	1035
etiology of.	947
German treatment of.	947
Monsonia ovata in.	320
disinfection.	1124
prescriptions used in treatment of.	86
sodium sulphate in.	219
treatment of.	182, 518, 758, 1108
tropical, treatment of.	133
vaccination.	612
Dysmenorrhea, medicamentous treatment of.	373
obstinate, surgical treatment of.	373
treatment of.	470
Dyspepsia, umbilical, treatment of.	1044
Dyspituitarism.	1097
Dyspnea, causes of.	136
Dystocia due to constricted os.	414
EAR diseases, common.	49
focal infection in etiology of.	665
infections with Vincent's microorganisms.	472
middle, aborting inflammation of.	422
chronic suppurative of.	1207
tropical, infection of.	118
salivary gland infection of.	1097
swinging of.	71
East River Homes Foundation.	411
Eclampsia, prevention of.	623
report of a case of, with recovery.	261
etiology of.	18, 410, 472
Feeling, treatment of.	708
Feet, treatment in treatment of.	125
weeping erythematous, of face.	25
Education, medical, in United States.	890
Edelman, M. H. Simple guides for the	21
Edema, malignant, soluble toxin from arti-	
ERLENMEYER	
Aldehyde reaction, theory of.	3
Acidosis, diagnosis of.	3

Acupuncture as a therapeutic procedure	Page. 729
Aged, neglect of	742
Air passages, upper, effect of heat and humidity upon	123
Alimentary canal	228
Alimentary siphons	173
Alcohol not an antidote to phlegm	299
Almanac, family, a new and useful	493
American Medical Association, sixty-seventh annual meeting of	21
Anemia, pernicious, of pregnancy, auto-intoxication of	174
Anthrax infection, source of	269
Appendicitis, medical treatment of	127
Arteriosclerosis, question of	1036
Autointoxication in pernicious anemia of pregnancy	174
Austrian, winging formula of	367
Blood pressure	31
clinical estimation of	704
of the arm	476
Camps, summer, value of	751
Cancer, cell and diet in relation to	843
BUREAU OF HEALTH NEWS	538
present status of nonoperative treatment of	317
Caries of teeth, our most common disease	751
Catgut, preparation of	319
Cecum, treatment of	751
Cell, diet, and cancer	845
Cerebral injury, laughter after	1088
Cervantes, 1616-1916	942
Chancres, new treatment of	703
Child and school	269
Children, government's work for welfare of	655
Cold and colds	471
Colitis, treatment of	751
Constipation in sedentary men	465
Cookery, hit or miss	605
Croton watershed, protection of	653
Croup, treatment of	118
Delinquency, medical conception of	317
Dental infections, changes in maxilla due to	1085
Dentistry, practice of, in State of New York	941
Dentists at the front, lack of	367
Department of Health of the City of New York, fifty-first anniversary of	893
Diet in acute gastritis	751
in pellagra	77
Dietetics and alimentation	604
importance of, in <i>Modern Hospital</i>	751
Disease, fomites in spread of	1233
in the service	751
prevention, laundries in relation to	125
Diverticula, vesical, complications of	751
Doctoring, better, for less money	702
Dust, street, danger to health from	30
Dux femina facit	944
Eczema, treatment of	751
German treatment of	847
monilia ovata in	320
Dystocia due to constricted os	414
Efficiency in the industrial world	843
Employer liable for typhoid contracted in his service	366
Epidemiology of interest	1176
Epileptic and idiot, antisyphilitic treatment of	223
Erysipelas, successful treatment of	466
Exercise, pathology of	895
Fly, the dangerous	943
Fomites, role of, in spread of disease	1233
Food, clean, in hotels	1135
Food, clean, in restaurants	846
Foot, frozen, the first of 1915	175
trench, theory of	1049
Gallbladder, malignant neoplasms of	464
Gleetritis, acute, diet in	750
German army and spawners	1177
Gestation, clinical evidences indicating the therapeutic interruption of	365
Glycerin and glycol in septic wounds	117
Health and wages, Surgeon General Gorgas on	77
department of health	29
insurance act, Mills	557
public and private	512
Hemorrhoids, treatment of, by injection	474

	PAGE.
Hospital standards.	318
Humidity, effect of, upon super air pump.	283
Husk, Dr. Carlos, a medical martyr.	607
Hydrocyanic acid as a fumigant.	244
Hydrolytic, in vitro, in a baby.	32
Idiots and epileptics, antisyphilitic treatment of.	895
Immigration, hygienic.	1085
Incapacity, pronounced in a baby.	1018
Infantile scorbuts, pseudoparalytic type of.	126
Infections, respiratory, epidemic of.	125
Injections, hypodermic, new technique for.	39
Inoculation, prophylactic, and the Widal test in typhoid.	20
Insurance against sickness.	130
Intoxication, by.	557
Jodine, abuse of tincture of.	274
Journals, change in name of.	125
Laundries and disease prevention.	1088
Laughter after cerebral injury.	49
Leptosis, clearly uponing treatment.	1037
Lipodystrophy, progressive.	1037
Mad. Dr. Carlos, a medical martyr.	607
Medical department of army, reorganization of.	1037
Metrics, phases of, not often discussed.	127
Examiners, national board of.	510
Martyr, Dr. Carlos Husk.	607
Mentals, needed in U. S. Army.	701
Preparation of.	31
Profession in war time.	222
Salaries.	465
Subjects, why not the truth concerning.	703
Medicine, American, opportunity for.	703
socialization of.	701
take your own.	800
Metric system in prescribing.	557
Mills health insurance act.	800
Monsonia ovata in dysentery.	1340
Mortality, control of.	1040
Napoleon, maladies of.	1040
Nephritis, trench.	1127
Neuroses, absence of, in war.	848
Nutritional deficiency, vitaminic age.	518
tics in.	559
Pellagra, diet in.	77
Phthiasis, public, caused by pediculus.	799
Physician in relation to society.	510
Physicians' prescriptions.	701
Physiological balance.	989
Physiology, comparative, findings in.	1235
Physiologists, municipal.	1136
Poisoning, mercuric chloride, treatment of.	943
Poliomyelitis, acute.	943
Poliomyelitis, chronic, survival of.	991
Pregnancy, autointoxication in pernicious anemia of.	174
Preparedness, medical.	1136
Precedentia uteri in a nullipara.	703
Psychic, substitute for.	510
Psychanalysis, connotations of.	560
Quackery and the German Army.	1177
Quarantine, federal and state.	537
of the Port of New York.	991
in smallpox.	358
Rectum, unusual collection in.	654
Religion of a physician.	654
Respiratory, epidemic of.	125
Sajous clubs.	412
Sajous, Dr. C. E. de M., and his articles on hematology.	32
Salars, French, substitute for.	895
Salvarsan, French, substitute for.	895
Saratoga Springs, future of.	848
School and the child.	269
Schools, value of sufficient.	1037
Schools, value of sufficient.	1037
Scorbuts, infantile, pseudoparalytic type of.	126
Sexual matters, why not the truth concerning.	465
Shakespeare, 1616-1916.	797
Smallpox and quarantine.	782
Southern Hospital Record, a new journal.	806
Spas, American.	1136
Spirocheta pallida, quick detection of.	991
Spiral, cause of.	991
Surgery, present war, therapeutic results of.	370
Synthesis, artificial, laborative in.	175
Teeth, caries of, our most common disease.	751
Temperature findings, singular, in plague.	1235
Trench foot, theory of.	1040
Thunb, curious accident to.	847
Trench foot, theory of.	1040
Trudeau school of tuberculosis.	367
Tumors, malignant, present status of.	367
U. S. Army, need for.	701

[illegible]

	PAGE.
Gangrene, threatened, operative treatment of.....	1245
Gardner, W. M. Treatment of constipation in sedentary men.....	552
Treatment of ophthalmia neonatorum.....	312
Gass, J. H. Treatment of pharyngeal cancer by oxygen anesthesia, new apparatus for administration of.....	137
Gassman, resuscitation from.....	231
Gaskell, Henry Kennedy. Dermatitis, pyodermitis.....	148
Gastric analysis, clinical significance of.....	357
cancer and ulcer, relationship between.....	138
carcinoma, ratum in.....	115
delayed.....	112
disturbances, tongue in diagnosis of.....	123
disturbances, recurring, in chronic tonsillitis.....	166
disturbance, force of.....	166
hyperacidity.....	324
syphilis simulating cancer.....	903
ulcer and cancer, relationship between.....	138
etiology of, and microbial affinity.....	120
following removal of adrenals.....	474
from point of view of medical selection.....	137
from standpoint of internist.....	137
medical treatment of.....	231
rational plan of feeding in.....	133
treatment of.....	803
treatment of.....	61
ulcers after use of Percy's "cold iron" for carcinoma.....	1048
Gastrell, J. H. Treatment of.....	137
Gastroduodenitis, diagnosis and treatment of.....	850
Gastrogenic diarrhea.....	850
Gastrointestinal cases, methods of examination.....	850
symptoms, eye strain in relation to.....	213
Gauraz, Edouard. Technic of secondary nephrectomy.....	870
Genital diseases, force of.....	870
Genitourinary diseases.....	870
surgery, caudal anesthesia in.....	76
symptoms from anal, rectal, and colonic diseases.....	420
tuberculosis, diagnosis of.....	66
Rosenbach's tuberculin in.....	99
Geriatrics, neglect of.....	558
Gestation, clinical cases, indicating therapeutic interruption of.....	36
Geyer, Albert C. Diathermia, a physiological specific.....	35
Diathermia in tuberculosis.....	88
Diathermia, physiological, symptomatic therapy. Physiology in consideration of constipation.....	73
Therapeutic value of diathermia.....	50
Gingivitis, ulceromembranous.....	48
Gingivitis, ulcerous.....	48
Glands, ductless.....	17
in relation to atypical growth.....	27
in insanity.....	27
in nervous, nonsurgical treatment of.....	27
Glass urinary, test for urological diagnosis.....	52
Glaucoma from atropine, unusual complications from.....	107
massage in.....	17
Gloger, Otto. Diagnostic value of records of breathing and of speech.....	109
Gloves, rubber, experiments with.....	109
Gluck's laryngectomy in cancer.....	47
Glycerin and ichthyol in septic wounds.....	79
Gonorrhea, treatment of.....	708
Goitre, electricity in treatment of.....	28
exophthalmic, bruit over eyeball in.....	95
medical treatment of.....	23
operations for.....	43
in treatment of.....	84
in Hautes-Vosges district.....	71
Simple, cutaneous, subcutaneous abscesses in.....	71
Gold, colloidal, intravenous injections of, in test, diagnostic value of.....	70
in syphilis of central nervous system.....	8
Goldberger, I. H. Teachers' vitality as indicated by a simple skin test.....	83
Goldstone, Karl H. Gynecology; its benefactors, its scope, and its progress.....	40
The Mount Sinai clinics.....	16
Goltz's foot.....	47
Gonorrhea, about.....	708
antigeninococcus serum in joint manifestations of.....	182
in women, treatment of.....	27
management of.....	70
of retinal glands.....	70
epithelium in treatment of.....	8
prompt cure of.....	244
Gonorrheal epididymitis, treatment of.....	71
epididymitis, treatment of.....	71
treatment of.....	81
Goodman, Charles, and Bernstein, Eugene H. Pre-septic gangrene, therapeutic treatment of.....	1245

	PAGE.
Gordon, Alfred. Cerebrocerebellar ataxia.	440
Medicological aspects of mental deficiency.	734
Gordon, Frank A. Treatment of insomnia.	534
Gordon, Murray Burnes. Treatment of rickets.	696
Gordon, William S. Failure of diagnosis in . . .	1156
Gottlieb, William S. Value of autoserum injections in skin diseases.	839
Gout.	839
Grafting, skin, technic of.	173
Graham, Edwin E. Grippe in children.	332
Graham, George W.	332
Green, brilliant, as anti-septic.	611
Grippe, bacteriology of.	294, 322
correction in prescription for.	324
differentiated from influenza.	324
epidemic of.	550
in children, treatment of.	322
in infants and children.	377
mouth wash for use in.	325
origin of, in relation to . . .	294
so called	294
treatment of.	330, 329
Grossman, Jacob. Spastic paralysis in chil- dren.	495
Grossman, Max. Cardiac dilatation a com- plication of apical pulmonary tuber- culosis	1174
Hagen, Moritz.	1174
Muscular relaxation and reeducation in addition to general treatment.	1018
Growth, atypical, ductless glands in rela- tion to.	203, 54
Growth, normal,	54
Growth, nonmalignant, radium in.	87
Guelpha's discovery in diabetes.	583
Gutmann, Jacob. Treatment of obesity; car- cinogenic principles in the dietetic obesity	161
Gynecological operations, anesthesia in.	756
Gynecology and psychiatry, relation be- tween	1043
habits, sexual, and progress of . . .	403
irradiation in	87
Gynocarcinoma, leprosy.	564
HABIT, morphine, rational treatment of.	709
Hand infections, treatment of.	564
Hand, operative treatment of.	1091
ringworm of	563
Hansell, M. T. The pathologist, the family, and the family physician.	189
Hansen, J.	988
Harrison act, first year of.	709
phase of	709
law, new ruling in.	1036
Hart, Henry	1036
Hav, fever, active immunization in.	81
calcium salts in	661
cause and prevention of.	661
poliotherapeutics in.	39
treatment of	1137
vaccines in	661
Hays, Harold. Corroborative diagnosis of mastoiditis by means of the ray.	1063
Headache, new sequelae of.	1093
pains in, from viewpoint of ophthalmolo- gist and otologist.	88, 888
Headache	88, 888
in relation to nasal disease.	17
Health administration, municipal.	1191
and wages, Gorgas's view on.	77
connection through life insurance com- panies	1050
danger to, from street dust.	30
department's fifteenth anniversary.	802
organization of general public.	191
nurses	73, 115
in relation to national health.	1194
Mills bill relating to.	552
next step in.	798
Labor unions, public health.	1194
organization, county.	1192
district	1191
physical, orthodontia in relation to.	760
problem, national.	760
public and private	512
and women's clubs.	1089
forestry in relation to.	539
relation of syphilis to.	1004
sex question in	1004
schools in relation to.	360
statistics	1003
women in the South.	1003
intensive community	1003
Hearing tests in school children.	1009
Heart, anatomy and pathology of.	136
block, epinephrine in.	80
in justice.	37
clinical observations on food.	37
condition of, in tuberculosis.	1009

	PAGE.
Heart, determination of size of	614
dilated, complicating tuberculosis.....	1174
sign of apical tuberculosis.....	857
disease, chronic, diet in.....	107
malignant.....	285
partient stand point.....	281
diseases, adrenaline eye test and lym- phocytosis in diagnosis of.....	993
diagnosis.....	1072, 1142
drugs of value in.....	1072, 1142
electrocardiograph in diagnosis of.....	137
increasing mortality from, in the United States.....	97
examination of.....	521
extraction of missiles from.....	518
functional examination of.....	1145
infiltration of, with round celled sarcoma.....	951
irritation of perithyroidism.....	285
murmurs in military service.....	114
soldier's, in relation to thyroidism.....	999
surgery of.....	1109
Heat, treatment of.....	382
Heat applied to eye.....	382
high versus low degrees of, in cancer of uterus.....	185
rational treatment of.....	377
relation of, to summer diarrhea of in- fants.....	42
Hectine in syphilis.....	710
Hefingsfeld, M., Serology and the di- agnosis of syphilis.....	673
Heiser, Victor G., Recent developments in the treatment of leprosy.....	289
Heliotherapy, general, in bone and joint affections.....	889
Helmatus.....	1086
Hematology, a new specialty.....	274
Doctor, Sajous's articles on.....	32
Hemorrhage of appendix.....	122
pancreatic cyst with.....	189
pathological conditions in.....	1226
unilateral, with renal calculi.....	235
of long standing, recovery of motor function in.....	132
Hemoglobin estimation.....	953
Hemolysis, factors influencing, in blood transfusion.....	345
Hemorrhoids, emetine in.....	278
in pulmonary tuberculosis, treatment of.....	83
treatment of.....	280
Hemorrhage after operations on nose and throat.....	852
after suprapubic prostatectomy, means for controlling.....	715
cerebral, prodromal symptoms of.....	993
intracranial, untreated.....	993
meningeal, albuminuria in diagnosis of.....	232
in newborn.....	293
post partum, method of procedure in.....	1081, 1128
pulmonary, treatment of.....	1208
sepsal, xanthosia a cause of.....	1187
submeningeal, lumbar puncture in.....	472
uterine, x rays in treatment of.....	804
Herniorrhaphy in spermoglysis.....	759
Hemorrhoids, high frequency cautery in treatment of.....	1202
treatment of, by injection.....	895, 944
Hemorrhoids, bromide of potassium or thromboplastin as a cure.....	519
Henin, Charles C., Cyclic vomiting of in- fants.....	890
Treatment of.....	699
Treatment of rickets.....	699
Hepatosplitis, partial, from interposition.....	856
Hernia, congenital.....	189
Herniotomy, ligamentary dissection for.....	529
mechanical treatment of.....	946
Paraneural.....	1047
postoperative ventral, study of.....	187
results.....	187
end results.....	187
Results of surgical treatment of.....	187
Herpes zoster, abortive treatment of.....	279
Herrick W. P., Sodium bicarbonate; old formulation.....	646
Hightower, C. C., Treatment of ophthalmia neonatorum.....	310
Hill's sign in aortic insufficiency.....	88
Hipjoint, osteomyelitis involving.....	1098
Hirschsprung Disease, therapy of.....	529
Hodgins, Louis L., How to proceed in post partum hemorrhage.....	1082
Holland, E. D., Syphilis of stomach; two cases which resembled cancer.....	402
Hookworm disease in Mississippi.....	1004
Hoover, F. P., An eye case with unusual complications.....	645
Hopkins, Henry Reed, Forestry and the public health.....	638
Horne, M. H. T., and Nelson, A. J., Clinical notes from the first special de- partment of Sva County Hospital.....	1221
Hordenine in adeno carcinoma.....	374
Hospital, American base, personnel of.....	556
Hospitals, enlargement of usefulness of.....	1154
Howard, J. H., Treatment of ophthalmia neonatorum.....	269

	PAGE.
Larvæ, treatment of diseases of.....	374
tuberculosis of.....	596, 613
Laundries and disease prevention.....	145
Lavadia, P. C. Treatment of constipation in sedentary men.....	394
Leishman, new colloid.....	613
Lead acetate, spoon of medicinal dose of.....	659
shot, danger of poisoning from.....	473
LECTURES AND ADDRESSES	
Biggs, Hermann M. Tuberculosis.....	168
Lefort, Albert. Gonorrheal infection of urethral glands.....	790
Leg ulcers, treatment of.....	966
Leishman, new colloid.....	613
Leprosy, gynocarcinates in.....	564
recent developments in treatment of.....	289
studies upon.....	413
Lerch, Otto. Diet in internal diseases.....	598, 740, 839
Lesions, kidney, diagnosis of, with cysto- scope and x ray.....	43
of nervous system following intravenous injections of bacteria.....	462
of peripheral nerves, sensory symptoms in.....	808
of stomach and duodenum, diagnosis of.....	857
renal and vesical, pain in.....	859, 921
synovial, of skin, radium in.....	517
venereal, Simpson light in.....	472

LETTERS TO EDITORS:

Allen, Frederick M. The Rush lecture on diabetes.....	669
Allport, Frank. Silver salts in ophthal- mia neonatorum.....	717
Baetz, Walter G. A correction.....	1054
Barr, D. D. A kind word.....	957
Bierhoff, Frederic. Abortive treatment of gonorrhea.....	478
The prompt cure of gonorrhea.....	394
Bolles, Charles P. Advice to young physicians.....	861
Bruck, Charles S., Jr. The preven- tion of beriberi.....	670
Brady, William. Cold and colds.....	381
Improper questions from the Indus- trial Commission.....	626
Brittain, Robert. Streptococcal infec- tions.....	569
Broeman, C. J. Treatment of psoriasis.....	861
Chamberlain, Joseph. The Mills bill.....	813
Chitt, through a mistake.....	813
Oriental and their freedom from pyorrhea alveolaris.....	706
Finley, John H. The new dentistry law.....	957
Goldstone, Karl H. Another blow at the profession. The Mount Sinai cases.....	957
Another pleased subscriber.....	957
Joerg, Oswald. A physician's religion.....	1005
John, C. Another view of the Mills bill.....	813
Kessel, Leo. The importance of dietetics.....	669
McCready, E. Bosworth. Forming Sajous in.....	430
Meyer, Alfred. A correction.....	940
Miller, Emma T. Diabetes and the spit- ting habit.....	46
Mowhan, R. C. An appreciative sub- scriber.....	910
Palier, E. The etiology of gastric ulcer and microbic affinity.....	1206
Physicians, Surgeons, and Dentists.....	426
Ransom, B. H. Source of item on the dog as a carrier of disease.....	382
Robinson, William J. Prostatic toxemia.....	146
Sajous, E. M. A correction.....	765
note.....	765
Swift, W. J. Pliny, Seneca, and curves.....	957
Thayer, William S. A memorial of An- thony Celli.....	334
Turner, Arthur S. Heat and cold ap- plied to the eye.....	765
White, J. M. Intraarterial injections.....	765
White, George. A reply.....	334
Bierhoff's letter on the prompt cure of gonorrhea.....	382
Leucocyte count in appendicitis.....	1173
Leucocytes, polymuclear, in pus, action of antiseptics on.....	662
Life insurance companies, health conserva- tion through.....	1060
Ligament, round, stenomyoma of.....	997
method of shortening in retroversion.....	84
Light, artificial, in treatment of wounds.....	1044
electric, in arthritis.....	277
radiant, in therapeutics.....	529
Simpson, experiment with.....	517
in skin diseases.....	270
in treatment of syphilitic wounds.....	472
in venereal lesions.....	472
Lit., Eng., 1899.....	1214
Lit., Eng., 1900.....	1214
Lit., Eng., 1901.....	1214
Lit., Eng., 1902.....	1214
Lit., Eng., 1903.....	1214
Lit., Eng., 1904.....	1214
Lit., Eng., 1905.....	1214
Lit., Eng., 1906.....	1214
Lit., Eng., 1907.....	1214
Lit., Eng., 1908.....	1214
Lit., Eng., 1909.....	1214
Lit., Eng., 1910.....	1214
Lit., Eng., 1911.....	1214
Lit., Eng., 1912.....	1214
Lit., Eng., 1913.....	1214
Lit., Eng., 1914.....	1214
Lit., Eng., 1915.....	1214
Lit., Eng., 1916.....	1214
Lit., Eng., 1917.....	1214
Lit., Eng., 1918.....	1214
Lit., Eng., 1919.....	1214
Lit., Eng., 1920.....	1214
Lit., Eng., 1921.....	1214
Lit., Eng., 1922.....	1214
Lit., Eng., 1923.....	1214
Lit., Eng., 1924.....	1214
Lit., Eng., 1925.....	1214
Lit., Eng., 1926.....	1214
Lit., Eng., 1927.....	1214
Lit., Eng., 1928.....	1214
Lit., Eng., 1929.....	1214
Lit., Eng., 1930.....	1214
Lit., Eng., 1931.....	1214
Lit., Eng., 1932.....	1214
Lit., Eng., 1933.....	1214
Lit., Eng., 1934.....	1214
Lit., Eng., 1935.....	1214
Lit., Eng., 1936.....	1214
Lit., Eng., 1937.....	1214
Lit., Eng., 1938.....	1214
Lit., Eng., 1939.....	1214
Lit., Eng., 1940.....	1214
Lit., Eng., 1941.....	1214
Lit., Eng., 1942.....	1214
Lit., Eng., 1943.....	1214
Lit., Eng., 1944.....	1214
Lit., Eng., 1945.....	1214
Lit., Eng., 1946.....	1214
Lit., Eng., 1947.....	1214
Lit., Eng., 1948.....	1214
Lit., Eng., 1949.....	1214
Lit., Eng., 1950.....	1214
Lit., Eng., 1951.....	1214
Lit., Eng., 1952.....	1214
Lit., Eng., 1953.....	1214
Lit., Eng., 1954.....	1214
Lit., Eng., 1955.....	1214
Lit., Eng., 1956.....	1214
Lit., Eng., 1957.....	1214
Lit., Eng., 1958.....	1214
Lit., Eng., 1959.....	1214
Lit., Eng., 1960.....	1214
Lit., Eng., 1961.....	1214
Lit., Eng., 1962.....	1214
Lit., Eng., 1963.....	1214
Lit., Eng., 1964.....	1214
Lit., Eng., 1965.....	1214
Lit., Eng., 1966.....	1214
Lit., Eng., 1967.....	1214
Lit., Eng., 1968.....	1214
Lit., Eng., 1969.....	1214
Lit., Eng., 1970.....	1214
Lit., Eng., 1971.....	1214
Lit., Eng., 1972.....	1214
Lit., Eng., 1973.....	1214
Lit., Eng., 1974.....	1214
Lit., Eng., 1975.....	1214
Lit., Eng., 1976.....	1214
Lit., Eng., 1977.....	1214
Lit., Eng., 1978.....	1214
Lit., Eng., 1979.....	1214
Lit., Eng., 1980.....	1214
Lit., Eng., 1981.....	1214
Lit., Eng., 1982.....	1214
Lit., Eng., 1983.....	1214
Lit., Eng., 1984.....	1214
Lit., Eng., 1985.....	1214
Lit., Eng., 1986.....	1214
Lit., Eng., 1987.....	1214
Lit., Eng., 1988.....	1214
Lit., Eng., 1989.....	1214
Lit., Eng., 1990.....	1214
Lit., Eng., 1991.....	1214
Lit., Eng., 1992.....	1214
Lit., Eng., 1993.....	1214
Lit., Eng., 1994.....	1214
Lit., Eng., 1995.....	1214
Lit., Eng., 1996.....	1214
Lit., Eng., 1997.....	1214
Lit., Eng., 1998.....	1214
Lit., Eng., 1999.....	1214
Lit., Eng., 2000.....	1214

Lippman, Maurice J. Meningeal hemor- rhage in newborn.....	263
Little, George W. The ductless glands and physical growth.....	208
Liv., 1899.....	1214
amebic, emetine in.....	469
superoperative complication of appen- dicitis, the best way of.....	296
diet in.....	742
diseases, in relation to nervous diseases.....	931
hydatid cysts of.....	236
Living, defining the best way of.....	472
Longape, Wapual T. The susceptibility of men to foreign proteins.....	757
Louse extermination in typhus fever.....	1044
Lowenstien, Frederick P. Treatment of constipation in sedentary men.....	554
Lubman, Max. Syringing the ear.....	71
Luetin reaction, influence of potassium iodide on.....	1050
Lumbar puncture in fracture of skull.....	309
in serous effusions.....	398
in submeningeal hemorrhage.....	472
Lunches, practical, for school children.....	582
Lung, gangrenous abscess of.....	284
indirect traumatism of.....	952
mucous infections of.....	326
syphilis.....	1097
Lungerhausen, W. T. Mineral bath ther- apeutics at Mount Clemens.....	917
Lungs, fat making diet in diseases of.....	743
diseases of, in asphyxia.....	807
Lupus of larvæ, treatment of.....	950
Luteum extract in menstrual disorders.....	85
Luxation, anterior, of epiphysis of left femur.....	549
Lye stricture of esophagus.....	1097
Lymph glands, abnormal.....	1097
sarcoma of.....	1047
Lymphatic system.....	807
Lymphatics, cervical, tuberculosis of.....	1186
in ascending renal infections.....	474
Lymphocytosis in diagnosis of cardiac af- fection.....	303
Lymphosarcoma, treatment of, with radium.....	284

McCOLLUM, E. V. The essential factors in a successful diet.....	838
McConnel, Guthrie. Carcinoma, further studies in metastasis.....	785
McCready, E. Bosworth. Pedology and its applications.....	342
MacDonald, John. Treatment of sickle-cell anemia.....	550
MacKee, George M. Progress in treatment of skin diseases.....	441
MacWhinnie, Arthur Morgan. The treat- ment of mucous accessions.....	307
including the use of a new instrument.....	213
Mackey, Harry A. Medical questions in the Pennsylvania compensation act.....	793, 834
Mackintosh, William. A correction.....	6
under A. Salvarian in primary syphilis.....	6
Magnesium chloride solution in treatment of infected wounds.....	277
hyperchloric acid in antiseptic.....	803
sulphate in tetanus.....	803
Makuen, G. Hudson. Hysterical mutism.....	1009
The conservative treatment of the ton- sils in Mississippi.....	483
Malaria in Mississippi.....	1004
intravenous injections of alkaloidal quin- ine in.....	708
tertian, anopheles punctipennis in trans- mission.....	1001
treatment of.....	1004, 1093
relative to its eradication.....	853
Malarial fever, recurrent form of.....	808
Malignant disturbances.....	1100
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464
of stomach.....	317
treatment of.....	317
Maligner.....	684
Malleterre, Felix. Antimeningococcal serum in meningitis.....	1024
Malignant disease of ovaries.....	1100
growths of bronchus.....	250
neoplasms of gallbladder.....	464

	PAGE.
Paralysis, facial, treatment of.....	504
infantile, aftertreatment of.....	593
aspects of.....	616
orthopedic treatment during improve- ment after.....	349
tendon hysto.....	130
transplantation in.....	193, 140
treatment of tetanuses due to.....	2
multiple postepileptic.....	951
of feet.....	83
of laryngeal nerve in mitral stenosis.....	376
of limbs, graphic representation of.....	614
of ulnar nerve, late.....	130
of trigeminal ganglion.....	130
peripheral facial, treatment of.....	1045
polymyositis, intraarticular silk ligament in flail joints of.....	109
with high fever.....	52
spastic, in children.....	52
Parasites, intestinal, toxic effects of.....	40
Paratyphoid and typhoid infection, differ- entiation between.....	281
fever.....	281
antitiphoid vaccination in relation to.....	562
clinical features of.....	232
complications of.....	567
diet, treatment and prognosis in.....	99
meningeal form of.....	224
origin of pulmonary disorders.....	807
Paresis, general, Aberdhalen test in.....	136
of cognition.....	760
neurophysiologic relation to.....	136
intraventricular injections of neosalva- rin in treatment of.....	38
medicological value of early manifestations of.....	94
Parker, Gilbert. How to proceed in post partum hemorrhage.....	1128
Parotid tumors, radium treatment of.....	37
Parvovirus, epidemic, caused by strepto- cocci, found in milk.....	712
experimental study of.....	114
Paroungani, Mirhan B. Problems of syphilitic infection.....	187
Pathologic anatomy, of.....	183
Pectoriloquy, aphonic, in early diagnosis of pneumothorax.....	1047
Pedersen, Victor Cox. Diagnosis of ure- mia.....	1069
Seven glass urinary test.....	87
Pediculosis, prophylaxis of.....	710
Pedology and its possibilities.....	342, 377
Pellagra, treatment of.....	155
condition of the blood in.....	810
diagnosis and treatment of.....	810
diet in.....	77, 1033
dietetic and medicinal treatment of.....	850
epidemiology of, in Nashville.....	953
etiology of, with reference to amebic in- vasion.....	95, 1070
in New York State.....	1070
in Texas.....	81
management of.....	750
observations of.....	81
peric acid in treatment of.....	120
prevention of.....	471, 954, 1033
treatment of.....	420, 471, 954, 1033
Pelvic complications of appendicitis.....	204
Pelvic, complete, relation to nervous dis- orders associated with nervous dis- orders.....	81
symptoms, role of anteposed uterus in.....	1190
Pelvis, conservative surgery of.....	282
Pemphigus, Wassermann reaction in.....	990
Pemphig, A. B. Treatment of ophthalmia neonatorum.....	81
Pentacene, dissolution of.....	328, 1040
Pentavaccine, Castellan's.....	328, 1040
Percussion dullness, relation of, to cardiac outlines.....	66
phlebotomy, two varieties of.....	56
technic and theory of.....	56
Pericardial effusions, friction rub in.....	520
Petroleum, extraction of missiles from.....	520
Pericystitis, complicating appendicitis.....	520
Perforation, treatment of.....	520
Perforators, a cause of pain.....	953
Peritoneal infections, antiseptic action of ether in.....	59
Peritonitis, acute suppurative, prognostic signs.....	23
following gonorrhea, vaginal origin.....	47
iodine in treatment of.....	47
postoperative complication of appendi- citis.....	20
resulting from typhoid perforation, treat- ment of.....	20
Periurethral abscess in a woman.....	52
Perkins, C. Winfield. The normal stomach	6
Perkins, Roger G. Public health labora- ories.....	72
Pertussis, treatment of.....	72
Pertussis, treatment of measles following	72
Pyelitis, renal, treatment of.....	72

	PAGE.
Fahler, George E. X ray diagnosis of surgical complications within the chest.....	160
Phagocytosis, relations on.....	328
Pharmacological superstitions.....	804
Pharmacologist, therapeutics of.....	804
Phenol, alcohol not an antidote to.....	990
Phthiriasis, pubic, caused by pediculus capitis.....	799
Physician as wage earner, psychology of.....	481
cross of.....	1084
in relation to society.....	510
relic and treatment of.....	554
under oath, preference the Journal.....	796
Physicians, New Year's prayer for.....	120
surgeons, and dentists' fund.....	474
women, needed in England.....	804
Physiological balance.....	989
therapeutics versus symptomatic.....	18
Phyostigmine, therapeutics of.....	850
Pineal gland, inert.....	696
Pituitary extract, action of.....	611
as a circulatory remedy.....	706
as coagulant in surgery of nose and in diabetes insipidus.....	566
preparations, therapeutic use of.....	498
Pituitrin in obstetrics.....	397
preparations.....	995
Plasma and total blood volumes, determination of.....	90
Playgrounds, municipal.....	1177
Plays, psychotherapy in.....	611
diagnostic.....	611
urgent, treatment of.....	416
with effusion.....	782
Pneumococcal bronchitis.....	1009
treatment of.....	1014
toxins of paraffin.....	1014
Pneumonia, chemical therapy of.....	374
correlation of symptoms and physical signs in.....	141
detection of.....	1119
epidemic, in the tropics.....	1125
open air treatment of.....	180
optochin in.....	610, 851, 1143
operative complication of appendicitis.....	206
treatment of, from circulatory standpoint.....	758
unresolved, x ray treatment of.....	681
Pneumosis in pulmonary tuberculosis.....	182
Pneumothorax.....	782
aphonic peritonsillitis in diagnosis of.....	1047
double induced.....	662
in interlobar empyema.....	354
spontaneous.....	828
Poisoning, by chloride.....	187
chloride gas treatment of.....	132
chronic, by emetine.....	132
food, by Bacillus paratyphosus B.....	234
from creamed codfish.....	1001
from lead shot.....	473
industrial aniline.....	1000
lead shot, danger of.....	473
mercuric chloride, treatment of.....	277, 1143
metallic aluminum to eyes in.....	154
mercuric chloride.....	154
potassium bichloride.....	972
systemic, with bismuth.....	516
Poliomyelitis, acute, treatment of.....	1040
prophylaxis.....	1040
paralysis, intraauricular silk ligament in.....	1040
Tall points of.....	1040
Pollen extracts in hay fever.....	661
Pollinosis, hay fever.....	661
Pollinosis, pollen therapeutics in.....	661
Poliomyelitis in the tropics.....	249
Poliotherapy, survival of.....	605
Position and movement, study of disease.....	579
Poisoning, by arsenic, treatment of.....	174
Post mortem examinations, problem of.....	172
Postoperative complications, relation of.....	121
from.....	121
Postoperative abscesses, evacuation of.....	666
Postural, without knife.....	1243
Posture in obstetrics.....	824
Potassium chlorate poisoning.....	1243
Pott, Nathaniel Bowditch. Diet in carious teeth.....	450
Pott's disease, bone graft in treatment of.....	842
Powder of sympathy of Sir Kenelm Digby.....	399
Pregnancy, autoantitoxin in peritonitis.....	174
in arsenic.....	174
Kiusti-Malone urinary test for.....	474
psychic and somatic palsies complicating.....	764
systemic blood pressure in.....	945
toxemia of.....	945
value of Wassermann test in.....	1190
Pre-erectile, medical.....	172, 1116, 1117

	PAGE.	
Preparedness, military, appeal for.....	1006	
from medical standpoint.....	581	
sanitary.....	1005, 1154	
Prescriptions in English.....	1200	
PRIZE DISCUSSIONS:		
Constipation in sedentary men, treatment of.....	459, 506, 552	
Hemorrhage, post partum, method of obstruction sequence of.....	1081, 1128	
Insomnia, treatment of.....	74	
Ophthalmia neonatorum, treatment of.....	266, 310	
Rickets, treatment of.....	649, 696	
Viral anemia, cause of.....	703	
Procidencia uteri in a nullipara.....	850	
Professional unrest.....	652	
Prognosis, urochromogen reaction an aid in.....	184	
Prophylaxis.....	108	
Prostate gland, calculi of.....	714	
Prostatomyoma, removal of.....	714	
Proctostomy, benefits following.....	327	
caudal anesthesia in.....	45	
Virtual anemia.....	1094	
Suprapubic, controlling hemorrhage by..... under local anesthesia.....	996	
Prostatic extract, toxic properties of.....	327	
Obstructive sequelae of.....	87	
patient, preoperative.....	45	
suppurative, suprapubic attack in.....	714	
surgery, progress of.....	764	
toxicity.....	1024	
Protein digestion, parenteral.....	745	
sensitization, food idiosyncrasies acquired through, in relation to arteriosclerosis.....	738	
Prothrombin, bacteriology of.....	745	
Proteins, poisonous.....	456, 602, 744, 844, vegetable.....	132
Protidone, pharmacological action of.....	732	
Pruritus, causes of.....	998, 1045	
Fryer, John H. Immobile.....	781	
following pleural exudates.....	781	
Some puzzling features of empyema.....	10	
Pseudoinfluenza, epidemic, etiology of.....	1048	
Pyemia, causation of.....	613	
human serum and blood in treatment of..... remedy for.....	650	
treatment of.....	861	
Psychiatric connotations of.....	560	
elements of.....	594	
Psychiatry and gynecology, relation be- tween.....	1043	
modern, and the curatelle.....	976, 1027, 1078	
Psychoses, catenae.....	1038	
membrane reflexes in.....	1038	
Psychoses, ductless gland.....	274	
Psychosis, periodical, intermittent insomnia as a factor in.....	807	
Psoriasis, mechanism of.....	181	
areas a cure.....	181	
Public phthisiasis caused by pediculus cap- itis.....	799	
Public health laboratories.....	721	
organization.....	753	
Pulmonary complications of infectious dis- eases, continuous saline proteolysis in.....	910	
Pulsus alternans, detection of.....	953	
Purgatives, caution in use of, in obscure abdominal conditions.....	1239	
Purpura, emetine in.....	182	
of white mole blood.....	182	
Pus, action of antiseptics on leucocytes in Pyleitis in infancy and childhood.....	659, 1050	
treatment of.....	1050	
Pycnanthropy, new substance for.....	725	
Pycnophagy, renal calculus.....	827	
Pyelotomy in feline.....	827	
Pyletic crisis, postoperative complication of.....	206	
Pylephlebitis, congenital, study of.....	206	
Pylorus, obstruction of, in infants.....	376	
symptom of ulcer at duodenal end of.....	377	
Pyrexia, in bacterial infections.....	104	
deep injections of mercury in.....	104	
emetine in treatment of.....	78	
freedom of orientals from.....	76	
pungent hydrogen peroxide in.....	854	
treatment of.....	104	
Pyuria, pathological conditions in.....	1220	
QUARANTINE, measures instituted by		
Germantown.....	171	
Quarantine, federal and State.....	557	
at the Port of New York.....	991	
importance of, in smallpox.....	71	
Quimby, A. Judson and Will A. Success- ful treatment of unresolved pneumonia with röntgen rays.....	68	
Quinn, Acton F., on uterus.....	119	
Quintessence, intrauterine injections of.....	701	
and urea in hyperthyroidism.....	791, 1002	
in toxemia of pulmonary tuberculosis.....	1002	

	PAGE.
Sinusitis, nasal accessory, inflammation of.....	803
new method of treating.....	854
skin affections arising around.....	1092
suppurative, bismuth paste in.....	1187
Supraorbital, mental and military.....	1200
Sinustis, dental and military.....	1200
staphylococcus albus.....	136
in military practice.....	951
mastoid, cured by closure of Eustachian tube.....	1021
Skin affections around wounds and sinuses.....	1092
in childhood.....	566
creeping eruption of.....	234
direct treatment.....	57
filtered x rays in.....	87
human serum and blood in.....	613
progress in treatment of.....	443
in.....	56
Simpson light in.....	57
treatment of.....	473
trichloroacetic acid in.....	708
value of autoserum injections in.....	1209
x-ray treatment.....	57
grafting, technic of.....	134
infections, local treatment of.....	230
lesions, suppurating, local treatment of.....	230
lymphatic radium.....	861
reaction in diphtheria.....	861
Skull, fracture of, lumbar puncture in.....	300
gunshot wounds of, radiography in.....	701
Sloane, J. C., and Holmes, Frederic R. Value of lumbar puncture in fracture of skull.....	300
Smallpox, acupuncture best method of vaccination.....	226
new treatment of.....	998
quarantine in.....	78
vaccination, truth about.....	93
Smith, F. Michael. An appreciative note.....	756
Smith, W. H. Common diseases.....	756
the ear.....	49
Smiths, P. A. With the American Red Cross in Vienna.....	702
Souag, antiseptic action of.....	312
SOCIETIES, PROCEEDINGS OF:	
American Association for Study and Prevention of Infantile Paralysis.....	129
American Medical Association.....	1180
Bronx County Medical Society.....	475
Medical Association of the Greater City of New York.....	327, 324, 569, 666
Medical Association of the Southwest.....	762, 810, 858
Mississippi Valley Medical Association.....	43, 91, 147
New York Academy of Medicine.....	428, 906, 1148, 1246
Section in Genitourinary Surgery.....	522, 713
Section in Otolaryngology.....	648
Pediatric Societies, Joint meeting of.....	1058
Philadelphia Pediatric Society.....	141
Southern Medical Association.....	954, 1002, 1050
Southern Surgical and Gynecological Association.....	1185, 828
Society proceedings, value of.....	668
Sodium bicarbonate, old and new uses of.....	248
citrate in direct blood transfusion.....	220
Sodium chloride, value of.....	1094
sulfadiazine in dementia praecox.....	221
salicylate, injections of, in rheumatism.....	421
sulphate in dysentery and diarrhea.....	228
Squamous-cell carcinoma.....	845
starches in infant feeding.....	619
Sowell, George A., and Mills, H. Brooker. Pyocystitis and metastatic abscesses following tonsillitis.....	725
Spas, infantile feeding.....	619
Spas, American.....	1135
therapeutic resources of.....	1135
spasmophilia, cases of.....	1193
Specialists, large, among.....	1193
Speech and breathing records, diagnostic value of.....	952
disorders of childhood.....	952
disorders of immun-körper in tuberculosis.....	1134
Spermatocytes, maturation of.....	808
Spermatozoa in fertility and sterility.....	130
Sphagnum moss as a dressing for wounds.....	218
spiniferous cells, roentgenographs of.....	1216
Spinous process.....	857
Spinal anaesthesia, value of.....	857
with stovaine.....	857
conditions, bone grafting for.....	983
fluid in Mongolian disease.....	983
Spina, anatomical.....	1244
surgery, technical features of.....	1244
Spine, fractures of, without paraplegia.....	1244
Sporoblasts, paraffin, quick detection of.....	79
Sprochets, granular phase of.....	46
Sprue, acute, and diabetes.....	46
Spleen, function of.....	619
traumatic rupture of.....	621
Splenectomy for hemolytic jaundice.....	1244
in treatment of pernicious anemia.....	563, 1244
indications for, in blood disorders.....	1244
Splenic infarct with anemia.....	702
Phages.....	702

	Page.
Spangs at Saratoga, value of.....	89, 923
hot, at Paso Robles.....	997
Sprue, cause of.....	991
dietetic treatment of.....	939
Sputum.....	90
cough, cause of.....	375
cure of.....	568
of pulmonary tuberculosis.....	364
Stafford, A. A.....	108
Stain for tubercle bacilli.....	515
Staphylococcus.....	809
new, for blood.....	809
Staphylococcus albus causing frontal and temporal abscess.....	136
Starches and sugars in infant feeding.....	16
Stasis, colic.....	1217
mechanical factors in.....	100
of urine in pyogenic kidney infections.....	11
of vesical urine.....	100
Statistics, cancer, in the United States.....	27
death, cause of, superficial cancer.....	109
Sterility in male.....	1190
in women.....	133, 1292
Sterilization of wounds by heated air or oxygen.....	81
Stigmata.....	81
Stimulation, mechanism of.....	3
Stomach, aids in diagnosis of surgical con- ditions in.....	88
contents of.....	807
lesions, diagnosis of.....	857
newer methods in surgery of.....	1186
of stomach, to rate gastric stasis.....	108
separate suture of mucous membrane in surgery of.....	1053
syphilis, of, resembling cancer.....	402
Stomatitis.....	1200
ectoparasitic.....	99
Stools, blood in, in gastric carcinoma.....	1205
Stout, P. Samuel. A plea for male nurses.....	825
Stovaine, spinal anesthesia with injections.....	114
Streptococci found in milk causing epi- demic of appendicitis and parotiditis.....	1147
localization of, in bronchial musculature.....	1204
Streptococcal infections.....	669
of throat.....	669
Streptococcus viridians in street dust.....	444
Streptothrix in bronchopneumonia.....	1146
Stricture, lye, of esophagus.....	1068
Stricture, of urethra.....	1239
Strontium salicylate, therapeutics of.....	326
Strychnine, therapeutics of.....	994, 1042
Stuttering, etiology of.....	856
Sugar, blood, influence of muscular work on.....	663
Sugars and starches in infant feeding.....	16
Supernumerary.....	1008
Supernumerations, pharmacological.....	804
Suppuration, chronic, of middle ear.....	1240
Suppurations in posterior mediastinum.....	1601
surgical treatment.....	1601
Supraspinatus muscle, deposit in, simulat- ing subacromial bursitis.....	665
Surgeons, American College of.....	1074
results of, in present war.....	270
general, syphilis in.....	409, 428
industrial.....	1104
of venereal disease.....	1074
obstetric, scope and limitations of.....	1243
of stomach and intestines, newer meth- ods of.....	1380
of art and new science of.....	1008
of plastic breast art.....	1008
Sutherland, T. Y. Unusual complications in a case of glaucoma from atropine.....	1075
Sutton, McW. B. E. Treatment of rickets with cod liver oil, Seneca, of, curative.....	80
Swimming pools, sanitation of.....	798
Swindle, Leroy D. The factor of absorp- tion in drug therapeutics.....	754
Synovitis.....	1008
Syphilis, abortive treatment of.....	1241
arsen-denzol in treatment of.....	635
cardiac, treatment of.....	865
cerebral.....	868
in treatment of.....	998
cerebrospinal, reactions and results in treatment of.....	373
chemotherapy in.....	419
of venereal disease.....	1074
therapeutics of.....	707
contagious, treatment of.....	457
Danysz's "102" preparation in treat- ment of.....	1241
experiment of.....	1241
of importance of living parasites.....	1008
gastric, simulating cancer.....	910
hectine in.....	707
Herman-Perutz reaction.....	423
in epilepsy.....	423
in surgery.....	400
in internal medicine.....	385, 428
in neurology.....	428

	PAGE
Syphilis, influence of, on progeny.....	521
intensive treatment of.....	1193
intramaine a new remedy for.....	1045
intramuscular injections of mercury salicylate.....	660
intravenous administration of mercury in mental deficiency due to.....	1175
nervous, autosalvarsanized serum in.....	851
changes in cellular content of cerebrospinal fluid in.....	184
drainage of cerebrospinal fluid in.....	281
latent.....	184
microscopical diagnosis of.....	907
untreated.....	184
of central nervous system.....	652
intraspinal treatment of.....	821
treatment of.....	1072
of colour.....	973
of lung, cases of.....	497
of stomach resembling cancer.....	402
of vertebrae.....	508
prophylaxis, immunaria in.....	175
of salivary gland.....	153
reinfection.....	153
relation of, to public health.....	1004
salvarsan-mercury-iodide treatment in.....	421
serum diagnosis of.....	910
tracheobronchial.....	1211
treatment of.....	471
of urinary tract.....	973
unsuspected, in neurology.....	389
untreated, variations in Wassermann in.....	700
urinary test for, compared with Wassermann.....	1051
with arterial hypertension.....	1192
Syphilitic aortitis, pathological study of.....	474
nephritis, treatment of.....	852
patients and their families, examination for.....	973
prophylaxis of.....	153
reinfection, problems of.....	42
rosolia limited to soles.....	329
Syphilis, congenital, mental features of.....	89
Syringing the ear.....	71
T	
TABES, Abderhalden test in.....	136
needless surgical operations in.....	426
Tar.....	1049
Tarsus and carpus, arrested development of.....	1049
Taylor, R. Tunstall. Infantile paralysis; series of treatment with.....	1049
the original method of tendon transplantation.....	1049
Teachers, testing vitality of.....	832
Teeth, varieties of, our most common disease.....	77
singling out.....	1049
Temperature findings, singular, in plague.....	1235
variations in.....	369
Tendon fixation in infantile paralysis.....	643
Tetanus, treatment of.....	1006
Terribery, William S. The medical service in the organized militia.....	398
testes, agglutination, in inoculated persons.....	952
testes, agglutination, in inoculated persons.....	1006
of circulatory function.....	507
Tetanus, abortive, with prolonged incubation period.....	40
accidental, prophylactic use of.....	114
atypical.....	420
clinical and therapeutic experiences with.....	420
conferred to single extremity.....	71
delayed.....	1122
of.....	1049
intraneural injections of antitoxin in.....	519
iodine in.....	804
late, resulting in deformity of limbs.....	993
localized, with short incubation period.....	181
magnesium sulphate in.....	803
nonspecific treatment of.....	35
treatment of.....	709
at the foot.....	114
Tethelin, Therapeutics of.....	81
Tetravaccines, Castellani's.....	328
immunologic value of.....	114
Thayer, William S. A memorial of Angelo Celli.....	334
Theoretical notes, practical, from India.....	154
Therapeutics, drug, prophylactic factor in.....	751
therapeutic, fundamental in.....	777
intravenous seroheroin.....	777
of a pharmacologist.....	83, 178, 562, 609, 658, 707, 755, 802, 850, 905, 947, 994
specific, in infectious diseases.....	1235
two kinds of.....	972
Therapy, physiological versus symptomatic.....	18
Thermometry.....	663
Thermometry, clinical.....	663
Thompson, Loyd. Collecting blood by venepuncture.....	985
Thorn, disease.....	280
Thorn, simple, in treatment of emphysema.....	280
Thro, William C. Recovery of Streptococcus viridans in street dust.....	444
Thrombosis, after operations on.....	950
infections of.....	950
sequel of.....	950

PAGE.		PAGE.		PAGE.	
Vascular disease in the young.....	954	Water intake, effect of, on nitrogen retention in nephritis.....	185	Wounds, magnesium chloride solution in treatment of.....	277
injuries, auscultation in.....	1000	salt, infection of ear from.....	1097	treatment of.....	420
Vaughan, Victor C. Poisonous proteins.....	456, 602, 744, 842, 936	supply of New York, protection of.....	604, 653	lancetate and confused, treatment of.....	1201
Veins, varicose, effect treatment of.....	1202	Waters at Paso Robles.....	927	new hypochlorite solution for.....	417
Venepuncture, collecting blood by.....	985	natural radioactive.....	550	of chest, emetine in hemoptysis in.....	325
Venereal diseases in war time.....	999	Watson, Leigh F. Quinine and urea injections in hyperthyroidism.....	701	of extremities, injuries to sympathetic fibres and bloodvessels in.....	1203
prevention of, in the army.....	1142	Weil's disease, etiology, mode of infection, and treatment of.....	712	of large arteries, intubation in.....	36
lesions, Simpson light in.....	472	experimental basis for specific treatment of.....	232	old, treatment of.....	1088
ulcer, treatment of.....	1093	experimental investigations of.....	40	paraffin dressings and drains for.....	472
Venesection as a therapeutic measure.....	518	symptoms of.....	1095	penetrating, of chest.....	375
Vertebrae, congenital deformities of.....	538	Weinberger, Bernhard Wolf. Orthodontia and the general physical health.....	769	perineal, aftertreatment for.....	994
syphilis of.....	630	Weiss, Louis. Treatment of ophthalmia neonatorum.....	266	quinine hydrochloride as a dressing for.....	178
Vertigo, gastric and auricular forms of.....	855	Welch, William H. Medical education in the United States.....	890	secondary closure of.....	517
Vesical diverticula, complications of.....	224	Whitall, J. Dawson. Sarcoma of inferior maxilla.....	762	septic, dressing and ethylol in.....	758
Irritation, reflex.....	883	White, J. M. Intrasternal injections.....	729	serums and artificial nutritive fluids in treatment of.....	371
lesions, pain in.....	856, 905	Whooping cough, early diagnosis of.....	65	sphagnum moss as a dressing for.....	228
urine, status of.....	1001	Widal reaction and prophylactic inoculation in typhoid fever.....	29	testing antiseptics for.....	1043
Vesicular diversula, repair of.....	1149	in persons vaccinated against typhoid fever.....	904	stab, of chest.....	1245
Vesiculitis, seminal.....	523	value of.....	270	sterilization of, by heated air or oxygen.....	84
Vineet's angina, treatment of.....	854	with standardized cultures.....	233	strange, caused by explosion.....	319
microorganisms, infection of ear with.....	613	Wiener, Joseph. Postoperative complications of appendicitis.....	203	treatment of, by artificial light.....	84
Viscera, transposition of.....	1146	Wilcox, Reynold Webb. Potassium iodide poisoning.....	975	urea as a bactericide in.....	38
Visceral diseases, nervous symptoms in.....	606	Wile, I. S. Malnutrition.....	729	Wyeth, George A. Prompt cure of gonorrhea.....	244
Visceropitosis, treatment of.....	418	Williams, Daniel Hale. The malingering.....	684	Reply to Doctor Bierhoff's letter on the prompt cure of gonorrhea.....	382
Viscosity of urine.....	855	Williams, Tom A. Medical treatment of exceptional children.....	54		
Vision, disturbances of, in gunshot wounds of brain.....	327	Treatment of constipation in sedentary men.....	552	X RAY diagnosis of mastoiditis.....	1163
Vitality of teachers indicated by blood ptosis test.....	832	Wilson, Gordon. Disease in colored girls.....	585	of surgical complications within the chest.....	1166
Vitamine solution of pellagra problem.....	1034	Winfield, James Macfarland. Pellagra in the State of New York.....	1076	filtered, in skin diseases.....	2895
Vitamins, isolating.....	749	Wittenberg, Joseph. Urological diagnosis.....	831	findings in alimentary tract, significance of.....	426
new factor in nutrition.....	1133, 1148	Wolbarst, Abr. L. The five glass catheter test.....	928	in cardiac anatomy and pathology.....	139
Vomiting, cyclic, of infants.....	890	Women in medicine.....	243	in diagnosis of kidney lesions.....	139
local, jejunostomy in.....	1090	Work, muscular, influence of, on blood carbohydrate metabolism.....	745	in exophthalmic goitre.....	853
treatment of.....	906	Workmen's compensation act and medical fee.....	410, 1036	in gynecology.....	87
uncontrollable, treatment of.....	88	Wound dressings.....	1042	in lobar pneumonia.....	141
		Wounds, Benegran a new remedy for.....	516	in postoperative treatment of carcinoma of breast.....	36
		chlorine water as a dressing for.....	378	in skin diseases.....	946
		cicatrization and granulation in healing of.....	75	in tuberculous adenitis.....	1016
		conservative treatment of.....	1092	in unresolved pneumonia.....	681
		disinfection of, with iodine and sodium hypochlorite.....	181	in uterine carcinoma.....	286
		gunshot, of brain, visual disturbances in.....	327	in uterine hemorrhage.....	804
		of skull, radiography in.....	761	in uterine myoma.....	1201
		treatment of.....	606	localization, rapid.....	703
		infected, bone transplants in.....	997	massive doses of, in cancer.....	1044
				pictures of normal parts.....	665, 791
				role of, in diagnosis of ureteral calculus.....	90
				treatment of menorrhagia, dysmenorrhea, and uterine myoma.....	1044
				tube, how to measure thickness of wall of.....	791
				Xanthosis, cause of septal bleeding.....	1082
				YANKAUER, Sidney. Bronchiectasis from standpoint of bronchoscopist.....	457
				Yates, David Gilbert. Dr. Achilles Rose—an appreciation.....	218
				ZIEHL'S fuchsin in impetigo.....	37

INDEX TO PAGES.

January 1st.....	148	April 1st.....	62, 72
January 8th.....	19, 99	April 8th.....	673-720
January 15th.....	97-144	April 15th.....	721-768
January 22nd.....	145, 102	April 22nd.....	769-816
January 29th.....	103-240	April 29th.....	817-864
February 5th.....	241-288	May 6th.....	865-912
February 12th.....	289-336	May 13th.....	913-960
February 19th.....	337-384	May 20th.....	961-1008
February 26th.....	385-432	May 27th.....	1009-1056
March 4th.....	433-480	June 3rd.....	1057-1104
March 11th.....	481-528	June 10th.....	1105-1152
March 18th.....	529-576	June 17th.....	1153-1200
March 25th.....	577-624	June 24th.....	1201-1248

LIST OF ILLUSTRATIONS TO VOLUME CHII.

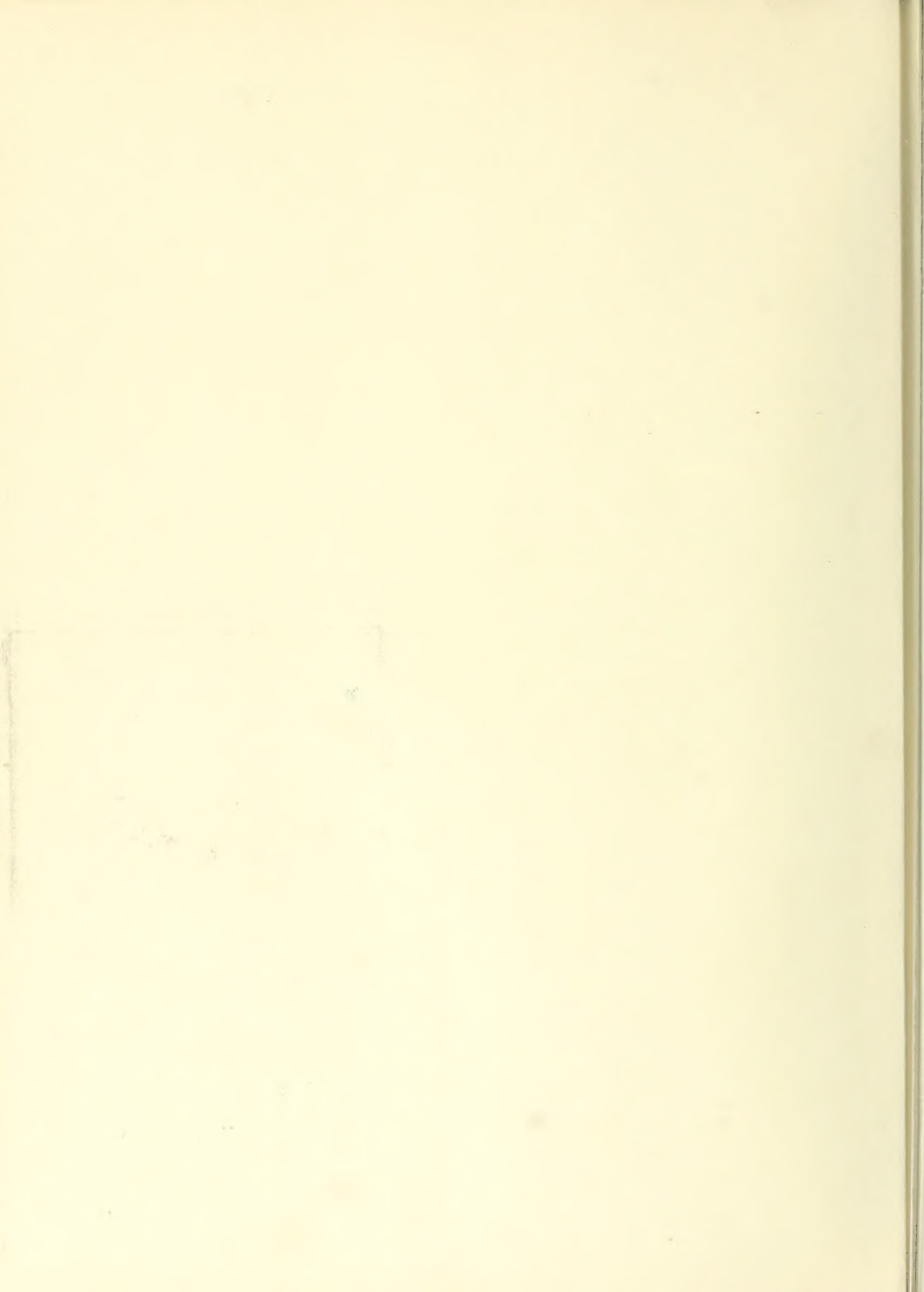
American Red Cross in Vienna. Eleven Illustrations.....	301-305	McCleave, Thomas C., M.D. Portrait.....	1189
Andrews, E. Wyllys, M.D. Portrait.....	1186	Malignant tumor development. Three Illustrations.....	201-202
Apparatus for administration of gas-oxygen. Four Illustrations.....	353	Mayo, Charles H., M.D. Portrait.....	1196
Apparatus for intravenous injections of salvarsan. Two Illustrations.....	1127	Moleen, George A., M.D. Portrait.....	1190
Apparatus for treatment of accessory sinus infections. One Illustration.....	213	Moorehead, Frederick B., M.D. Portrait.....	1191
Beriberi. Five Illustrations.....	686	Mortality in the United States. Nineteen Illustrations.....	97-104
Blue, Rupert, M.D. Portrait.....	1185	Oertel system of graduated exercise. Two Illustrations.....	926
Braasch, W. F., M.D. Portrait.....	1189	Orientation and equilibration. Four Illustrations...	577
Camp sanitation. Two Illustrations.....	1170	Orthodontia in relation to general physical health. Eighteen Illustrations.....	770-774
Cancer of breast. Eight Illustrations.....	981-983	Paralysis, infantile, tendon transplantation in. Eleven Illustrations.....	193-198
Carbon dioxide baths. Thirty Illustrations.....	913-916	Paralysis, spastic, in children. Five Illustrations.....	490-499
Dermatitis facialis. Six Illustrations.....	148-152	Paralytic feet. Three Illustrations.....	826
Detroit views. Ten Illustrations.....	1180-1193	Parker, Walter R., M.D. Portrait.....	1190
Diet in cardiac insufficiency. Eight Illustrations.....	450-454	Pedology, possibilities of. Twelve Illustrations.....	343-347
Digestion, delayed. Five Illustrations.....	1115-1116	Percussion technic and theory. One Illustration.....	113
Dislocation of knee. One Illustration.....	1125	Pneumonia, management of. Six Charts.....	1059-1064
Eclampsia with recovery. Two Illustrations.....	262	Pneumonia, management of. One Illustration.....	1121
Electrocardiograph. Ten Illustrations.....	541-546	Pollutions in the male. One Illustration.....	250
Exophthalmos, pulsating. Two Illustrations.....	878	Pyloric obstruction in infants. Two Illustrations...	775
Fleck typhus. Two Illustrations.....	1168	Removal of useless uterus. One Illustration.....	488
Gallbladder, hourglass. One Illustration.....	1068	Rickets, causes of. Five Illustrations.....	69
Gas gangrene. Two Illustrations.....	984	Rucker, William C., M.D. Portrait.....	1188
Gay, F. P., M.D. Portrait.....	1188	Sarcoma of lower jaw. Two Illustrations.....	62
Geier, Otto P., M.D. Portrait.....	1187	Sarcoma of tibia. One Illustration.....	1072
Gengenbach, Frank P., M.D. Portrait.....	1189	Sarcomata in unusual situations. Two Illustrations...	492
Hamilton, A. S., M.D. Portrait.....	1188	Schmidt, Louis E., M.D. Portrait.....	1191
Hatcher, Robert A., M.D. Portrait.....	1187	Shoes, physiological and therapeutic. Ten Illustrations.....	337-341
Herb, Isabella C., M.D. Portrait.....	1188	Stomach, normal. Nine Illustrations.....	64-68
Hernia, congenital. One Illustration.....	159	Syphilis in epilepsy. One Illustration.....	820
Hibbs, Russell A., M.D. Portrait.....	1189	Syphilis, serology and diagnosis of. One Illustration...	675
Hydronephrosis. One Illustration.....	548	Syphilitic reinfection. Six Illustrations.....	153-156
Judd, E. S., M.D. Portrait.....	1186	Thymic disturbance in adult. Four half tones....	677-678
Keily's device for protection against tubercle bacillus.....	1074	Tonsilloscope. Four Illustrations.....	961-964
Leprosy, treatment of. Eight Illustrations.....	290-293	Tremor tracings. Four Illustrations.....	308
Luxation of left femoral epiphysis. Four Illustrations.....	549-550	Ureteral calculus, diagnosis of. Four half tones....	1070
Lye stricture of esophagus. One Illustration.....	1069	Urinary test, seven glass. Three Illustrations.....	867
		Vander Veer, Albert, M.D. Portrait.....	1185
		Venepuncture, new method of. Two Illustrations...	986
		X ray treatment of unresolved pneumonia. Two Illustrations.....	682

LIST OF CONTRIBUTORS TO VOLUME CIII.

Those whose names are marked with an asterisk have contributed editorial articles.

- ABRAHAMS, ROBERT M. D.
ALLEN, FREDERICK M., M. D.
ANDERS, HOWARD S., M. D., Philadelphia.
ANDERS, JAMES M., M. D., LL. D., Philadelphia.
*APPEGATE, JOHN CHEW, M. D., Philadelphia.
*ARMSTRONG, DONALD B., M. D.
ARROWSMITH, HUBERT, M. D., F. A. C. S. Brooklyn.
ASHLEY, DEXTER D., M. D.
- BABCOCK, ROBERT H., M. D., LL. D., Chicago.
BABCOCK, W. WAYNE, M. D., Philadelphia.
BAETZ, WALTER G., M. D., Woodhaven, N. Y.
*BAILEY, WILLIAM S., Jamestown, N. Y.
BALDWIN, EDWARD R., M. D., Saranac Lake, N. Y.
*BANDLER, CLARENCE C., M. D.
BARKER, CREIGHTON, M. D., New Milford, Conn.
BARKER, LEWELLYS F., M. D., Baltimore.
BARNES, FREDERICK R., M. D., Philadelphia.
BARR, D. D., M. D., Taylorsville, Ill.
*BARTLETT, EDWIN J., M. D., Hanover, N. H.
BARUCH, SIMON, M. D.
BASSLER, ANTHONY, M. D.
BECK, CARL, M. D., Chicago.
BEEBE, S. P., Ph. D., M. D.
BENEDICT, A. L., A. M., M. D., Buffalo.
BENTLEY, DAVID J., M. D., Philadelphia.
BERNSTEIN, EUGENE P., M. D.
BIERHOFF, FREDERIC, M. D.
BIGGS, HERMANN M., M. D., LL. D.
BISHOP, LOUIS FAUGÈRES, A. M., M. D.
BLUE, RUPERT, M. D., Washington, D. C.
BOGGS, RUSSELL H., M. D., Pittsburgh.
BOLLES, CHARLES P., M. D., Wilmington, N. C.
RONIME, ELLIS, M. D.
BOOKMAN, MILTON R., M. D., F. A. C. S.
BOWMAN, JOHN G., M. D., F. A. C. S., Chicago.
BRADDOCK, CHARLES S., Jr., M. D.
BRADY, WILLIAM, M. D., Elmira, N. Y.
BRAY, AARON, M. D., Philadelphia.
BRITAIN, ROBERT, M. D., Downsville, N. Y.
BRODHEAD, GEORGE L., M. D.
BROEMAN, C. J., M. D., Cincinnati, Ohio.
BROWN, SAMUEL HORTON, M. D., Philadelphia.
BURR, CHARLES W., M. D., Philadelphia.
BUSH, A. D., M. D., Olivet, Mich.
- CARRINGTON, J. OTIS, M. D., Malden, Mass.
CHAMBERLAIN, JOSEPH P., M. D.
CHENEY, WILLIAM FITCH, M. D., San Francisco.
CLIMENKO, H., M. D.
*CLOUTING, CHARLES E., M. D.
COHEN, MYER SOLIS, A. B., M. D., Philadelphia.
COHEN, SOLOMON SOLIS, M. D., Philadelphia.
COLLINS, CLIFFORD U., M. D., Peoria, Ill.
COLLINS, JOSEPH, M. D.
COMSTOCK, ALBERT, M. D., Brooklyn.
- CORNWALL, EDWARD E., M. D., Brooklyn.
COUGHLIN, ROBERT E., M. D., Brooklyn.
COURRIER, JOHN L., D. D. S., Newark, N. J.
CRENSHAW, HANSELL, M. D., Atlanta, Ga.
CROTHERS, SAMUEL ROSS, M. D., Chester, Pa.
*CUMSTON, CHARLES GREENE, M. D., Geneva, Switzerland.
- DALAND, JUDSON, M. D., Philadelphia.
DAVIS, GWILYM G., M. D., F. A. C. S., Philadelphia.
DEADERICK, WILLIAM H., M. D., Hot Springs, Ark.
DEARBORN, GEORGE VAN NESS, Ph. D., M. D., Boston.
DEAVER, JOHN B., M. D., Philadelphia.
*DEEKS, W. H., M. D.
DENCH, EDWARD B., M. D.
DEVER, FRANCIS J., M. D., Philadelphia.
*DONNELLY, W. H., M. D., Brooklyn.
DOWNNEY, JESSE W., Jr., M. D., Baltimore, Md.
DOWNS, A. SHERMAN, M. D., Saratoga Springs, N. Y.
DOYLE, STANLEY B., M. D., Rosebank, N. Y.
DRYFOOS, ARTHUR D., M. D.
DUEL, ARTHUR B., M. D., F. A. C. S.
- EDELMAN, M. H., M. D.
EGBERT, J. HOBART, M. D.
*EGGLESTON, CARY, M. D.
ESNER, AUGUSTUS A., M. D., Philadelphia.
EVANS, GEORGE H., M. D., San Francisco.
EWEERS, WILLIAM V., M. D., Rochester, N. Y.
- FANZ, JOHN I., M. D., Philadelphia.
FASKE, LEO, M. D., Brooklyn.
FEDDE, B. A., M. D., Brooklyn.
FINLEY, JOHN H., Ph. D., Albany, N. Y.
FISCHER, LOUIS, M. D.
FISK, EUGENE LYMAN, M. D.
FLOERSHEIM, SAMUEL, M. D.
*FOSTER, MATTHIAS LANCKTON, M. D., New Rochelle, N. Y.
FOWLER, EDMUND PRINCE, M. D.
FOWLER, ROYALE H., M. D., Brooklyn.
FOWLER, RUSSELL S., M. D., F. A. C. S., Brooklyn.
FRENCH, THOMAS R., M. D., Brooklyn.
*FREUDENTHAL, WOLFF, M. D.
*FRIDENBERG, PERCY, M. D.
*FRIEDMAN, HENRY M., M. D., LL. D.
FRIEDMAN, JESSE D., M. D., New Kensington, Pa.
FUERSTMAN, HERMAN LOUIS, M. D., Newark, N. J.
- GALLANT, A. ERNEST, M. D.
GARDNER, W. M., M. D., Brooklyn, N. Y.
GASKILL, HENRY KENNEDY, M. D., Philadelphia.
GAURAZ, EDOUARD, M. D., Mennecy, France.
GEYSER, ALBERT C., M. D.
GLOGAU, OTTO, M. D.
GOLDBERGER, I. H., M. D.
GOLDSTONE, KARL H., M. D., Brooklyn.
GOODMAN, CHARLES, M. D., F. A. C. S.
- GORDON, ALFRED, M. D., Philadelphia.
GORDON, FRANK A., M. D., Williston, N. D.
GORDON, MURRAY BURNES, M. D., Brooklyn.
GORDON, WILLIAM S., M. D., Richmond, Va.
GOTTHEIL, WILLIAM S., M. D.
GRAHAM, EDWIN E., M. D., Philadelphia.
GROSSMAN, JACOB, M. D.
GROSSMAN, MAX, M. D., Brooklyn.
GROSSMAN, MORRIS, M. D.
GUTMAN, JACOB, M. D., Brooklyn.
*GWATHMEY, JAMES T., M. D.
- HANSELL, M. T., M. D.
HARROWER, HENRY R., M. D., Los Angeles, Cal.
*HARTSHORNE, ISAAC, M. D.
HAYS, HAROLD, M. D., F. A. C. S.
HEIDINGSFELD, M. L., Ph. D., M. D., Cincinnati.
HEISER, VICTOR G., M. D.
HENIN, CHARLES C., M. D., Springfield, Mass.
HERRICK, W. P., M. D.
HIGHTOWER, C. C., M. D., Hattiesburg, Miss.
HOFF, LOUIS L., M. D., Holyoke, Mass.
HOLLAND, E. D., M. D., Hot Springs, Ark.
HOOVER, F. P., M. D., Jacksonville, Fla.
HOPKINS, HENRY REED, M. D., Buffalo.
HOKAN, MICHAEL J., M. D.
HOXIE, GEORGE H., A. M., M. D., Kansas City, Mo.
HOWARD, J. H., M. D., York, Pa.
HOWARD, TASKER, M. D., Brooklyn.
HOWE, ALEXANDER C., M. D.
HÜHNER, MAX, M. D.
HUNTINGTON, P. M., M. D., Medical Corps, United States Army.
- *INGHAM, SAMUEL D., M. D., Philadelphia.
JACKSON, J. ALLEN, M. D., Philadelphia.
JACOBSON, WILLIAM, B. S., M. D.
JACOBY, GEORGE W., M. D.
JENNINGS, JOHN E., M. D., Brooklyn.
JENNINGS, WALTER B., M. D., Scarsdale, N. Y.
JOERG, OSWALD, M. D., Brooklyn.
- KAHN, ULYSSES S., M. D., Binghamton, N. Y.
KAKELS, M. S., M. D., F. A. C. S.
KARPAS, MORRIS J., M. D.
KAUFMAN, LOUIS RENÉ, M. D., F. A. C. S.
KEILTY, ROBERT A., M. D., Philadelphia.
KELLOGG, J. H., M. D., Battle Creek, Mich.
KENNEDY, J. W., M. D., F. A. C. S., Philadelphia.
KESSEL, LEO, M. D.
*KEYES, EDWARD L., Jr., M. D.
KILDUFFE, ROBERT, JR., A. M., M. D., Chester, Pa.
*KING, HOWARD D., M. D., New Orleans, La.
KLEIN, EMANUEL, M. D., Bayonne, N. J.
KOHN, LOUIS WINFIELD, M. D., Philadelphia.

- KRAMER, S. P., M. D., Cincinnati.
 KRAUSS, F. M. D., Philadelphia.
 KRUMHAAR, EDWARD B., A. B., M. D., Philadelphia.
- LANDRY, ADRIAN A., M. D., Plaquemine, La.
 LANDSMAN, ARTHUR A., M. D.
 LAVADIA, P. C., M. D., Ithaca, N. Y.
 *LAVINDER, CHARLES H., M. D.
 LEFORT, ALBERT, M. D., Roisel, France.
 LERCH, OTTO, A. M., M. D., New Orleans, La.
 *LEWINSKI-CORWIN, E., M. D.
 *LIND, JOHN E., M. D., Washington, D. C.
 LITTMAN, MAURICE J., A. M., M. D.
 LIPPE, SEELYE W., M. D., Rochester, N. Y.
 LOWENSTEIN, FREDERICK P., M. D., Springfield, Mass.
 LUBMAN, MAX, M. D.
 LUNGERHAUSEN, W. T., M. D., Mount Clemens, Mich.
- *MCCOLLUM, E. V., M. D., Ph. D., Madison, Wis.
 *MCCONNELL, GUTHRIE, M. D., Waterloo, Ia.
 MCCREARY, E. BOSWORTH, M. D., Pittsburgh.
 MACDONALD, JOHN, M. D., Philadelphia.
 MACKEE, GEORGE M., M. D.
 MACWHINNIE, ARTHUR MORGAN, M. D., Seattle, Wash.
 MACKEY, HARRY A., Philadelphia.
 MACKINNEY, WILLIAM H., M. D., Philadelphia.
 MAKUEN, G. HUDSON, M. D., Philadelphia.
 MALLETERRE, FÉLIX, M. D., Paris, France.
 MARTIN, CLARENCE, M. D., St. Louis.
 MARTIN, WILLIAM, M. D., Atlantic City, N. J.
 MAYNE, EARL H., M. D., Brooklyn, N. Y.
 *MAYO, CASWELL A., Ph. M.
 MAYO, CHARLES H., M. D., Rochester, Minn.
 MAYS, THOMAS J., M. D., Philadelphia.
 MEDING, CHARLES B., M. D.
 MENDELSON, JOSEPH A., M. D., Philadelphia.
 MEYER, ALFRED, M. D.
 MILLER, EMMA T., M. D., San Antonio, Texas.
 MILLS, H. BROOKER, M. D., Philadelphia.
 MITTENDORF, ALFRED D., M. D.
 MOLINA-DE ST. REMY, ANTONIO H., M. D., San Juan, Porto Rico.
 MONAHAN, R. C., M. D., Butte, Mont.
 MORRIS, ROBERT T., M. D.
 MOYRAND, HENRI, M. D., Grenoble, France.
 MUNSON, J. F., M. D., Sonyea, N. Y.
 MYERS, MARK C., M. D., Paso Robles, Cal.
- NASCHER, I. L., M. D.
 NEUMANN, FRITZ, M. D.
 NEUWELT, LOUIS, M. D.
 NEWMAN, F. RICHARD, M. D., Wheeling, W. Va.
 NEWMAVER, S. W., M. D., Philadelphia.
 NICOLL, ALEXANDER, M. D., F. A. C. S.
- OFFTINGER, BERNARD, M. D., Long Beach, Cal.
 OPDYKE, RALPH, M. D.
- PALEY, SAMUEL H., M. D.
 PALIER, E., M. D.
 PALLAN, G., M. D., Toledo, Ohio.
- PAROUNAGIAN, MIHRAN B., M. D.
 PEMSLER, A. B., M. D.
 *PEDERSEN, VICTOR COX, A. M., M. D., F. A. C. S.
 PERKINS, C. WINFIELD, M. D.
 PERKINS, ROGER G., M. D., Cleveland, Ohio.
 PFÄHLER, GEORGE E., M. D., Philadelphia.
 *PISEK, GREGORY R., M. D.
 POTTER, NATHANIEL BOWDITCH, M. D.
 *PRATT, FABIAN L., M. D., Omaha, Neb.
 PRYOR, JOHN H., M. D., Buffalo.
- QUIMBY, A. JUDSON, M. D.
 QUIMBY, WILL A., M. D.
- RACHFORD, B. K., M. D., Cincinnati, O.
 RANSOM, B. H., Washington, D. C.
 READ, J. STURDIVANT, M. D., F. A. C. S., Brooklyn.
 *REED, ALFRED C., M. D., Changsha, China.
 REESE, F. D., M. D., Cortland, N. Y.
 REHFUSS, MARTIN E., M. D., Philadelphia.
 KEYNOLDS, WALTER S., M. D.
 RHODES, WILLIAM L., M. D., Kansas City, Kansas.
 RIDDELL, WILLIAM RENWICK, LL. D., F. R. H. S., Toronto, Canada.
 RIHA, WILLIAM W., M. D., Bayonne, N. J.
 RISLEY, S. D., M. D., Philadelphia.
 RISSER, ARTHUR S., M. D., Blackwell, Okla.
 ROBERTS, PERCY WILLARD, M. D.
 ROBERTSON, R. S., M. D., Brooklyn.
 *ROBERTSON, WILLIAM EGBERT, M. D., Philadelphia.
 *ROBIN, ALBERT, M. D., Wilmington, Del.
 ROBINSON, BEVERLEY, M. D.
 ROBINSON, J. E., M. D., Temple, Texas.
 ROBINSON, WILLIAM J., M. D.
 *ROGERS, JAMES F., M. D., New Haven, Conn.
 ROHDENBURG, G. L., M. D.
 ROSENBERGER, RANDLE S., M. D., Philadelphia.
 ROSENZWEIG, S. BERNARD, M. D.
 ROYSTER, HUBERT A., A. B., M. D., F. A. C. S., Raleigh, N. C.
 RUCKER, J. B., JR., M. D., A. B., Philadelphia.
 RUDIS-JICINSKY, J., M. D., Chicago.
 RUNYON, W. D., M. D., Oakdale, Iowa.
 *RUSCHHAUPT, L. F., B. Sc., M. D., Milwaukee, Wis.
- *SAJOUX, CHARLES E. DE M., M. D., LL. D., Sc. D., Philadelphia.
 *SAJOUX, LOUIS T. DE M., B. S., M. D., Philadelphia.
 SANDERS, A. S., M. D.
 SAPHIR, JOSEPH F., M. D.
 *SCARLETT, REFCUS B., M. D., Trenton, N. J.
 SCHAFFNER, PHILIP M., M. D., Brooklyn, N. Y.
 *SCHAMBERG, JAY F., A. B., M. D., Philadelphia.
 SCHILLER, A. NOAH, M. D.
 *SCOTT, R. J. E., M. A., B. C. L., M. D.
 SHANAHAN, WILLIAM T., M. D., Sonyea, N. Y.
 SHAW, A. L., M. D., Sonyea, N. Y.
 SHAW, JOHN H., M. D., Lancaster, Pa.
 *SHIVELY, HENRY L., M. D., LL. D.
 SILL, E. MATHER, M. D.
 SLOCUM, MORRIS A., M. D., Philadelphia.
 SMITH, F. MICHAEL, M. D., Kilmichael, Miss.
- SMITH, S. MACCUEN, M. D., Philadelphia.
 SMITHE, P. A., M. D., Enid, Okla.
 SOUTHWORTH, THOMAS S., M. D.
 SOWELL, GEORGE A., M. D., Philadelphia.
 *SPAULDING, HARRY V., M. D.
 STAFFORD, A. A., M. D., San Francisco, Cal.
 *STEINBUGLER, WILLIAM F. C., M. D.
 *STEVENS, A. R., M. D.
 STOUT, P. SAMUEL, M. D., Philadelphia.
 *STRICKLER, A., M. D., Philadelphia.
 STYLES, W. A. L., M. D., Montreal, Canada.
 SUTPHEN, T. Y., M. D., Newark, N. J.
 SUTTON, MCW. B. E., M. D., Brooklyn.
 SWIFT, W. J., M. D.
 *SWINGLE, LEROY, M. D., Salt Lake City, Utah.
- *TALBOT, WINTHROP, A. B., M. D.
 *TAYLOR, J. MADISON, A. M., M. D., LL. D., Philadelphia.
 TAYLOR, R. TUNSTALL, B. A., M. D., F. A. C. S., Baltimore.
 TERRIBERRY, WILLIAM S., M. D., Lieutenant Colonel, Medical Corps, N. G., N. Y.
 THAYER, WILLIAM S., M. D., Baltimore.
 THOMPSON, LOYD, Ph. B., M. D., Hot Springs, Ark.
 THRO, WILLIAM C., M. D.
 *TILTON, BENJAMIN T., M. D.
 *TODD, JOHN B., M. D., Syracuse, N. Y.
 TOMPKINS, E. PENDLETON, M. D., Roanoke, Va.
 TULLIDGE, E. KILBOURNE, M. D., Philadelphia.
 TURNER, ARTHUR S., M. D.
- UHLE, ALEXANDER A., M. D., Philadelphia.
 UPSHUR, J. N., M. D., Richmond, Va.
- VAUGHAN, VICTOR C., M. D., Ann Arbor, Mich.
 *VEDIN, AUGUSTA, M. D.
- WADSWORTH, W. S., M. D., Philadelphia.
 WAITZFELDER, EDWARD, M. D.
 WALKER, J. T. AINSLIE.
 WALTER, WILL, M. D., Chicago.
 WARREN, D. E., M. D., Passaic, N. J.
 WATSON, LEIGH F., M. D., Oklahoma
 City.
 WEINBERGER, BERNHARD WOLF, D. D. S.
 WEISS, LOUIS, M. D., Newark, N. J.
 *WHEELER, CLAUDE L., A. B., M. D.
 WHITALL, J. DAWSON, M. D., Philadelphia.
 WHITE, J. M., M. D., Meridian, Miss.
 WIENER, JOSEPH, M. D.
 WILCOX, REYNOLD WEBB, M. D., LL. D., D. C. L.
 WILE, IRA S., M. D.
 WILLIAMS, DANIEL HALE, M. D., LL. D., Chicago.
 WILLIAMS, TOM A., M. B., C. M. (Edin.), Washington, D. C.
 WILSON, GORDON, M. D., Baltimore.
 *WILSON, H. AUGUSTUS, M. D., Philadelphia.
 WINFIELD, JAMES MACFARLAND, M. D., Brooklyn.
 WINSTENBERG, JOSEPH, M. D., Brooklyn.
 WOLBARST, ABR. L., M. D.
 WOODYATT, R. T., M. D., Chicago.
 WYETH, GEORGE A., M. D.
- YANKAUER, SIDNEY, M. D.
 YATES, DAVID GILBERT, M. D.



BINDING SECT. MAY 29 1966

R
11
I65
v.103

International record of
medicine

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STORAGE

